Higher Education in Asia: Quality, Excellence and Governance

Angela Yung-Chi Hou
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Sheng-Ju Chan *Editors*

Higher Education in Taiwan

Global, Political and Social Challenges and Future Trends

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Foreword

In one of her first speeches, the new Prime Minister of Norway emphasized in early 2015 the need for her country to move away from oil and gas dependence and rather build its future on knowledge and its applications. Among the emerging economies in South-East Asia, Taiwan has certainly been one of the first nations to acknowledge early on that higher education was essential for the creation, dissemination, and application of knowledge. It has systematically placed higher education capacity building at the center of its development agenda, thereby demonstrating the recognition that universities and other types of higher education institutions play a crucial role in fostering the knowledge, insights, innovative abilities, and creative thinking needed for designing and implementing effective economic growth strategies.

It is therefore not surprising to observe the impressive expansion and thorough transformation of the Taiwanese higher education system over the past decades. After operating as an elitist system until the late 1980s—starting from a very small network of only 7 institutions in the early 1950s—it has gradually moved toward a mass system with close to 160 institutions today, characterized by the presence of a dynamic private sector that represents about two-thirds of the total number of higher education institutions and almost 70% of total enrollment. The recent rapid growth of the system has followed the political evolution from authoritarian to democratic regime. A unique feature of the Taiwanese system is that its development reflects the combination of elements of the Chinese, Japanese, and US university traditions.

Against this background, the book edited by Professors Hou, Chiang, and Chan could not arrive at a better juncture. This ambitious publication, bringing together an outstanding group of scholars, provides a comprehensive panorama of the higher education system in Taiwan, while at the same time weaving in an international reference framework that helps to understand the evolution of the Taiwanese universities in a comparative perspective. The book shows us the many threads of the complex story of the impressive transformation that the Taiwanese higher education system has undergone in the past decades. It tells a tale of rapid quantitative expansion, institutional diversification with the growth of a sizeable private higher education subsector, significant development of internationalization, careful efforts to put in place a strong quality assurance system, and the emergence of a few leading research universities.

The book has three parts. The first part gives the historical background, analyzes how the higher education system has become substantially more diverse, and examines the evolution of government policy over the years. It shows the impact of key government decisions that have included deregulation to allow religious groups and private investors to enter higher education, a market-driven management approach that gave more autonomy to both public and private universities, measures to enhance internationalization, and a series of excellence initiatives to boost research and teaching excellence.

The second part starts by documenting the emergence and development of a state-of-the-art quality assurance system including both institutional and academic accreditation, with a focus on student learning outcomes. The process has been led by the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT), which was set up in 2005. In the context of the government's autonomy policy, quality assurance evolved toward a self-accreditation system after 2012. The Taiwanese quality assurance model stands out today as one of the most advanced in South-East Asia.

Next comes a full account of the various excellence initiatives launched by Taiwan since 2005, following similar programs in China, Korea, and Japan. The government has supported efforts to build world-class universities in the country through three main excellence initiatives. The first one was the Development Plan for World Class Universities and Research Centers of Excellence (2005–2016). The second one was the Teaching Excellence Initiative (2005–2014), which puts Taiwan among the few countries that have paid serious attention to improving teaching and learning, rather than focusing only on research excellence. The most recent one is the Technological University Paradigms (2013). These initiatives have put pressure on universities to internationalize their campus by recruiting international students and foreign faculty, put English-taught programs in place, and deepen collaborations with foreign universities. The initial results are promising, as the number of Taiwanese universities in the top 500 increased significantly, as did the quantity and quality of the universities' research output.

The second part also has a full chapter on the development of internationalization in Taiwan and one on the evolution of governance. The latter one reveals how higher education in Taiwan has gradually shifted from a traditional, government-controlled bureaucratic system into a more decentralized system. While the government has undoubtedly granted more autonomy to universities in Taiwan, it appears that it has not gone as far as other countries in the region, and that the comprehensive accountability system has translated in many bureaucratic reporting requirements for the higher education institutions.

The third and last part of the book focuses on current challenges faced by the Taiwanese universities, while also proposing options for overcoming these challenges. One of the significant issues that is explored in this part is the demographic evolution and the ageing of the Taiwanese population, which is likely to have a constraining impact on doctoral education, as is happening in Japan and South Korea. With a rapidly ageing society, universities have increased their focus on educational

programs with a lifelong learning orientation and restructured doctoral education with a growing emphasis on serving the needs of industry.

Chapter 9 discusses the important topic of equity in terms of access and success for students from low-income families and reviews the extent to which the massification of higher education in Taiwan has reduced disparities. It shows that massification has not translated automatically into more equity for traditionally under-represented groups, but that the government's flagship policies in this area, the Multiple Entrance Program (MEP) and the Tuition and Miscellaneous Fees Exemption (TMFE), have been effective in helping to improve the situation. Linked to the equity dimensions, the next Chapter investigates how technological innovations and the rapid increase in open online courses have opened new pathways for access to higher education in Taiwan.

The following two chapters are dedicated to academic careers, the first one focusing on the promotion system in Taiwanese universities and the second one analyzing issues of stratification of doctoral degrees and the role of academic networks. Chapter 13 presents an in-depth review of progress achieved by Taiwanese universities in developing institutional research departments and how it has influenced their governance. Finally, Chap. 14, presents general reflections on current trends and outstanding issues for higher education in Taiwan, such as the consequences of being an ageing society, the need for strengthening linkages between universities and the world of work, the importance for universities to assume greater social responsibility, the pressure arising from international ranking competitiveness, and transnational talent mobility.

Even though this rich publication covers a wide array of topics, it was not designed as an encyclopedia of higher education in Taiwan, and therefore could not cover all aspects in a systematic fashion. But the book constitutes the perfect platform for further work on complementary aspects that have not been included, such as funding issues. For instance, it would be worth investigating the unmet financing needs at the higher education level and how the government of Taiwan could elaborate a sustainable financing strategy that would achieve greater resource mobilization and funding allocation mechanisms linked to the performance of universities.

Taiwan is one of the leading East-Asian countries that have sought carefully to combine and align the main ingredients of academic success: talent, resources and governance.[1] For two decades, the government of Taiwan has devoted substantial resources to promote excellence in research and teaching. But reluctance to grant complete institutional autonomy to universities may have held them back slightly, compared to their regional peers. In the latest yearly ranking of national higher education systems prepared by the University of Melbourne since 2012, Taiwan takes the 21st spot in 2020 among 50 national systems of higher education, ahead of Korea (24), China (26) and Malaysia (27). Singapore has the best performance

[1] Salmi, J. (2009). *The challenge of establishing world-class universities.* Washington DC: The World Bank.

among all Asian nations in fourth position; Hong Kong is in 14th place; and Japan is number 20.[2]

I commend Professors Angela Yung-Chi Hou, Tung-liang Chiang, and Sheng-Ju Chan for putting together this outstanding publication on the transformation of higher education in Taiwan. I trust that the readers will find the book as informative and stimulating as I did. I am convinced that the various chapters will make a worthwhile contribution to the national debate on the future of higher education, and help advance the government's understanding of the importance of autonomy and the need to empower academics and universities in Taiwan to work together toward academic excellence. Finally, this book provides comparative education researchers all over the world with an insightful exploration of the evolution of the Taiwanese higher education system in recent times.

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[2] http://www.universitas21.com/news/details/220/u21-ranking-of-national-higher-education-systems-2016.

Praise for *Higher Education in Taiwan*

"'*Good practice*' is only '*good*' within the given context, since contexts have proven to be the key factor in any reform or change process. The current contribution is an excellent example of policy diffusion and transfer from an international context and the way local factors influence its formation, implementation and impact. Like many other higher education systems, the Taiwanese higher education has entered an era of transformations amid impossible to predict and ever-changing environment. In parallel with outstanding achievements in reforming the system—e.g. deregulation, promoting autonomy of higher education institutions; establishment of a robust quality assurance system to drive improved performance and excellence—the system still confronts challenges linked with market demand and higher education offer alignment, internationalization (at home and abroad), greater international visibility and influence, among the rest. The current book is a valuable contrition to the body of knowledge on higher education reforms in general, and governance and quality assurance in particular. It provides an authentic perspective on policy diffusion and transfer from an international to a local context by demonstrating the ways in which cultural and contextual peculiarities shape a policy and influence its implementation. Not least is the role of the direct implementers of change, the change agents, in the success of the endeavor and turning it into another '*good practice*'."

—Dr. Susanna Karakhanyan, *INQAAHE President*

"The Editors of this book put together scholars who have rich research and teaching experiences in higher education institutions across Taiwan to engage in critical reflections of higher education development from historical, comparative and international perspectives. This book is highly relevant for those who are interested in higher education development, university governance, quality assurance and internationalization of Taiwan."

—Prof. Dr. Joshua Ka-Ho Mok, *Vice-President and Lam Man Tsan Chair Professor of Comparative Policy, Lingnan University*

"The rapid transformation of higher education in Asia has tended to drive a more narrow focus on contemporary changes and challenges. Research on higher education

have nevertheless demonstrated that present changes in the sector often is strongly influenced by past history and legacy, and that without a broad historical understanding it is also difficult to make informed reflections about the future. The current volume provides a comprehensive overview of the developments of the higher education sector in Taiwan addressing how the country is adapting to global trends while taking into account the domestic historical, political and social context. Hence, the current volume is a must-read for those wanting an in-depth understanding of the on-going transformations of higher education in Taiwan."

—Prof. Dr. Bjørn Stensaker, *Professor of higher education, University of Oslo*

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Angela Yung-Chi Hou is a Professor of Higher Education at National Chengchi University, Taiwan. Currently, she serves as Associate Dean of College of Education, National Chengchi University, as well as Executive Director of Higher Education Evaluation & Accreditation Council of Taiwan. She has been involved in quality assurance practices and international research for more than 15 years, including serving as Vice President of both International Network of Quality Assurance in Higher Education (INQAAHE) and Asia Pacific Quality Network (APQN). She specializes in higher education policy, quality management, internationalization, faculty development, and quality assurance of cross border higher education.

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Part I
Understanding Taiwan Higher Education in Historical, Political and Social Contexts

Chapter 1
Historical Development of Higher Education in Taiwan from Past to Present

Angela Yung-Chi Hou, Tung-liang Chiang, Sheng-Ju Chan, and I-Jung Grace Lu

Abstract As one of the Confucian societies, higher education in Taiwan has experienced varying stages of change, from a colonial to a Chinese system, now moving into a modern system. Owing to divergence of global trends, coupled with local concerns since the 1990s, Taiwan's higher education system has encountered several challenges as those in East Asia. This chapter aims to provide background information for the readers by exploring the evolution and changes in Taiwan's higher education system from a historical perspective. The objectives and impacts of the policy change at each stage are stated respectively. An introduction to the content of the book is highlighted at the end of the chapter.

Keywords Taiwan higher education · Educational reform · Policy change

1.1 Higher Education Massification in Asia and Taiwan

With the fast development of the economy and increasing social demand for higher education, higher education in Asia has evolved from the elitist stage into the massification phase over the past decades (Shin, 2015). Enrollment in Asian higher education has increased by over 50%, and in East Asia and Pacific, the gross enrollment rate even reached to world average levels (Calderon, 2012, Marginson, Kaur, & Sawir, 2011). According to INQAAHE, there are around 76,387 higher education providers,

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with more than 349 million students enrolled in the region up to 2019 (INQAAHE, 2019).

The Asia-Pacific region has been characterized by its diversity and complexity. The countries in the region have been shaped not only by geography, but also by the language, economy, politics, region, and their international cooperation. Due to the variations in demographic and economic development, national higher education systems in Asia differ vastly in size and growth (Hou, Ince, Tasi, & Chiang, 2015). As a result, massification generating accessibility to higher education increases public concern over decreasing quality of institutions and students, as well as escalating inequality in society. Some scholars argue from a conflict theory perspective that "mass higher education is a consequence of social competing between people are competing for the limited resources, decent jobs, and places in the upper social classes" (Shin, 2015, p. 5).

Over the past decades, the development of higher education in Taiwan has been influenced interchangeably by Chinese heritage, Japanese cultures, and American universities. Higher Education has always been in the spotlight throughout these social transformations and political system transitions. According to Chou (2015a), the uniqueness of the system characterized by a combination of Japanese, American, Chinese, and local features indicates "options facing Taiwan in its pursuit of localization and globalization in higher education" (p. 92). Since the 1980s, Taiwan society has experienced rapid changes in politics, economy, and culture, as well as education. After the 1990s, the education system moved gradually toward a universal system from elitist mode by governmental policies, including inviting private sectors to enter higher education, adopting a market-driven management approach, enhancing internationalization, and engaging in the pursuit of excellence, etc. (Ministry of Education (MOE), 2019a; MOE, 2019b).

As one of the Confucian societies, higher education in Taiwan has undergone varying stages of transformation from a colonial to a Chinese system, and shifting itself into a modern system. Yet, Taiwan's higher education system still encountered similar challenges to other parts of East Asia, owing to divergence of global trends coupled with local concerns after 2000. This chapter aims to provide background information for the readers by exploring the evolution and transformation of Taiwan's higher education system from a historical retrospect. The objectives and impacts of the policy change at each stage are stated respectively. An introduction to the content of the book is highlighted at the end of the chapter.

1.2 An Overview of Taiwan in Terms of Geography, Economy, and Political System

Taiwan, formerly known as Formosa, is located in the western Pacific, approximately 160 km off China's southeast coast, midway between Japan and the Philippines (Executive Yuan, Republic of China, 2016). Taiwan has a geographical area of 36,193

square kilometers, with the Central Mountain Range stretching from north to south. Up to 2019, Taiwan had a population of 23.77 million, with an average population density of 649 people per square kilometer (1,680 per square mile), which makes it the 17th most densely populated country in the world.

Ruled at various times by Chinese, Dutch, and Japanese government, Taiwan is considered an immigrant society, consisting of 86% local Taiwanese, 12% refugees who fled from mainland China after the Chinese Civil War, and 2% Taiwanese Aborigines, descendants of the Austronesian peoples who dominated Taiwan until the seventeenth century. Mandarin is the official and spoken language. Japanese is spoken by very senior people who received their education during Japanese colonial rule in the early twentieth century (World Population Review, 2019).

As a dynamic and democratic state, Taiwan has an economy that has grown rapidly since the 1980s. Its estimated nominal GDP per capita for 2016 was $21,571, which ranks as the seventh largest in Asia. Its total PPP is over $1 trillion, putting its economy in 21st place when compared to other countries in the world. As of 2018, telecommunication, financial services, and utility services were the three highest paid sectors in Taiwan (Wikipedia, 2019). Besides, Taiwan is the most technologically advanced computer microchip maker in the world (The Economist, 2018).

After being colonized by the Japanese government over 50 years, Taiwan was returned to the Chinese government at the end of World War II. Lost in the Chinese Civil War, the ruling party, Kuomintang (KMT) retreated from mainland China to Taiwan in 1949 with two million mainlanders. With authoritarian one-party leadership, the KMT government then ruled the island under Martial Law until 1987. Following the gradual liberation and democratization of the political system during the presidency of Chiang Ching-kuo from 1978 to 1988, Taiwan was gradually transformed from an authoritarian state into the first democratic country in Chinese Society (Chou, 2015b; Chiang, 2018).

1.3 Five Developmental Stages and Context in Taiwan Higher Education: Major Policies, Events, and Paradigm Shift

As indicated above, Taiwan's higher education development and governance have been interchangeably influenced by Western, Chinese, and Japanese systems. The modernization of Taiwan's higher education started during the colonial period in 1930s, and underwent a five-stage transformation, including the colonial period (Japanese rule); state control and educational reform (from 1945 to 1985); the expansion and deregulation era (from 1986 to 2005); the excellence and quality assurance golden age (from 2005 to 2016), as well as the current era of equity and social responsibility (from 2016 to present) (Chen, 1979; Cheng, 2011; Huang, 2013; Huang, 2019).

- ***Colonial Period (Japanese Rule): From 1920 to 1945***

During the early development of Taiwanese higher education in the Japanese colonial period from 1920 to 1945, there was one university and only a few colleges, with around 5000 students in total (MOE, 2019a). They include *Taihoku Higher School*, *Taihoku Imperial University*, *Taihoku Medical College, Taichu Agriculture and Forestry College, Tainan Commercial College, Taihoku Commercial College, Tainan Technical College, and Private Taihoku Girl's College*, etc. 80% of the students entering these institutions were Japanese rather than Taiwanese at that time. Taiwanese students rarely had chances to enter higher education except in the field of medicine (Wu, et al. 1989). It was found that the number of Taihoku Imperial University's graduates by 1943 was 161, contributing to 19% in total. 79 out of 179 were in the medical field, with a ratio of 45% (Wu, 1986).

Taihoku Imperial University, Taiwan's first modern university, was established in 1928 (National Taiwan University, 2019) as one of the Imperial Universities by the Japanese government. The Faculty of Literature and Politics and the Faculty of Science and Agriculture were the first to be established with a total number of 59 students. The Faculty of Medicine and the Faculty of Engineering were set up in 1935 and 1943, respectively (National Taiwan University, 2019). The founding of Taihoku Imperial University was considered as Japanese ambition expansion into South China and the South Pacific after WWI (Wu, et al., 1989). As a result, it not only involved many well-known Japanese scholars in research centers, but also received grants and funding for policymaking research projects (Wu, Chen, & Wu, 1989; National Taiwan University, 2019).

Moreover, the colleges in agriculture, business, and industry also served specific purposes for Japanese national development. For example, Tainan Commercial College supported the strengthening of Japanese economic influence in Taiwan and in Asia; Tainan Technical College, renamed as National Cheng Kung University in 1971, initiated three fields of Mechanics, Electrical Engineering, and Applied Chemistry, which aimed to respond to Japanese and local needs in industrial development (National Cheng Kung University, 2019).

In brief, the main purpose of Taiwan higher education institutions in the Japanese colonial era was "to provide research material or high-level manpower needed for Japan's colonial policy, rather than to raise the quality of the people ruled" (Wu, et al.,1989, p. 123). Notably, Taiwanese students could not compete with Japanese students in terms of access to higher education during this period.

- ***State Control and Educational Reform: From 1945 to 1985***

There were two phases in this period from 1945 to1985. The first phase, identified as HE model shift, was from 1945 to 1949, after Taiwan was restored to the Chinese government. All existing universities and colleges were renamed and reformed by applying the Chinese institution model, but with American forms such as academic structure, administrative organization, curriculum and instruction, degree, and graduation requirements (Chou, 2015a). Concurrently, Taiwan people had "full access to

the opportunities of education" (Wu, et al., 1989). For example, Taihoku Imperial University was formally transferred to the Chinese government by being renamed National Taiwan University and was expanded into six faculties, including the Faculty of Liberal Arts, Law, Science, Medicine, Engineering, and Agriculture (National Taiwan University, 2019). Up to 500 students were enrolled, and the study period was also changed from three to six years, under the Japanese system, to four years.

The second phase of this period began with the Nationalist government's withdrawal from mainland China and removal to Taiwan in 1949. The KMT government was aggressively committed to the development of Taiwan's higher education, but it also consolidated state control over education. In 1950, the KMT government announced so-called "educational guidelines during nation's reconstruction period" (戡亂建國教育實施綱要) as a foundation of national development. The guideline put emphasis on educating students to realize "Three Principles of the People," applying this political ideology into curriculum revision at the compulsory education, and strengthening the concept of "Recovering the Mainland" across all levels of education. In 1953, with the Nationalist government's permission, the first private university, Tunghai University, was reestablished in Taiwan by the United Board for Christian Education in China. On 11 November, The American Vice President Richard Nixon "arrived in Taichung to preside over Tunghai University's ground breaking ceremony" (Tunghai University, 2019).

Economy has always been one of the driving forces of education reforms in Taiwan. In 1953, as guiding principles for national economic development, the first four-year economic construction plan was published, addressing three themes including "agricultural and industrial production," "maintaining economic stability," and "increasing foreign income" (Executive Yuan, 2015). Due to Taiwan's economic prosperity in the 1960s, the KMT government introduced several education reforms, particularly in expanding education at secondary level and in vocational training institutes. On one hand, the education reform was meant to respond to national development and industry needs; on the other hand, government control remained strong by publishing principles and standards for curriculum development at primary and secondary schools, even teachers' colleges. In other words, education became a policy tool for the KMT government to regulate "society and people" during this phase.

Higher education expansion in Taiwan began in the 1970s after the establishment of several private higher education providers (Kuo, Ranis, & Fei, 1981). As of 1964, there were only 20 universities and 21 colleges. In 1970, the number of colleges increased to 69. However, the rapid increase resulted in the suspension of new school applications and approvals by the government in 1972. In 1985, when the government announced that it would accept new applications, the total number of universities was 28 plus with 77 junior colleges.

To conclude, the relationship between government and the higher education sector during this phase was based on a top-down approach with a bureaucratic hierarchy, which meant that that the MOE had direct control power over individual universities. In general, academic freedom was extremely limited while higher education institutions functioned as parts of governmental unit. They had to follow standard rules,

procedures, and regulations, enjoying limited institutional autonomy. For example, the appointment of presidents in national universities was decided by senior officials in the government; in addition, institutional governance lacked other stakeholders' engagement. There were rigid regulations about the university curriculum, including some designated compulsory courses nationwide, such as military training and the history of China. Faculty members at public universities were regarded as a subgroup of public servants, with a commitment to the public goods. All these features demonstrated that the higher education sector was under tight control, in line with governmental direction and commands. These institutions were therefore called "MOE university" (教育部大學).

- ***Expansion and Deregulation Era: From 1986 to 2005***

This period of 20 years dominated by two major trends in Taiwanese higher education: rapid expansion, and deregulation. With limited financial resources, the government of Taiwan either allowed individual or private sectors to establish higher education institutions, or updated junior colleges to four-year universities. As a result, individual institutions were forced to be more competitive and accountable in the proliferation of marketization and massification of higher education in Taiwan (Giroux, 2002; Chou, 2015b; Shin, 2015).

During this period, the KMT government tended to be more open and supportive of the establishment of private universities. As of 1986, 14.2% of people aged 18 to 24 attended postsecondary education institutions. Moreover, in 1989, the government announced that the national agenda for education would strive to boost the quantity and quality of universities and colleges. Driven by national policy, the 1990s saw Taiwanese higher education rapidly expand and flourish. When the University Act was passed in 1994, the number of universities almost doubled. After 2000, the total number of universities and colleges had risen to 158, and gross enrollment rate increased to 49.1%. Although the number of universities increased to 142, the number of junior colleges dropped from 77 to 16 between 1985 and 2000 (MOE, 2019a). Interestingly, the growth of massification in higher education brought learning opportunities for young people, and competition for entering top research universities became severer than ever. It was argued that "while all the above may sound good, it remains debatable whether this expansion and the increasing 'choices' automatically help to improve students' life chances" (Chen, 2010, p. 3).

Following political democratization and social liberation in the late 1980s, the Taiwan government was pressured to lift state control over institutional governance and increase institutional autonomy. After the 1990s, the government was opted to respond to global and regional trends in higher education, with a particular focus on deregulation as well as accountability (Mok, 2000; Hou, 2011). There was therefore a move for deregulation, pressured by to liberate state control over past four decades began (Cheng, 2011). The grass-root movement *titled 410 Education Reform Alliance,* which soon gained massive support, was launched to echo this wider notion calling for greater deregulation of the education sectors. Chan, Yang and Liu (2018) indicates that the purpose of higher education deregulation and liberation was to "avoid inappropriate intervention from political parties and governments" (p. 79).

Chou also points out that Taiwan's universities "have shifted from traditional norms of state control to those of state supervision" (Chou, 2015a, p. 11) under political liberation movement (Song, 2005).

Several deregulation initiatives have been launched subsequently. National universities and private institutions were given more autonomy over financial management and operation of their governing body, respectively. In 1999, the National University Endowment Fund Establishment Act was enacted to "facilitate the flexible operations of university finances" (MOE, 1999). The 1997 Private Education Act Revised also gave private schools more autonomy in the operation of the board of trustees and the establishment of branch campuses. Several policies were developed in order to empower universities, including the abolishment of national required courses, authorizing universities to review and undergoing the faculty member' promotion by their own, the incorporation of national universities, and carrying out flexible scheme over enrollment by department and programs. (Ma, 2013). Moreover, the University Act also lifted state control over the appointment of university presidents, tuition fee charges, and multiple college admission (Tsai & Shavit, 2003; Chou, 2015b). To some extent, universities enjoyed institutional autonomy during this period, but the call to develop a national quality assurance system to review their accountability and academic performances quickly escalated.

- ***Pursuit of Excellence and Quality Assurance (from 2005 to 2016) Golden Age***

The period (from 2005 to 2016) can be depicted as an era of "pursuit of excellence and quality assurance". On one hand, the government wanted to give universities more autonomy in order to pursue academic excellence; on the other hand, an external quality assurance framework was formed to assess institutional accountability. It is noted that "governments' aspirations to building world class universities has accelerated the implementation of selection and concentrated polices in regions and countries" (Cheng, Wang & Liu, 2014, p. 3), and Taiwan is no exception. As Lo indicated, "the quest for building world-class universities has become a trend of higher education development in several East Asian countries where the massification of higher education has been accomplished" (Lo, 2014, p. 24).

Propelled by global competition over attracting academic talent, the Taiwan government adopted the objective of "pursuit of excellence and promotion quality of Taiwan's higher education system" as a national agenda and concentrated governmental resources on selected universities. Since 2005, three main excellence projects have been launched, including the Development Plan for World Class Universities and Research Centers of Excellence (2005–2016), the Teaching Excellence Initiative (2005–2014), and the Technological University Paradigms (2013) (Yonezawa & Hou, 2014). Following the implementation of excellence initiatives, university recipients were pressured to internationalize campuses by recruiting international students and foreign faculty, supporting English-taught programs, deepening collaborations with foreign universities, and seeking international recognition in global rankings, etc. (Hou, 2011).

Massification has expanded access to higher education in Taiwan, as it has in other Asian nations, but it has also increased public concern about the quality of institutions and students, which addresses national concerns to development of quality assurance (QA) and management. As Trow (1973) stated, "The steady expansion of higher education appears to some observers to constitute a serious threat to academic standards" (p. 35). By 2005, the total number of colleges and universities stood at 159, with more than 1.28 million students enrolled. The admission rate had risen to 57.6%. In response, the Taiwan government developed a national QA system of higher education to undertake regular reviews of universities and programs using a mandatory approach. Founded by the MOE and 153 universities and colleges in 2005, the Higher Education Evaluation & Accreditation Council of Taiwan (HEEACT) was commissioned to conduct external reviews over Taiwanese universities and colleges on a regular basis. In addition to HEEACT, several self-funded local and professional accreditors were founded to carry out evaluations of vocational education and selected professional programs, such as the Taiwan Assessment and Evaluation Association (TWAEA), the Taiwan Medical Accreditation Council (TMAC), the Institute of Engineering Education Taiwan (IEET), and the Chinese Management Association (CMA). Currently, there are five QA agencies and accrediting bodies recognized by the government of Taiwan. By 2016, more than 85 institutions and 3000 programs were under HEEACT's review, and their detailed final reports were published on the HEEACT official website (Hou, et al., 2018).

- ***Equity and University Social Responsibility as Current Stage: 2016 to Present***

The 10-year implementation of national excellence initiatives and quality policy led by the former government has brought severe criticism, such as over concentration on world-class universities building, increasing inequality among higher education institutions, stricter governmental control. (Hou, 2012; Mok, 2016). In addition, university administrators and faculty members strongly complained about workloads and red tape derived from accrediting agencies (Hou, et al., 2018).

On May 20, 2016, Dr. Tsai Ing-wen, the chairman of the opposition party, the Democratic Progressive Party (DPP), was elected as the first female President of Taiwan, and DPP also gained a majority in the Legislative Yuan for the first time. The new administration faced an immediate range of economic, social, and political challenges, including pension reforms, energy development, youth unemployment, and the cross-strait relationship, as well as the issue of the widening gap in education inequality.

With the DDP Party's emphasis on "universal human rights, transitional justice and constitutional reforms", the Tsai administration believed that "all citizens are treated equally regardless of their gender, age, ethnicity and religion" (DPP, 2019). In particular, "the facilitation of the Taiwan identity awakening" and "the liberation of mind from the past authoritarian control" were urgent tasks (Wang, 2013, p. 1). The doctrine of "egalitarianism," which emphasizes that people should be treated equally regardless of social class, ethnicity, gender, or other demographics, exactly corresponds to the DPP's political vision (Zha, 2013). As soon as the new government took office, the MOE began to shift the focus to "university social responsibility," "community engagement," and "the partnership and collaborations with the institutions in the ASEAN countries."

Table 1.1 Major polices and events in Taiwan higher education since 1945

Year	Policy and events	Universities	Colleges	Net rate
Colonial period (Japanese rule)				
1945	Taihoku Imperial University transferred to NTU	1	3	
	State control and educational reform:1950–1985			
1950	Educational guidelines during nation's reconstruction period	4	2	
State control and educational reform: 1950–1985				
1953	The first four-Year Economic Construction Plan begins	4	5	
1964	Educational Plan in Taiwan	21	20	
1970	5th National Education Meeting	22	69	
1972	Suspension of new applications for establishment of private higher education institutions	23	73	
1979	Teacher's Education Act	26	75	10.9
1985	Establishment of private schools allowed	28	77	13.9
Expansion and deregulation era (1986–2005)				
1988	6th National Education Meeting	39	70	16.0
1989	Expansion and deregulation as national agenda	41	75	17.2
1994	University Act Revised	58	72	26.3
	Teacher Education Act Revised			
	410 Education Reform			
	7th National Education Meeting			
1995	Teacher' Education	60	74	27.8
	Act for junior colleges upgrading into universities			
	National Education Report			
1996	Education Reform Report	67	70	29.1
1997	Moving Lifelong learning Society	78	61	31.1
1998	Education Reform	84	53	33.3
1999	Education Law	105	36	35.4
	National Endowment Act			
2001	White paper for Universities	135	19	42.5

(continued)

Table 1.1 (continued)

Year	Policy and events	Universities	Colleges	Net rate
2003	Higher Education Macro Planning Commission (HEMPC) proposal over "selection and concentration" policy	142	16	49.1
Pursuit of excellence and quality assurance golden age (2005–2016)				
2005	Development Plan for World Class Universities and Research Centers of Excellence Initiative	145	14	57.6
	Teaching Excellence Initiative			
	Establishment of Higher Education Evaluation & Accreditation Council			
2010	8th National Education Meeting	148	15	66.7
2011	National Education Report	148	15	68.4
2013	Whitepaper for Talent Cultivation	147	14	70.4
2016	Establishment of Taiwan Institutional Research Association	145	13	71.2
Equity and social responsibility—current stage (2016 to present)				
2016	New Southbound policy)	145	13	71.2
2017	Higher Education Sprout Project			71.31
2017	Program accreditation turned from compulsory into voluntary approach	153		
2018	Global Talent Recruitment Program (Yushan Scholar Program)			71.03

Source by authors

In 2017, the MOE launched a new initiative called "Higher Education Sprout Project" to replace the "Excellence Projects," aiming to "comprehensively enhance the quality of universities and promote the diversification of higher education so as to secure students' equal right to education. Besides, it expects to reinforce international competitiveness through facilitating universities to achieve world-class status and developing cutting-edge research centers" (MOE, 2018, p. 1). In contrast to the previous two cycles of excellence initiatives for the few selected universities, the new project awarded a total of 156 institutions with an egalitarian approach. Under the new scheme, all types of higher education providers are eligible for government funding. It is expected to accomplish the following four goals: implementing teaching innovation; developing universities' features and uniqueness; improving public goods; and fulfilling social responsibilities (MOE, 2019c). Likewise, the new project attempts to strike a balanced between teaching quality enhancement and a focus on research outputs (Table 1.1).

Table 1.2 Basic data of Taiwan higher education from 1990 to 2018

Year	1990	1995	2000	2005	2010	2015	2018
Total population	20,401,305	21,357,431	22,276,672	22,770,383	23,162,123	23,492,074	23,588,932
Population under 18	6,954,328	6,671,072	6,173,541	5,550,472	4,915,037	4,365,974	4,084,081
Number of new born	337,042	326,547	307,200	206,465	166,473	213,093	180,656
Average GDP (USD)	8,205	13,119	14,908	16,456	19,197	22,780	25,792
Number of universities and colleges	121	134	150	162	163	158	153
Number of general universities	45	53	65	70	71	71	70
Number of universities of technology	76	81	85	92	92	87	83
Number of 4-year universities	21	24	53	89	112	126	127
Number of 4-year colleges	25	36	74	56	36	19	14
Number of junior colleges	75	74	23	17	15	13	12
Total university student enrollment	576,623	751,347	1,092,102	1,296,558	1,343,603	1,332,445	1,244,822
Number of undergraduate students	239,082	314,499	564,059	938,648	1,021,636	1,035,218	961,905
Student enrollment rate (%)	19	28	39	57	67	71	71
Number of teaching staff	22,071	31,195	40,202	47,317	50,213	48,407	46,590
Ratio of student to faculty member	26	24	27	27	27	28	27
HE expenditure (million USD)	58,498	100,444	177,668	221,581	225,910	245,633	NA

Source Statistics Bureau, MOE

All in all, higher education in Taiwan in the two decades has undergone significant expansion, both with respect to increases in the number of institutions and the number of enrolled students. Amid flourishing economic development, social liberalization, and democratization in the 1990s, Taiwan's higher education system has decentralized: the state now exerts less control, while universities continue to seek more autonomy. By 2016, the number of higher education institutions has increased to 158, largely due to the upgrade of junior colleges to four-year universities. These quantitative increases demonstrate emphatically that higher education in Taiwan has transformed from an elite-type to a universal-type educational system (Martin, 1973; National Development Council, 2017) (Table 1.2).

1.4 Taiwan's Higher Education System, College Admission, Learning Outcomes, and Qualification Framework

The MOE in Taiwan is the highest administrative body responsible for national educational policymaking and implementation, with the aim of raising the overall quality of education and the nation's competitiveness (MOE, 2019a). In general, higher education in Taiwan features a dual track system of universities alongside polytechnics. General universities and colleges fall in the category of the university system, while the polytechnic system includes technological universities and colleges and junior technological colleges. The Department of Higher Education and the Department of Technical and Vocational Education under the MOE are in charge of the university and polytechnic systems, respectively.

Higher education institutions (HEIs) offer qualifications under the Degree Conferral Law. In other words, degrees are conferred pursuant to the provisions of this Law. Academic qualifications are categorized into four levels, including associate degree, bachelor's degree, master's degree, and doctoral degree. Although universities and colleges can determine the names and levels of the degrees they confer, they need to report to the MOE for approval. Taiwan's universities and colleges vary significantly in size, ranging from the largest with around 30,000 students, to the smallest with fewer than 1,000 students. It is noted that only 4-year universities and colleges provide educational programs above bachelor level. Junior colleges are counted as part of the higher education system, but they only award an associate degree (MOE, 2019b). According to Article 22, Enforcement Rules of University Act, each undergraduate program requires a minimum of 128 credits. However, specific professional programs may require a higher number of credits. For example, a program of Medicine requires a minimum of 241 credits, and a program of Dentistry requires a minimum of 208 credits. Eighteen teaching hours of in-class learning time (not including learning activities out of class) are counted as one credit. In most cases, the academic year constitutes two semesters, and a semester lasts for 18 weeks.

Normally, students on undergraduate programs take four years to be awarded a qualification, but some professional programs, such as medicine, dentistry, law,

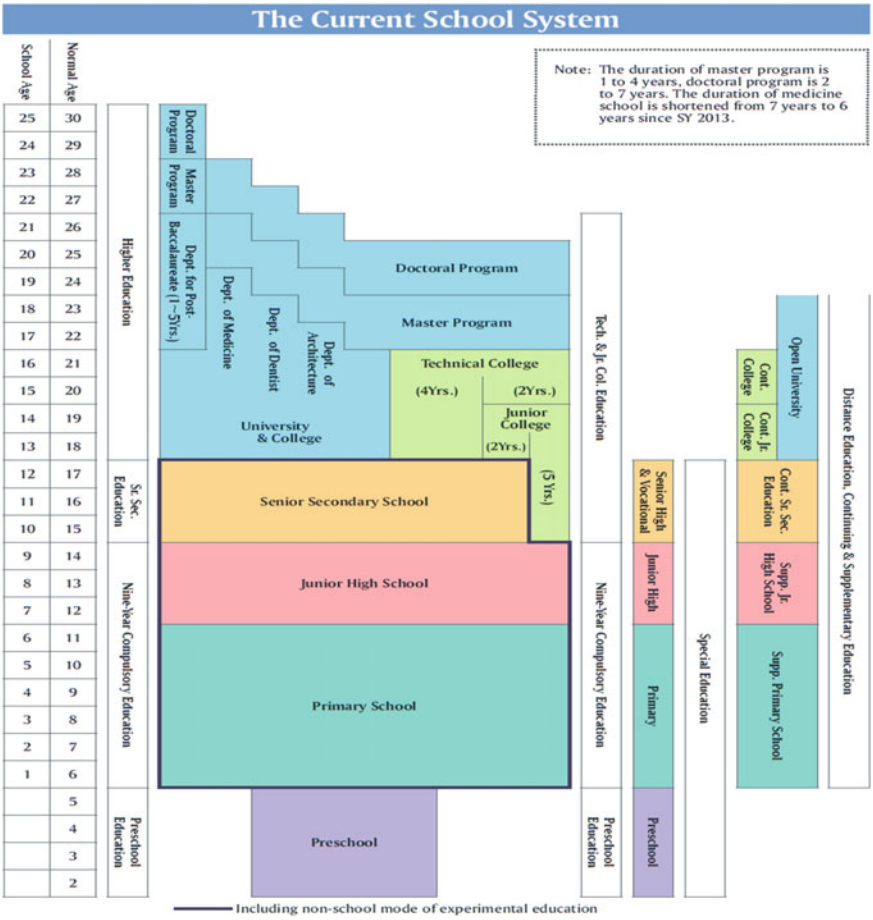

Fig. 1.1 Taiwan's education system by levels (*Source* Ministry of Education (MOE) (2019a). Education in Taiwan 2019–2020. Taipei, MOE)

and architecture, take longer. For example, medical school admits higher school graduates who then study for six years on campus, followed by a two-year internship at a teaching hospital. An increasing number of universities, in particular, offer a broad range of continuing education and online learning programs to satisfy the needs of working students in the fast-changing job market.

In 2019, Taiwan's higher education system constituted 153 education sectors and 1,244,822 students, with 46,794 teaching staff. Over 80% of this staff were Ph.D. degree holders, representing a 15% increase in the past 10 years. One third of them are full professors. The total education budget was US $24.56 billion in 2017, when "high education accounted for 33.95% (junior colleges 0.71%, universities and colleges 33.24%)" (MOE, 2019a). To enhance global competitiveness and research and teaching standards, Taiwan's government has invested more than US $ 400

million in higher education annually over the last five years. Besides, US$ 20 million were allocated over two years in the Yushan Scholar Program, aimed at attracting talented scholars from across the world to teach in Taiwan's universities and colleges (MOE, 2019a) (Fig 1.1).

1.4.1 Multi College Admission Mode

According to the University Act, Article 23, students who have graduated from public or accredited private senior secondary schools, or equivalent, are entitled to study for a bachelor's degree. All students who prepare to enter universities and colleges need to take the General Scholastic Ability Test (GSAT), which aims at measuring student learning outcomes in terms of knowledge- and skills-acquisition after the completion of high school studies.

According to the GSAT scores, there are three pathways by which students can be admitted to university and college, including the Stars program, personal application, and admission by Advanced Subjects Test (AST). Regulations on performance assessment, recruitment methods, and required documents are formulated by the Joint Board of College Recruitment Commission. In the Stars program, the students need to be recommended by the senior secondary schools in which they study in order to get onto the program they are interested in. After submitting high school' recommendation, universities or colleges then evaluate whether they will admit students based on their GSAT score and face-to-face interviews. The personal application process is similar to the Stars program application process, but in this case all applications and recommendations are handled by the students individually (Ministry of Education, 2019a).

Students who either fail to be admitted by one of the two approaches described above, or are not satisfied with the exam's results, can take the AST as a final option. The AST focuses on assessing whether students possess advanced knowledge in specific subjects and the readiness to study in specific academic programs. Thus, the students can submit a preference list of programs they expect to study according to their AST score and interests. The results are announced by the Joint Board of College Recruitment Commission and the official website of all institutions (Fig. 1.2).

1.4.2 Learning Outcomes and Core Competencies

For general understanding, student learning outcomes generally refer to aggregate statistics for groups of students, such as graduation rates, retention rates, transfer rates, and employment rates for an entering class or a graduating class. Nevertheless, they just represent to a certain extent institutional performance, not being able to demonstrate what and how students learn in universities and colleges. Using a broader definition, student learning outcomes now encompass a "wider range of student

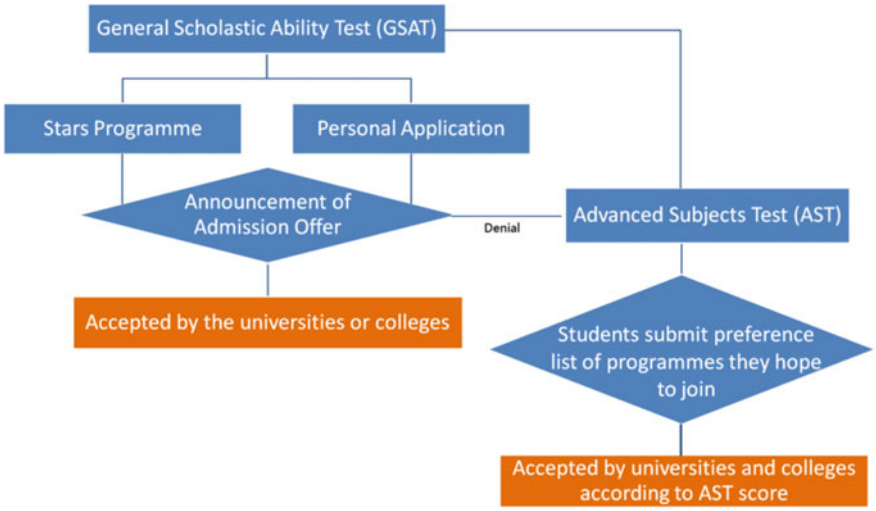

Fig. 1.2 Admission process for Bachelor's program (*Source* authors using data from MOE (2019a))

attributes and abilities, both cognitive and affective, which are a measure of how their college experiences have supported their development as individuals," which include acquisition of specific knowledge and skills, values, goals, attitudes, self-concepts, world views, and behaviors, etc. (Frye, 2009). The Council for Higher Education Accreditation (CHEA) also states that student learning outcomes are defined "in terms of the knowledge, skills, and abilities that a student has attained at the end of his or her engagement in a particular set of higher education experiences" (CHEA, 2008, p. 66). To conclude, student learning outcomes "can be broadly defined as something that happened to an individual student as a result of his or her attendance at a higher education institution and/or participation in a particular course of study" (Ewell, 2008, p. 5).

Since 2011, Taiwan's HEIs have been required to define students' core competencies and skills, which should match the trends of internationalization and marketization, in order to strengthen institutional competitiveness (Hou, 2011). According to the self-study reports of 70 Taiwan universities accredited by HEEAC in 2011, 19 core competencies were developed. Nine out of 19 learning outcome descriptors were commonly embraced by most institutions. They include "Humanistic literacy," "Exploration and critical thinking," "Global vision," "Cultural literacy," Creativity," "Communication," "Ethics" and "social responsibility," "Creativity," and "Knowledge and practical skills."

Currently, the emphasis on learning outcomes has been widely accepted by universities in Taiwan. The competencies that the students should possess after the completion of programs in the universities and colleges include professional knowledge, generic skills, and attitude and values. The component modules contribute to the fulfillment of the program's learning outcomes for Taiwan's universities and colleges.

It was found that most of Taiwan's institutions still regard "value and attitudes" as the most important core competency that students should develop in the learning period on a study program.

1.4.3 Development of a Qualification Framework in Taiwan Higher Education

Taiwan is one of the states in Asia without a national qualification framework, though universities and colleges identify core competencies that students should acquire, as indicated above. In the face of global competition, the key to success lies in creativity and the quality of higher education. As educational markets tend to be more open, which definitely leads to fiercer competition across campuses. Given Taiwan's position in the emerging Asian market, and the competition it faces from neighboring countries such as Mainland China, India, Japan, South Korea, and Singapore, having a global outlook has become more and more important. In addition to equipping students with global mobility and employability, a consensus between government and universities has emerged to develop more practical internationalization strategies to attract excellent foreign and Chinese students, including developing a national qualification framework. Under the New Southbound policy in higher education, launched in 2016, the Taiwan government recognized the pressing need to develop a national qualification framework in order to attract more international students to study in Taiwan, particularly from ASEAN countries.

1.5 Emerging Issues in Taiwan Higher Education and Content of the Book

Higher education in Taiwan has undergone substantial transformation in terms of social functions, institutional mission, governance modality, teaching and learning orientation, and accountable outcomes. Over the past decade, the growth of massification and marketization has been the subject of most of the commentary on Taiwan's higher education. Moreover, higher education expansion in Taiwan has brought related problems, such as no clear boundary between general universities and vocational providers, insufficient funding, inequality, and unemployment.

Regardless of that, higher education is playing a more inclusive role for the new age cohort in a universal system. At the same time, university is also widely regarded as the engine of local development, economic growth, and national competitiveness. Nurturing young talent, domestically and internationally, is also a critical mission for university sectors. In echoing these new roles and missions, notable issues emerge and lead to widespread discussions in Taiwan society, including diversification versus inclusiveness, talent recruitment and retain; industry–university collaboration;

university social responsibility and community engagement; industry–university collaboration and internationalization.

1.5.1 Diversification Versus Inclusiveness

Both diversification and inclusiveness are becoming prominent and important for Taiwanese higher education with respect to the institutional typology/pattern, student constituents, and varied regional needs at the social and economic levels. Greater diverse composition of HEIs is strongly related to the differentiated positioning of institutional function in terms of research, teaching and even social engagement. Different social expectations make HEIs diversified. Within the university, a wide range of student features and characteristics, such as working students, professional training, or even disadvantaged groups, pose new challenges in how to effectively address different needs in an inclusive manner. Along with further integration into the regional development, Taiwanese HEIs are pondering how to redefine their mission and purpose by incorporating local social-economic agenda. These primary factors simultaneously drive diversification and inclusiveness in universities.

1.5.2 Talent Recruitment and Retain

Talent has become a pressing issue for Taiwan. Driven toward a knowledge-based economy, the country's universities should recruit and retain the best faculty members and students for knowledge creation, innovation, institutional ranking, and research excellence. However, the World Talent Ranking released by the Institute for Management Development (IMD) in 2019, though ranking Taiwan at 20th place worldwide, confirmed that brain drain (ranked at 46th), foreign highly-skilled personnel (48th), and attracting and retaining talent (38th), are the weakest indicators for Taiwan (IMD, 2019). Greater attention should therefore be directed to attracting and retaining domestic and international faculty members and students in the long run (Mok & Cha, 2019).

1.5.3 University Social Responsibility and Community Engagement

Another main issue confronting HEIs in Taiwan is strengthening their connection, their engagement, and their commitment for social responsibility (Vasilescua, Barnab, Epurec & Baicud, 2010). In linking to the notion of public goods, the university social responsibility scheme initiated by the MOE urged HEIs to address local

social, cultural, and economic development through the synergy with multiple organizations such government, NGO, industrial or foundations (MOE, 2019a). This new movement calls for greater transparency or social responsibility from university has created new impulse to transform university's role and function except research and teaching.

1.5.4 Industry–University Collaboration and Internationalization

One of the threads for engaging with local development links with the upgrading or reskilling of industrial capacity, particularly for small and medium-sized enterprises (SMEs). Known for SMEs in Taiwan, HEIs aim for deepening collaboration with industry by creating, transferring, and applying knowledge to the real workplace and manufacturing. The urgent task for HEIs in Taiwan is to help restructure industry configuration with cutting-edge and advanced technology and abundant talent resources (Leydesdorff, n.d.). Greater cooperation between industry and university still matters for future development if Taiwan wishes to pursue a leading position in innovation and technological creation in the era of Industrial Revolution 4.0. Besides, campus internationalization is a popular strategy in Taiwan, helping to enhance global competitiveness. Universities and colleges are encouraged to not only recruit talent from across the world, but also develop collaborative international programs in order to deepen bilateral and multilateral partnerships with foreign universities.

1.5.5 Content of the Book

Based on the issues and trends outlined above, this book is divided into three parts with 14 chapters: Part I: Understanding Taiwan Higher Education in Historical, Political, and Social Contexts; Part II: Transforming Taiwan Higher Education into a Global Players; Part III: Frontier of Rapid Changes.

Part I of the book introduces the overall context and background of higher education in Taiwan. It includes three chapters. This Chapter introduces the historical development of higher education in Taiwan, showing the change from the past to the current state of the country's higher education development. Chapter 2 explains the process of diversification and convergence of HEIs in Taiwan. Chapter 3 looks at the higher education policy movement from Neoliberalism to public good.

Part II of the book provides a closer look at how higher education in Taiwan gradually shifted its structure from a traditional, government-controlled and bureaucratic system into a more liberal and diverse system, in order to become an active global player. There are seven chapters in Part II. Chapter 4 describes the QA system in

Taiwan, to demonstrate how the QA for HEIs has shifted into a new era. Chapter 5. introduces the challenges the universities in Taiwan face when striving to build world-class universities. Chapter 6 further discusses the current situation of internationalization of higher education in Taiwan, and how the country's universities play their role in the competitive global market of higher education. Chapter 7 discusses the current situation of the accountability and academic autonomy of HEIs in Taiwan and the challenges HEIs faced.

Part III of the book identifies the challenges and issues as well as solutions and new possibilities, which emerged under the changing environment of higher education in Taiwan. Chapter 8 explores the impact and the potential challenges of the aging society in Taiwan on doctoral education. Chapter 9 discusses the issue of equity in higher education for students with low socioeconomic status under the influence of massification of higher education in Taiwan. Chapter 10 introduces the technological innovations and the surge in open online courses that opened a new pathway for higher education in Taiwan. Chapter 11 explores the status and reflections of academics' multi-career pathways and promotion system in Taiwan higher education. Chapter 12 discusses the issue of the stratification of doctorate degrees within the network among academics in Taiwan. Chapter 13 discusses the implications of institutional research on university governance in Taiwan. Chapter 14, in conclusion, reflects on the trends and challenges for higher education in Taiwan.

1.6 Prospects and Conclusion

One century's progress has witnessed the rapid development of Taiwan's higher education system. The Taiwanese academic system has been significantly influenced by Japanese (before 1945), Chinese (after KMT rule), and American (since 1960s) regimes. These mixed cultural and intellectual elements constitute the main features of current knowledge, tradition, and HE framework (Chan & Yang, 2017). The turning point for the contemporary Taiwanese higher education system occurred in the late 1980s and 1990s, when the fundamental nature, structure, scale, and scope of the current academic system were formed in line with the modern university as we now know it. The developments that followed were based on these foundations, such as a liberal academic atmosphere, deregulation, widening access, emphasis on education quality, and pursuit of excellence. This remarkable progress has upgraded the majority of higher education providers significantly, making Taiwan one of the leading higher education systems among developed societies, along with Western and East Asian countries (Bhandari & Lefébure, 2015).

In spite of this appreciable achievement, Taiwanese higher education still confronts some domestic and international challenges, including aging societies, industrial revolution 4.0, smooth transition from university to work, greater social responsibility, intensified international ranking competitiveness, and transnational talent mobility. The future vision for the higher education sector in Taiwan should therefore balance the multiple values among excellence, accountability, equality, and

justice. Utilizing the expertise of 18 leading Taiwanese higher education scholars, this book reviews policy change and the transformation of the system in the context of multiple pressing issues, providing readers with authentic observations and insightful analysis of the reforms and prospects of Taiwan's higher education sectors.

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Chapter 2
The Influence of Governmental Policies and Global Competition in the Diversification of Higher Education in Taiwan

Karen Hui-Jung Chen

Abstract Diversity has been identified as one of the factors promoting the development of higher education system. The internal forces and external environments shape the horizontal and vertical diversity of the higher education system of each nation. The example of Taiwan is used to investigate the effects of government policies and global competition on diversity and diversification in the higher education system. In order to better understand the patterns of diversification of higher education in Taiwan, this chapter applies new institutional theory to form an analytical framework, considering institutions embedded in an open social environment, by which their structures and practices could be shaped and changed. In addition, two macro environmental perspectives were adopted to examine the changes involved in the diversification of higher education system, including governmental policies and global environment. A total of 164 higher educational institutes (HEIs) in Taiwan were investigated to determine the extent and dynamics of diversification of the higher education system. Results revealed that the local environmental factor of governmental policies changed the level of diversification, but the external pressure from global competition drove HEIs to pursue higher ranking and enhanced vertical stratification. During the diversification process, the Taiwanese government reduced control and empowered the HEIs to have more autonomy in administration and finance, and favored market-oriented changes. However, these changes were unable to lead to marketization. Challenges emerge in self-financing, market-led management, and reduction in state provision. Furthermore, the governance and diversification of higher education in Taiwan are unable to be fully explained by the triangle coordination of Clark (The higher education system. University of California Press, Los Angeles, CA, 1983). Public opinion as a fourth force is of increasing importance in the process.

Keywords Diversity and diversification · Higher education institutions · Global competition · Vertical and horizontal difference

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2.1 Introduction

Diversity of higher education systems has been identified as one of the factors promoting higher education development (Teichler, 2008). A considerable amount of higher education diversity is vital in increasing student choices and fostering the level of participation (Birnbaum, 1983; Huisman, Meek, & Wood, 2007; Van Vught, 2007). Increasing diversity has become an important policy issue in higher education (Zha, 2009). However, the extent and dynamics of diversity of higher education systems depend on many variables. Internal forces and external environments shape the diversity of the higher education systems of each nation. The internal forces come from an institutional level, and external environments include both national and global level (Marginson, 2016a; Teichler, 2017). The example of Taiwan is used to investigate the effects of government policies and global competitions on the diversity and diversification of in the higher education system.

Higher education in Taiwan has been recognized globally for its quantity and quality. It has expanded rapidly in the past decade—the gross tertiary enrollment rate was 50% in 1999, and reached 85.3% in 2007, which is higher than most Asian countries (Ministry of Education [MOE], 2019a). Regardless of rapid expansion, higher education in Taiwan remains of high quality. A total of eight universities in Taiwan were ranked among the top 400 worldwide, and 12 universities ranked in the top 100 in Asia, according to the QS World Universities Ranking 2020 (QS, 2020). Internal forces and external environments have competitively shaped the higher education system in Taiwan, which has grown from an elite to a universal system. As a diversified system is necessary to meet the needs of market and specification of social development (Marginson, 2017a; Trow, 1973), many changes in government administration and fiscal policies have been introduced to the higher education system in Taiwan. These national environment factors influence the diversification of higher education. In addition, as globalization is a trend in higher education, the external environment affects the diversity process, especially global competition.

This chapter uses higher education system in Taiwan for case study and focuses on investigating on the features characterizing the expansion and diversity of higher education system, as well as explore how the governmental policies and global competitions influenced the diversification of higher education system.

2.2 Diversity and Diversification of Higher Education Systems

The concepts of diversity, diversification, and differentiation have been discussed extensively in the higher education literature, while the definitions and approaches are slightly different in the various studies. The following paragraphs clarify the

conceptual definitions of these terms and review the different approaches to diversity of higher education in the literature.

2.2.1 Concepts and Notions

Diversity of higher education is a concept indicating the variety of higher education institutions (HEIs) within a higher education system (Teichler, 2015, 2017; van Vught, 2008). Furthermore, Teichler (1996) distinguishes between vertical and horizontal diversity of higher education systems. Horizontal diversity refers to the way HEIs are grouped according to their types, or functions. It may also relate to mission, governance, or internal organizational culture. Vertical differentiation refers to the number of levels in a system. HEIs are stratified according to their quality, reputation, or performance. Marginson (2017a) links diversity to horizontal variety in higher education, and stratification to vertical variety. In this chapter, we use the terms diversity and stratification.

Diversification refers to a process by which new and different entities emerge. It increases the diversity within a system (Huisman, 1995; Vaira, 2009), and refers to a dynamic process, while diversity refers to a static status (van Vught, 2008). Conversely, differentiation refers to a process by which the entities of the system become more complex. It emphasizes the relationship between environment and the entities within it. Differentiation indicates an increase of structural and functional complexity of HEIs, rather than the emergence of new entities (Dakka, 2015; Vaira, 2009, p. 137).

2.2.2 The Extent and Dynamics of Diversity

Various approaches have been applied to discuss the extent and dynamics of diversity and diversification. These studies can be distinguished according to the question of whether the diversification process is driven by internal forces, external environments, or a combination of the two (van Vught, 2007). First, an institutional level perspective was proposed by Parson and Platt (1973). They suggested that there was an internal drive toward increasing the levels of diversity, and used the data of the of the USA's higher education system to support their arguments. As the massification of higher education takes place, new knowledge and new functions of higher education emerge. The HEIs become more diverse to fulfill social needs, which increases the differentiation and diversity of the higher education system.

National level perspective for analyzing diversity of higher education was proposed by Clark (1983). He presents a triangle of coordination model for the actual integrating mechanism of academic organization. The coordination is based on a mixture of state authority, academic oligarchy, and the market (Fig. 2.1). Based on the triangle model, the phenomena of differentiation and diversification of higher

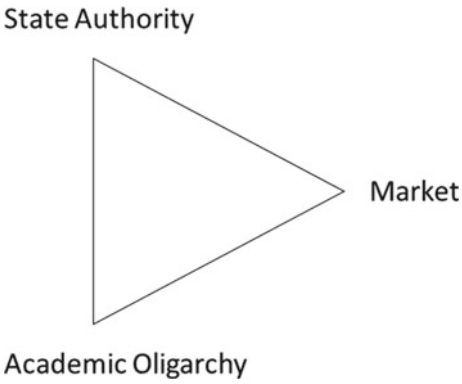

Fig. 2.1 The triangle of coordination (*Source* Clark, 1983, p. 143)

education can be interpreted. Clark points out that the complexity of higher education systems is the outcome of three forces: the variety of student population, the growth of the labor market, and the emergence of new disciplines (Clark, 1983, p. 215). As the knowledge becomes complicated, the fragmentation of academic institutions increases, and the differentiation and diversity of higher education system is enhanced.

Global perspective has been proposed for analysis under the trend of globalization of higher education (Marginson, 2006, 2016b; Mok, 2002). HEIs are facing national competition as well as global competition. Marginson (2006) points out that "higher education is a complex combination operating at the same time locally, nationally, and globally" (Marginson, 2006, p. 1). At national level, history, policy, and financial support shape the diversity of higher education system (Teichler, 2008). The HEIs are differentiated horizontally by institutional mission, and type. A national higher education system is more diverse if more institutional types are included, or if there is a greater difference in kind between institutional types (Wang & Zha, 2015). In addition, market competition tends to enhance diversity of higher education. As the growth of student participation increases, a wider range of choices of programs emerges to fulfill student needs. The diversity of HEIs increases in response to diverse student needs and labor markets. The government has to step back and allow the market to play a dominant role (Marginson, 2017b). At global level, HEIs have to face global market needs, global student flows, and global competition. Two factors—emergence of the worldwide market and the rapid development of cross-border education—have fostered HEIs to expand their systems to become more diverse. Global competition is enhanced by global ranking, which is closely related to research capacity and results in global stratification in higher education (Marginson, 2016b; Mok, 2002).

A different angle, ecology perspective, was proposed to understand the dynamics of whole organizations in the higher education systems (Dacin, Goodstein, & Scott, 2002; Oplatka & Hemsley-Brown, 2010; van Vught, 2007; Zha, 2009). This approach draws on new institutional theory (DiMaggio & Powell, 1983), which considers higher education systems as a network of individuals. In order to survive, HEIs

require sufficient resources from the environment. Environments consist of the social, political, and economic surroundings. HEIs also compete with each other to secure sufficient resources (van Vught, 2007). As the level of dependence increases, the balancing operations of HEIs can be observed when they response to environmental changes. Zha (2009) took Chinese universities as an example. The HEIs there added new programs in order to attract more students and acquire more financial support; however, when the funding was limited, the HEIs could only change the curriculum to attract students.

2.3 Analytical Framework

In order to better understand the patterns of diversification of higher education in Taiwan, this chapter applies new institutional theory to form an analytical framework, including three theoretical perspectives: the population ecology perspective, the resource dependency perspective, and the institutional isomorphism perspective. Unlike institutional theory, the new institutional theory considers that institutions are embedded in an open social environment, by which their structures and practices can be shaped and changed (Campbell, 2004; DiMaggio & Powell, 1983; Hannan & Freeman, 1989; Manning, 2017; Zha, 2009).

This framework considers HEIs as individual organizations that form a network by interaction with each other. The HEIs adopt their structures because of the environmental changes in order to have sufficient resources. Furthermore, the institutions mimic each other and therefore come to resemble each other. In this chapter, the expansion and related characteristics of higher education in Taiwan are described. Two macro environmental perspectives were adopted to examine the changes brought about by diversification of the higher education system, including governmental policies and global environment.

Furthermore, Clark's triangle of coordination is applied for analysis in this chapter. In this model, the coordination of academic organizations is based on a mixture of state authority, academic oligarchy, and the market (Clark, 1983, p. 143). However, the academic oligarchy has had a declining influence in the expansion process of higher education (Marginson & Considine, 2000; Zha, 2009). This chapter therefore focuses on the other two dimensions, government and market, and utilizes the new institutional theory to examine the influence of two factors from macro environment—government policies and global competition—on diversification of the higher education system, and then discusses the market-oriented changes.

This chapter used document and literature analysis to collect documents related to the research purposes and to identify themes for interpretation. According to Bowen, document analysis is "a systemic procedure of reviewing and evaluating documents" that allows for the data to be "examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge" (Bowen, 2009, p. 27). The major data

sources were investigated to collect data for analysis in this chapter, including historical documents of higher education development in Taiwan, governmental documents, higher education acts in Taiwan, government policy papers and scholarly publications, and the internet-based data of the MOE in Taiwan. From the documents and literature, the extent and dynamics of diversification of 164 universities and colleges in Taiwan were investigated.

2.4 Higher Education System in Taiwan

2.4.1 Fast Expansion from an Elite to a Universal System

Trow (1973) identified a broad pattern of higher education development that applies to every advanced society. According to Trow's classification, a tertiary enrollment rate of less than 15% is an elite system; between 15 and 50% is a mass system; while greater than 50% is a universal system. In an elite system, only a small group of people can attend universities and colleges, while in a mass system, more people attend. If the enrollment rate exceeds 50% and reaches universal access level, different HEIs emerge to serve different student needs (Teichler, 2008; Trow, 2007).

The higher education system in Taiwan has expanded rapidly over the last three decades. The gross tertiary enrollment rate (GTER) was 15.4% in 1976 and reached 50.5% in 1999, changing from a mass to a universal system. Notably, the GTER reaches 85.3% in 2007, which is higher than the enrollment rates of most Asian countries (MOE, 2019a). Furthermore, the GTER of Taiwan is essentially higher than the average GTER of Organisation for Economic Co-operation and Development (OECD) countries. According to the OECD statistics (OECD, 2020), the average GTER of OECD countries reach 60% in 2013. Most countries have reached the stage of universal access. However, the GTER of Taiwan in 2013 reached 84%, which is much higher than the average GTER of OECD countries (Fig. 2.2).

This expansion influenced the diversity of higher education in Taiwan. The elite systems are highly homogeneous. As the enrollment rate exceeded 50% and reached universal access level, a trend toward differentiation emerged within the higher education system to serve different student needs.

2.4.2 Binary System to Fulfill Student Needs

The Taiwanese higher education system is a binary system, classified into academic universities and vocational colleges. The differentiation is based on research focus or training focus. The academic universities usually have a strong research focus, while the technological and vocational institutions aim to train students with specific skills. Two government offices are responsible for different-track of programs, including

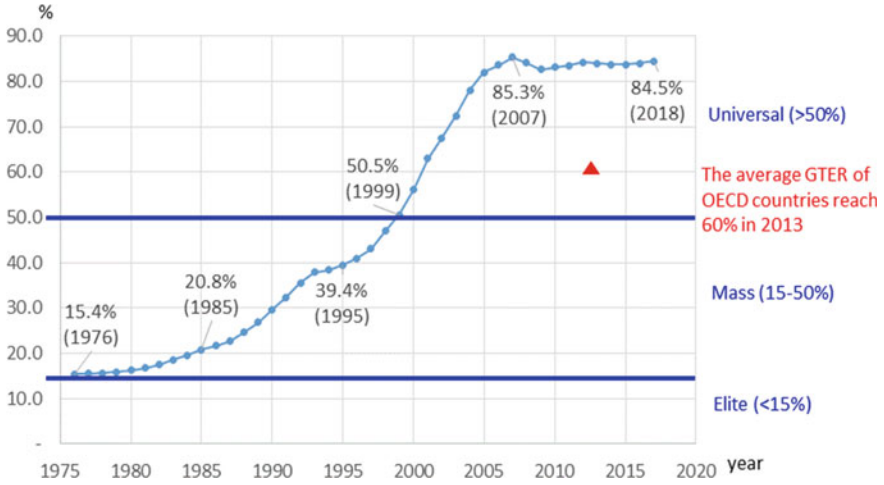

Fig. 2.2 The gross tertiary enrollment ratio in Taiwan, 1976–2018 (*Source* Ministry of Education, 2019a; OECD, 2020)

the Department of Higher Education (MOE, 2019b, 2019c), and the Department of Technological and Vocational Education (MOE, 2019d). Adopting different regulations and guidelines, the government is able to assure the educational quality of each track and protect student rights.

To foster economic development and respond to the needs of the market, the Taiwanese government approved the establishment of more HEIs, especially private HEIs. In the 1950s, there were seven public HEIs and a single private one (MOE, 2019b). However, there were 153 HEIs in Taiwan as of 2019, compared to 105 in 1986 (Fig. 2.3). There were only three private HEIs in 1954 (21%), 55 in 1968 (65%), 110 in 2009 (67%), and 105 in 2019 (69%) (MOE, 2019e). Notably, the ratio of the number of public and private HEIs stayed at approximately 1:2 from 1971 to 2019, in spite of the number of private HEIs increasing dramatically during 1990–2010 (Fig. 2.3).

2.5 Macro Environmental Influence on Diversity

As an increasing concern about the impact of New Public Management reforms on public services, many changes of governmental management and financial governance have been introduced in the HEIs of Taiwan. These could be seen as local environment factors, influencing the diversification of higher education. Global competition is another environmental factor that might affect the diversity process.

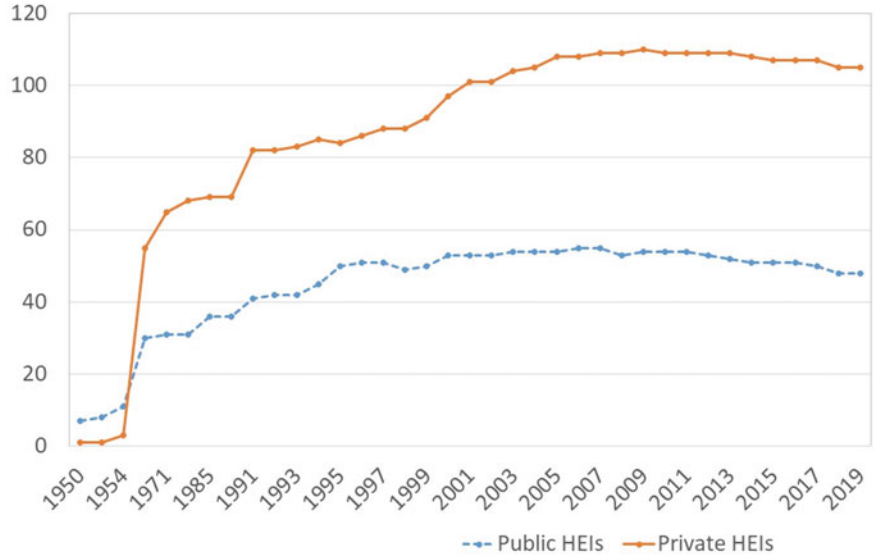

Fig. 2.3 The number of public and private HEIs, 1950–2019 (*Source* Ministry of Education, 2019e)

2.5.1 Changing Governmental Administration Policies

Governmental administration policies have changed over the decades. The MOE has supervised the operation of both public and private HEIs, ranging from student enrollment, faculty hiring, and curriculum arrangement, to fiscal decisions and administrative appointments since 1949. Under the impact of New Public Management, the government reformed the administration of higher education in 1987 (Gai, 2004). The HEIs were allowed to take decisions concerning finance and personnel, and university autonomy was also increased.

The expansion of higher education arises as a result of increased differentiation. The Taiwanese government has resolved to increase the diversity of the higher education system by implementing relevant policies and incentives since 1994. The MOE of Taiwan adopted deregulation and incentives to increase the diversification; however, sometimes their policies have inhibited diversification. The following examples demonstrate how the government adopted an incentive-led administration policy and a changing quality assurance, and demonstrate their influence on diversification of higher education in Taiwan.

Adopting an Incentive-Led Administration Policy. HEIs were encouraged by the MOE to identify and develop their characteristics under various incentive projects. In the 2000s, two major incentive projects were implemented to promote the diversification and stratification of the higher education system. The first major incentive project, the Aim for the Top University Project, was a policy introduced by the MOE and implemented from 2006 to 2015. The project aimed to enhance the

quality of research and to pursue top global universities. Its total budget was NT$ 50 billion. Designated research-intensified universities and research centers received the funding in three stages. In the first stage, a total of 11 universities received funding in the period from 2006 to 2007. The second stage expanded funding to 15 universities, in the period from 2008 to 2010. In the third stage, 12 universities and 34 research centers received financial support, in the period from 2011 to 2015. The Aims for the Top University Project encouraged vertical stratification of universities.

The second major incentive project, the Higher Education Sprout Project, is scheduled to run from 2018 to 2023. Its total budget is up to US$2.9 billion US dollars, and the aim is to encourage HEIs with different mission to pursue development. The MOE adopted a two-track approach, classifying HEIs in one of two categories. The first track aims to improve university quality comprehensively and promote the diversified development of higher education. The second track focuses on reinforcing the international competitiveness of Taiwanese universities in order for them to achieve world-class status. A total of 24 universities were sponsored for the second track development. As different goals were set for the different tracks, variation in the approach to diversification can be expected, including enhancement of horizontal diversification in the first track, and vertical stratification in the second track.

Changing Quality Assurance Approaches. The expansion of higher education in Taiwan has increased the diversification of HEIs to fulfill the different student needs. In 1999, the enrollment rate of the Taiwanese higher education system reached 50.5%, and had thus become a mass system of higher education. The rapid growth of HEIs made the government face the challenge of higher education governance.

Before 2004, the Taiwanese higher education system was controlled by centralized government. In 2004, the University Act was revised, aiming at increasing social accountability and university autonomy. Based on the Act, the Regulations Governing the Evaluation of Universities was adopted in 2005, to make it a legal requirement for all HEIs to receive accreditation (Chin & Chen, 2012; Hou, Ince, Tsai, & Chiang, 2015; Mok & Chan, 2016). HEIs had to take responsibility for assuring their educational quality by identifying their mission and designing different programs and curriculums to fit their educational goals, and being evaluated for student learning outcomes by the accreditor, the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT). Through the accreditation process, the educational quality was assured.

Two cycles of institutional accreditation and program accreditation have been completed between 2006 to 2017. The HEIs required to aligned the educational goals with curriculum, instructions and learning outcomes to show the educational effectiveness for accreditation (HEEACT, 2019). Considering resources and structures, the HEIs developed various educational goals and functions to fulfill student needs. Threfore, the accreditation process has enhanced the horizontal diversification of the higher education system. In 2017, the MOE announced the suspension of program accreditation to response to the fast changing environments, and encouraged the HEIs to build up their internal QA systems to self-monitor the educational quality of provided programs. Higher education governance in Taiwan gradually

shifted from external quality control (by the government) to internal quality control (by the HEI itself) (Chen & Hou, 2016).

2.5.2 Changing Governmental Funding Policies

During the fast expansion of higher education in Taiwan, governmental funding per student was reduced. The government reformed its funding policies based on public management and transformed the financial structures of HEIs from highly to less state-dependent organizations (Broucker & De Wit, 2015; Brunsson & Sahlin-Andersson, 2000). Three aspects of government reforms on financial policies that influenced diversity were explored.

Implementing University Funding Systems in Public HEIs. Public HEIs in Taiwan have changed their financing structure since 1996. Before that, they received most of their funding from the government and submitted the annual balance to the government. In 1996, the National University Endowment Fund Establishment Act was issued, and a reform of the university budget system was carried out. Each public HEI had to establish its university funding system and diversify its financial resources. Instead of relying on the government for financial support, HEIs had to seek other resources, such as tuition fees, donations, business cooperation, and miscellaneous fees.

Referring to the annual budgetary of public and private HEIs in Taiwan, it reveals that the financial resources structure of public HEIs changed after the 1996 funding regulations. In 1997, government subsidies reached 61%. In 2004, this had been reduced to 51.9%, while tuition fees shifted to 21.0%, and self-fundraising and miscellaneous incomes represented 27.1% of funding. In 2008, government subsidies had decreased to 47.1%, tuition fees were 21.6%¸ and self-fundraising and miscellaneous incomes had increased to 31.3% (MOE, 2019f).

With more autonomy to allocate their university budget, HEIs have more autonomy in managing their personnel, general governance, and academic affairs. Furthermore, in order to manage the multiple financial resources, HEIs have built internal control systems for finance and quality management. The government has changed its financial governance role in higher education from control to supervision. For example, the MOE visited 54 HEIs to evaluate their university funding systems in 2008, with the aim of reviewing as well as assisting with the operation of the university funding system. This represents a move from a highly centralized administration of finance toward government-regulated management. As the public HEIs applied various strategies of raising and spending their educational budgets, the diversification of HEIs was enhanced.

Funding Policies of Private HEIs. It is not only public HEIs that receive government funding in Taiwan, but private ones too. The government's financial support (excluding special budget) to private HEIs shifted from 10.1% in 2004 to 11.9% in 2006. The major financial sources were tuition and fees, representing 59.4% in 2004 and 58.0% in 2006; while self-fundraising and miscellaneous incomes stood

Table 2.1 Tuition and fees on tertiary education per student relative to per capita GDP in Taiwan (Unit: %)

Academic year	General HEIs		Technological and professional HEIs	
	Public	Private	Public	Private
2006	11.04	20.20	8.99	17.45
2007	10.51	19.26	8.37	17.21
2008	10.70	20.04	8.83	17.94
2009	10.86	20.33	8.96	18.20
2010	10.03	18.77	8.27	16.81
2011	9.93	18.60	8.20	16.65
2012	9.71	18.17	8.01	16.27
2013	9.41	17.62	7.77	15.78
2014	8.54	15.98	7.08	14.30
2015	8.22	15.39	6.87	13.84
2016	8.05	15.07	6.75	13.57
2017	7.93	14.85	6.64	13.36
2018	7.79	14.58	6.54	13.12

Source Ministry of Education (2019g)

at 30.5% in 2004 and 30.1% in 2006 (Chang, 2010). After the government reduced its funding for higher education, public and private HEIs alike have to seek multiple financial resources to maintain standards in teaching, research, and service. However, the tuition and fees remained the major financial sources.

Tuition Fees Policy. Table 2.1 shows that the average tuition and fees of tertiary education per student decreased in the academic years from 2006 to 2018 as a percentage of the gross domestic product per person. The percentages of public general universities decreased from 11.04% in 2006 to 7.79% in 2018, and these of private general universities declined from 20.20% in 2006 to 14.58% in 2018 (MOE, 2019g). A similar trend was revealed in the technological and professional universities/colleges. Before 1999, the tuition fees of public and private HEIs were decided by the government. In 1999, the Tuition and Miscellaneous Fees Flexible Plan was announced by the MOE, and HEIs were allowed to customize the items and amounts of tuition and miscellaneous. In 2008, the government issued the regulation Measures for Tuition and Miscellaneous Fees Collection for Colleges and Universities, which allowed HEIs to collect tuition and miscellaneous fees from students; but they need to obtain the MOE's approval before announcement.

Table 2.2 shows the number of HEIs approved by the MOE to adjust tuition and fees in the academic years 2001–2018 (MOE, 2019h). In 2001, 26 HEIs adjusted their tuition and fees in the range of 1.2–8%. After the announcement of new regulations in 2008, a small number of HEIs got approval from the MOE to adjust their tuition fees with the range under 2.5%, which is lower than that of 2001–2008. From 2009 to

Table 2.2 Number of HEIs approved by the MOE to adjust tuition and fees

Academic year	Number of HEIs with approval	Adjustment range
2001	26	1.2– 8%
2002	32	2.4–10%
2003	27	1–8%
2004	53	2.4–5%
2005	10	3–5%
2006	7	2.3%
2007	8	3%
2008	8	11.43–1.92%
2009	None	None
2010	None	None
2011	None	None
2012	None	None
2013	None	None
2014	8 (16 applied)	1.37–2.06%
2015	9 (23 applied)	1.89–2.50%
2016	2 (14 applied)	2.5%
2017	None (2 applied)	None
2018	2 (16 applied)	2%
2019	None (2 applied)	None

Source Ministry of Education (2019h)

2013, the government blocked the increase of tuition and fees due to the international economic crisis. In 2014, a total of 16 HEIs applied for raising tuition and fees, while only eight of them got approval from the MOE, with an increasing range of 1.37–2.06%. In 2018, 16 HEIs applied, but only two were approved by the MOE.

Although universities were empowered to decide their own tuition fees, few HEIs were able to raise the tuition fees they proposed to the MOE, due to pressure from the Anti-High-Tuition Alliance since 2006. Organized by students from HEIs, the alliance against governmental policy of tuition fees and argue that the government should not increase students' financial burden (Wang & Loncar, 2010). The protest against high tuition fees is continuing, which has a great impact on university finance and development since then. As tuition fees were the major source of finance, HEIs were increasingly relying on them, and insufficient funding has therefore become a pressing issue, especially for private HEIs. With reduced financial resources, the development of both public and private HEIs is limited. Without sufficient funding, the top HEIs in Taiwan are unable to compete with top global universities. Furthermore, as the major financial resources coming from tuition fees, the developments of the private HEIs are hindered. The effect of insufficient funding on HEIs emerges.

Both vertical stratification and horizontal diversification of higher education are gradually dedifferentiated

2.5.3 Global Competition and Stratification

Global Rankings. Global rankings have a major influence on the higher education system and governmental policies (Marginson, 2016a). Most global rankings measure research performance. The Times Higher Education World University Ranking (THE) applies indicators of research, teaching, knowledge transfer, and internationalization to compare the performance of research-intensive universities (THE, 2019). The Academic Ranking of World Universities (ARWU) simply focuses on academic or research performance (ARWU, 2019). Research is a key measurement in reaching world-class universities. Promoting research performance is of increasing importance in the competition between HEIs and between nations (Chan, 2015; Chan & Chan, 2015; Chang, Nyeu, & Chang, 2015; Lo, 2009; Marginson, 2016b; Shin & Harman, 2009 Vaira, 2004).

In Taiwan, the National Taiwan University ranked 120 in THE listings in 2020, and was ranked 151 out of 200 in ARWU in 2019. The National Tsing Hua University ranked 351 out of 400 in THE, and 501 out of 600 in ARWU. Notably, the National Taiwan University of Science and Technology (NTUST), a vocational college, is listed for its reputation as a research-intensified university in both THE and ARWU ranks (Table 2.3).

Ranking-fostered competition enhances stratification. The world-class universities draw fiscal and personnel resources, as well as attracting prospective students. Research performance shapes the stratification and pulls the vertical differences between the top and bottom universities.

Table 2.3 Ranks of HEIs in Taiwan in THE and ARWU listings

University	THE ranks in 2020	ARWU ranks in 2019
National Taiwan University	120	151–200
National Tsing Hua University	351–400	501–600
Taipei Medical University	351–400	701–800
China Medical University, Taiwan	501–600	301–400
National Chiao Tung University	501–600	501–600
National Taiwan University of Science and Technology	501–600	901–1000
National Yang-Ming University	501–600	501–600
National Cheng Kung University	601–800	301–400

Source THE (2019), ARWU (2019)

2.5.4 Influence of Global Rankings and Diversification

Rankings influence the higher education system at governmental institutional level and policy level.

Institutional Level: Academic Drift. Rankings alter institutional developmental strategies. In order to be highly ranked and become world-class universities, HEIs tend to fulfill the requirements of the ranking systems but ignore their own histories, missions, and characteristics. There is a tendency toward the academic drift of vocational institutions and the vocational drift of universities (Tight, 2015). This blurs the boundaries between universities and vocational institutions (Gellert, 1993; Harwood, 2010; Vaira, 2009).

Vocational institutions tend to offer courses with more theoretical and academic content, and incline toward graduate degree programs, especially doctorate degrees. Not only do they provide essential education and training to meet labor market needs but they also open theoretical courses and focus on academic research. For example, NTUST (also known as Taiwan Tech), founded in 1974, was the first vocation institution of its kind in the technical and vocational system of Taiwan. It seeks to emulate the research paradigm of universities. It opened its first doctorate degree program in 1982 and it was upgraded from vocational college to vocational university in 1997. The graduate student enrollment rate increased rapidly. In 2020, a total of 5,605 undergraduates and 4,902 postgraduate students are enrolled. With excellent academic performance, NTUST ranked 257 in the QS rankings in 2019, and 61 in the Asian university rankings of THE in 2020 (NTUST, 2019; THE, 2020).

In order to compete for students and limited resources, the universities tend to provide more vocational and professionalizing courses to increase the employability of graduates. By focusing on employability, universities can attract high-quality students and maintain competitiveness in the market. For example, the National Taiwan University was ranked the highest in Taiwan in the 2018 Global University Employability Ranking, which was ranked according to the opinions of human resources executives in terms of students' preparation for the workplace (QS, 2019).

As the academic drift and vocational drift goes on, the boundary between universities and vocational institutions is vanishing. The two types of HEI have become similar to each other, and the dedifferentiation of horizontal diversification has emerged.

Governmental Policy Level: Alliance and Mergers. Rankings influenced the forces of change governmental policies. With an expectation of rising in top university rankings, the MOE in Taiwan adopted two grand incentives for HEIs to pursue excellence (as mentioned in the previous sections). Furthermore, in order to efficiently use resources to compete with global higher education, the government in Taiwan encouraged university alliance and mergers.

Alliances in higher education seek to increase the scale and scope of institutions, with the expectation of economic benefit and competitiveness of economic benefit and competitiveness (Lo, 2014; Patterson, 2000). A university alliance, comprising

three or more HEIs, forms a governance structure, shares common goals, and implements specific constraints on members. By sharing resources and workforces through integration, the HEIs are able to use their facilities to full capacity and achieve joint objectives.

Facing international competition, the Taiwanese HEIs form university alliance networks to cooperate with each other. A total of 12 university alliances have been established in Taiwan since 2008 (Wiki, 2019). Some of the alliances pool resources such as libraries and teaching resources, while some jointly coordinate budgeting to support research teams across campuses. Some of them form a strategy alliance, such as jointly recruiting students from overseas.

The first alliance, the University System of Taiwan (UST), was established in 2008, consisting of four research-oriented universities, namely National Central University, National Chiao Tung University, National Tsing Hua University, and National Yang-Ming University. These four have good reputations on different academic fields, but none of them are comprehensive universities. Complementing each other in academic disciplines and research strengths, and with a regional proximity, they form a university alliance, sharing teaching and research resources with the aim of becoming an outstanding international university. The four HEIs invited the best teachers from across campuses to offer a core curriculum and reconstruct undergraduate curriculums, including general education and basic science courses. Facilitating integration of research resources, faculties from the four universities jointly participated in the pursuit of academic excellence, and the four HEIs organized several research centers including the Brain Research Center and Center for Nano Science and Technology (UST, 2019).

The alliances were formed with the expectation of increasing economic benefits and competitiveness; however, by sharing common goals and implementing specific constraints on members, the alliances inhibit the diversification of HEIs.

2.6 Emergence of a New Dimension

Combining the observations set out in the previous sections with Clark's triangle frames for analysis, reveals that changing governmental policies and global competition have led to decentralization and marketization. Notably, a forth force, public opinion, came to the fore and participated in the coordination frame, influencing the diversity of higher education in Taiwan.

2.6.1 Relevance Between Decentralization and Stratification

The governmental administration policies of higher education changed over the last decade. The management mode shifted from government control to school-based management. In the decentralization process, the autonomy of universities increased, and they were empowered to make decisions regarding their own academic, management, and financial affairs.

However, the increase in university autonomy does not necessarily enhance diversification, for the one-size-fits-all governmental policies can hinder diversification. During the decentralization process, the government provided incentives for universities to apply for more funding for the pursuit of top global universities or teaching excellence. With the former aim requiring ample funding in research, facilities, and personnel, the government can only support few universities, with a limited budget. However, under pressure from public opinion, the government decided to change the focus of the second major incentives, and dramatically increased the numbers of universities receiving incentives. With limited financial resources and under a low tuition fees policy, the research-intensified universities face the challenges of achieving world-class status. The one-size-fits-all governmental policies are decreasing the vertical stratification of higher education in Taiwan.

2.6.2 Market-Oriented Changes

The governance of the higher education system in Taiwan has changed from centralized to decentralized control. As noted in the previous sections, the universities have to search for additional financial resources to governmental funding, adjust their programs and curriculum to appeal to market needs, cooperate with industry and business companies to raise funds, and rent out buildings or facilities to make profits. It seemed that market forces had started to shape the higher education system. However, could the drive for decentralization lead to the marketization of higher education in Taiwan? The followings use three characteristics highly relevant to the process of marketization to analyze the higher education system in Taiwan: the self-financing principle, reduction in state provision, and market-led management principles (Mok & Lo, 2001; Oplatka & Hemsley-Brown, 2010).

Challenges of Self-Financing: Imbalance of Financial Structure. Self-financing is a critical indicator of the financial autonomy and marketization of higher education. Reduction of governmental funding and an increase of self-fundraising is important (Clark, 1998; MOk, 2002; Teixeira & Dill, 2011). As set out in the previous sections, public HEIs rely and depend on governmental funding, and private HEIs depend on tuition fees. The self-fundraising proportion is still low for both public and private HEIs. The imbalance in financial structure might inhibit the marketization of higher education in Taiwan. In response to the decline in governmental financial support, the HEIs in Taiwan need to generate more income by themselves through

diversified fiscal sources, such as cooperation with manufacturing or business to reduce resource dependence.

Challenges of Market-led Management: University Exit Mechanism. There were several market-oriented changes in university governance in recent years, as mentioned in the previous sections. HEIs in Taiwan can adjust and offer market-oriented programs and courses by allocating more financial resources, while cutting down on less market-competitive programs to increase the enrollment rate. In addition, more and more institutions in Taiwan establish cross-department degree programs in response to the employment market demand. They integrate the resources from several related departments to create a comprehensive professional course module to enhance the competitiveness of their students before entering the job market. For example, the National Chengchi University (NCCU), a research-oriented university in Taiwan, provided 4 cross-department programs in 2005, but the total number of the programs dramatically increases to 21, including 4 bachelor-level, 12 master-level, and 4 doctor-level cross-department degree programs and 1 cross-college degree program in 2020 (NCCU, 2020). This trend reflects how HEIs are transforming their programs to fulfill the needs of market and emphasize upon employability.

Although HEIs in Taiwan are now empowered to adjust the programs they provide, they are now facing a market imbalance between supply and demand. The demand for higher education is decreasing for the low birthrate and low enrollment rate, while the supply is unchanged for the total number of HEIs remains the same. With limited funding and low tuition fees, some of the HEIs are facing financial crisis. From 2007 to 2019, the MOE approved the termination of seven HEIs and the transformation of two HEIs. The exit mechanism of HEIs was not fully decided by the providers (HEIs) and the market—government intervention played an important role instead. The market-led management principle was not appropriately satisfied.

Challenges of Reduction in State Provision: Ceiling of Tuition Fees. The governmental governance modes of higher education have changed significantly since 1987. The MOE supervises university operation, including student admission, faculty hiring, budget decisions, and administration appointments. In response to the New Public Management reform of public services, the government gradually empowered universities with more administrative and financial independence.

However, although the government issued regulations allowing flexibility in tuition fees, the standard for collecting tuition and fees is regulated by the government. With the intervention of the government, HEIs were unable to adjust the tuition fees according to their products and services in the higher education market. As lots of a university's budget comes from tuition and fees, differentiation of products and services between universities is gradually reduced, leading to weak competitiveness.

2.6.3 Public Opinions as a New Dimension

In Clark's triangle of coordination (Clark, 1983), the state, the market, and the academic oligarchy act as the primary forces dominating coordination of higher education systems. This dynamic model gives insight into how these forces interact and influence the actions of institutions and individuals.

Clark's triangle is a systematic tool for analysis and is considered one of the most influential models in higher education. However, 36 years after Clark proposed this model, we found that it is unable to track the movement of public opinion, which is of increasing importance in recent democratic society. As we observed in the previous sections, governmental tuition fee policies in Taiwan are changing under pressure from public opinion, and movements such as the Anti-High-Tuition Alliance. Sometimes the revised policies contradict previous ones. Public opinion has become more involved in university coordination through its influence on governmental policies. It represents the emergence of a fourth force in university coordination.

2.7 Discussion

The expansion of higher education does not necessarily lead to the increase of diversification of higher education. This chapter examines the argument by applying new institutional theory to form an analytical framework, considering institutions embedded in an open social environment, by which their structures and practices could be shaped and changed.

Two macro environmental factors influenced the diversification and stratification of higher education in Taiwan. The local environmental factor from governmental policies changed the level of diversification, but the external factor from global competition drove HEIs to pursue higher ranking and enhanced vertical stratification. During the diversification process, the Taiwanese government reduced its control and empowered HEIs to have more autonomy in administration and finance, and favored market-oriented changes. However, these changes were unable to lead to marketization. Applying the principles of marketization to analyze higher education in Taiwan reveals that challenges exist in self-financing, market-led management, and reduction in state provision. Furthermore, Clark's triangle coordination cannot fully explain the governance and diversification of higher education in Taiwan. Public opinion as a fourth force is increasing its importance in the process.

The increasing complexity and uncertainty influences the diversification of higher education systems. Long-term observation and in-depth analysis of the dynamics of higher education diversification process are necessary in the future. This will help to understand possible future development of higher education systems.

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Chapter 3
Taiwan's Higher Education Policy: From Neoliberalism to Public Goods (Higher Education in Taiwan: Global, Political, and Social Challenges)

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Abstract Neoliberalism and public goods have each provided an approach to quality assurance in higher education and the interconnected well-being of society. In 2000, in the pursuit of educational excellence and global competitiveness, the Ministry of Education launched a series of competitive funding projects to supplement the general funding scheme. Simultaneously, policies were instituted to provide incentives to universities. These were for the development and reforming of core collegial processes to strengthen the capacity of the academic profession to improve performance. While the concept of public goods has become a crucial purpose in the higher education system for substantive development. The aim of this chapter is to consider the change in Taiwan's implementation of policy from neoliberalism to public goods. The chapter will review the concept of neoliberalism, public goods, and how policy is being driven by the Higher Education Sprout Project (HESP). First, the development of the higher education system is briefly described. Second, the increasing competition that comes with improved institutional quality within a neoliberal context is discussed. Third, it focuses on the ambiguous university–business links, and the fact that these are questionable and that public concerns have led to the idea that, in neoliberal times, universities should reconsider the locus of their public goods. Fourth, the effect of the HESP is examined and conclusions are drawn. This chapter focuses on the challenges that may be faced by the higher education system under a shift in the policy paradigm. It implies the government's authoritarian control of higher education institutions began to loosen and universities were handed decision-making powers on matters related to teaching, research, and learning. In answer to the question of whether public goods can work well with higher education reform, the findings suggest that the partners need to engage with the new policy implementation in order for this to be the case.

Keywords Education policy · Higher education · Higher Education Sprout Project · Neoliberalism · Public goods

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3.1 Introduction

After 20 years of scholarship on neoliberalism in higher education, its main tenets have been absorbed into designations such as the corporate university, the entrepreneurial university, and the neoliberal university. Critical voices have shown that all universities are now entrenched in academic capitalism, internally distorted by an audit culture and governed by managerialism that is embroiled in internal conflicts over the purpose and conditions of academic work (Bottrell & Manathunga, 2019, p. 2). Like other Asian countries, Taiwan has introduced various neoliberal measures to transform the higher education system, such as decentralization, corporatization, deregulation, and performance-based initiatives (Chan, Yang, & Liu, 2018; Chiang, 2018; Hsieh, 2018). The basis of the policy (which incorporates the concept of public goods) is that higher education is interconnected with the well-being of society. The concept of public goods has played a significant role in positioning higher education over recent years. Various studies have focused on the topic of how research associations can promote the use of research to serve the public good (Eryaman & Schneider, 2017). For example, the American Educational Research Association (AERA) identifies the promotion of the use of research to serve the public good as its fundamental responsibility. AERA provides scientific evidence on the benefit of diversity in affirmative action via legal briefs submitted to the Supreme Court (AERA, 2016). The Australian Association for Research in Education (AARE) (2016) identifies its mission as enhancing the public good by promoting, supporting, and improving research and scholarship in education to generate high-quality educational research for the purpose of better developing society. The British Educational Research Association (BERA) (2016) is another NGO committed to working for the public good by sustaining a strong and a high-quality education research community, dedicated to advancing knowledge through education. These examples reveal that the public good has an important role in current education systems.

The ideas of both neoliberalism and public goods coexisted have had a crucial impact on contemporary higher education policy. Taiwan is no exception in the global context. In 2000, in the pursuit of educational excellence and global competitiveness, the Ministry of Education (MOE) launched a series of competitive funding projects to supplement the general funding scheme. Simultaneously, to improve performance, higher education policies provided incentives for universities to develop and reform their core collegial processes to strengthen the capacity of the academic profession. It is with reference to this that this chapter investigates how the policy has shifted from neoliberalism to public goods.

The chapter comprises five sections. First, the context of the development in the higher education system is addressed. It was in the mid-1980s that the authoritarian control of the government over higher education institutions began to loosen. As a result, one of the major objectives of higher education reform has been to implement competition as a method of increasing productivity, accountability, and control. Second, the meaning of public goods in higher education is addressed, with a focus on the challenges currently faced by the higher education system. The question of

why it is necessary to redefine the public goods is addressed. Third, the idea that ambiguous university–business links are controversial will be addressed, as well as the public concern that universities should reconsider the locus of their public goods in neoliberal times. Fourth, the effect of related higher education policies is reviewed; and finally, conclusions are made and suggestions offered for enhancing the higher education system.

3.2 Neoliberalism: Its Context and Impact

Neoliberalism is generally connected to the notion of globalization, largely because it is related to looser economic regulations and free trade. From a neoliberal perspective, the meaning of neoliberalism can be extended to include the goals of freedom of choice, consumer sovereignty, competition, and individual initiative. Neoliberalism demands compliance with and obedience to the constructions of the state as actualized by developing the techniques of auditing, accounting, and management (Olssen & Peters, 2005, p. 315). In this sense, neoliberalism is a critical element of globalization, constituting the theory according to which domestic and global economic relations are structured.

In higher education, neoliberalism has led to the introduction of a new mode of regulation and type of governance. The basic assumption of neoliberalism is that deregulation and institutional autonomy lead to superior institutional performance (Chang, 2015, p. 603). Proponents of neoliberalism surmise that it transforms universities into efficient organizations and output-oriented systems, and that under neoliberalism, governments tend to minimize rules and regulations to provide more institutional autonomy. However, governments are indirectly involved in higher education through various evaluation mechanisms (Ferlie, Musselin, & Andresani, 2008). For example, there are numerous evaluation indicators for quality assurance, accountability, and world rankings. Various governments tend to link the specific evaluation results to their funding allocation; consequently, evaluation mechanisms exert a strong influence on universities.

In last two decades, the MOE in Taiwan implemented several initiatives to enhance the quality of higher education, including the introduction of competitive funding schemes and allocation of resources to universities based on the quality of faculty research and instruction (Hou, 2012; Hsieh, 2018). As these reforms have been overwhelmingly shaped by neoliberal perspectives, the discussion in this paper focuses on specific concerns in higher education related to this trend. Under neoliberal thinking, governments' regulatory control has become an ambivalent measure (Chang, 2015, p. 604).

Realizing that globalization had accelerated global competition among universities (Lo & Weng, 2005; Lu, 2004; MOE, 2006), the government in Taiwan launched a series of large-scale projects to catch up with the rest of the world's higher education systems amid the powerful trend of globalization (Song & Tai, 2007). These included the Program for Promoting the Academic Excellence of Universities, the Program to

Promote the International Competitiveness of Universities, the Research University Integration Project, the Program for Improving Research University Infrastructures, the Program for Expanding Overseas Student Recruitment, the Plan to Develop World-Class Universities, and the Program for Rewarding the Teaching Excellence of Universities. Competitive funding was attached to each of these projects, and funds were allocated under the philosophy of "pursuit of excellence." Among these projects, the Plan to Develop First-class Universities and Top-level Research Centers receive the most funding (Chang, Wu, Ching, & Tang, 2009).

In 2006, the MOE launched the Development Plan for World-Class Universities and Research Centers of Excellence, also known as the Five-Year Fifty Billion Project. As the name suggests, 50 billion Taiwanese dollars were distributed over five years to selected higher education institutions with an academic record of high-quality research. Eleven universities were chosen for the first phase of the project, 2006–2010, while 12 universities received funding for the second phase, 2011–2016, which was renamed the Aim for the Top University (ATU) (Chang, 2015).

However, higher education funding is a zero-sum game. The ATU risks creating a vicious cycle in which non-ATU institutions (especially private universities) and their students are increasingly marginalized. As a result, the MOE realized that it should rethink the ATU and focus on higher education as a whole (Tang, 2019). The government therefore launched a further two competition-based funding schemes: the Program for Encouraging Teaching Excellence in Universities, and the Program for Developing Exemplary Universities of Science and Technology. The objective is to provide extra funding for selected universities to improve their teaching quality and applied studies. These special funding schemes have formulated a role differentiation policy that has re-stratified the higher education sector in Taiwan.

Higher education in Taiwan was previously shaped by extensive government legislation and numerous regulations. From the mid-1980s, the government's authoritarian control of these institutions began to loosen, and universities were given decision-making powers on matters related to teaching, research, and learning. Prior to 1995, public universities were financed entirely by the government, and universities had scant discretion over allocating internal resources. Public universities had no incentive to attract sources of income in addition to government funding, because all revenue, including tuition fees, gifts, donations, and income from the sale of services, had to be returned to the Treasury at the end of each academic year. Criticism of the inefficient use of resources coupled with increasing constraints on government funds available to higher education resulted in a new funding scheme. This was the 1996 National University Development Fund, which was intended to enhance institutional autonomy and flexibility in mobilizing resources (Chang, Nyeu, & Chang, 2015; Laws and Regulations Database of the Republic of China, 2015). Consequently, public higher education institutions currently raise money from various sources in addition to government funding. Sources include student tuition and miscellaneous fees, income from the extension of education programs, industry collaborations, rental of buildings or facilities, gifts and donations, and income generated from savings and other financial activities.

3.3 The Meaning of Public Goods in Higher Education

UNESCO's 2015 report, Rethinking Education, drew attention to the weakening of the concept of public goods under the alliance of scientism and neoliberalism as the most worrying symptom in the contemporary education system. In this regard, the notion of education being a "common good" reaffirms the collective dimension of education as a shared social endeavor (UNESCO, 2015, p. 78). In broad terms, higher education could be defined as a private, public, or common good. At first glance, higher education would appear to be mainly a private good and cannot be viewed as a common good. While higher education has been funded directly by the state for a long time, it is usually seen as contributing to public goods, such as reducing inequality and increasing social mobility. In considering Marginson's (2007, 2011) discussion on higher education, we may accept that it is intrinsically neither a private nor a public good, nor a common good. "It is potentially rivalrous or non-rivalrous and potentially excludable or non-excludable, which means that, being nested into wider social and cultural settings, higher education as a good is policy sensitive and, consequently, varies by time and place" (Boyadjieva1 & Ilieva-Trichkova, 2019, p. 1051).

"Common goods," "the common good," and "public goods" are concepts widely discussed in philosophy, political science, and economics. They have recently also attracted the attention of scholars in sociology and educational science (Boyadjieva1 & Ilieva-Trichkova, 2019). The philosophical tradition of studying the common good dates to Plato and Aristotle, with the concept of being further developed in the works of numerous philosophers and political theorists including Thomas Aquinas, John Locke, Adam Smith, John Stuart Mill, Jacques Maritain, and John Rawls. Traditionally, the philosophical study of the common good refers to both "the common good" and "a common good" or "common goods" (Boyadjieva1 & Ilieva-Trichkova, 2019). Locatelli's (2018) study suggests that the frameworks of education as a public good and as a common good may be seen as a sort of continuum consistent with the aim of developing democratic political institutions that enable citizens to have a greater voice in the decisions that affect their well-being. Although closely related to the notion of public goods, the idea of common goods has its own specific meaning.

The concept of public goods has played a significant role in shaping what the universities do in an environment of growing uncertainty and demands for greater accountability. In recent years many governments have adopted a national strategy or development plan for higher education and setting out national objectives (Hazelkorn & Gibson, 2018); for example, Ireland, the Netherlands, Hong Kong, Finland, and New Zealand are adopting performance agreements or contracts to better align higher education institutions with national objectives. The meaning of public goods may vary in different systems. Therefore, the various higher education systems demonstrated, from public goods to quasi-public goods, are reasonable. Higher education in Taiwan is not pure public good, as it is selective in its admissions and is fee-charging. It may belong to the category of quasi-public goods as Tian and Liu's (2018) argument. However, policy documents and the law emphasize that higher education in

Taiwan should contribute public goods by virtue of its positive externalities and non-profitability.

Public goods in higher education may face unexpected political intervention. In this case study, we found that Acts related to higher education policy must first be approved by the Legislative Yuan, after which they can be implemented at central or local level. In current political environment, even though the legislators are elected by the citizens, they usually voice their party's interest. Therefore, related reform Acts have often been delayed for political reasons. For example, it is the intention of the MOE to develop part-foreign-owned branch campuses in specific areas based on the idea of free economic zones. This means that the branch campuses do not necessarily have to be located in the current free economic demonstration zones. The newly established branch campuses will also be exempt from governmental regulations. To circumvent the constraints of educational funding, the MOE acted outside existing frameworks and conventional innovation management and announced a required budget for the demonstration zones. This was to promote innovation to increase incentives for university cooperation at home and abroad (Chang, 2015). The funding changes require Legislative Yuan approved, while the Minority Party usually intends to boycott the ruling party's proposal. Even though its implementation belongs to public goods, for political reasons this initiative is still on the party's negotiating table in the Legislative Yuan.

3.4 Shifting Policy Implementation from Neoliberalism to Public Goods

The 2016 presidential election was a turning point for new directions in Taiwanese higher education, but changes in policy could also be attributed to factors in the broader context. For example, the low fertility rate and overexpansion of the higher education sector have resulted in the reduction of the domestic market in higher education and the oversupply of services in Taiwan (Chang & Huang, 2017; Wu, Chang, & Hu, 2019). To solve these problems, the administrations of the Democratic Progressive Party (DPP) (2000–2008) and Kuo Ming Tang (KMT) (2008–2016) considered the internationalization of higher education to enhance global competitiveness and the reputation of universities and to recruit more international students (Chen & Lo, 2013; Ma, 2014). However, the problem was that the nonselected higher education institutions and their students were disadvantaged by the inconsistent allocation of teaching resources.

In view of this, the DPP (President Tsai Ing-Wen) administration (2016–present) launched a new initiative known as the Higher Education Sprout Project (HESP) in 2017. The project highlights egalitarianism as its principal tenet with the aim of securing students' equal rights to education by promoting diversity in the higher education system (MOE, 2017). This ensures that all the higher education institutions can be allocated the necessary resources for prompting quality assurance.

Moreover, the ATU and other government competition-based funding schemes criticized homogenization with respect to the institutions' lack of significant characteristics. The government (including the MOE and the Ministry of Science and Technology [MOST]) allocated NT$17.37 billion for the first year of the HESP. Based on the ambitions of HESP, 65% of this (NT$11.37 billion) was allocated to the first phase of the project, which focused on universities' social responsibility. In addition, 35% (NT$6 billion) was apportioned to the second phase, the aim of which was to enhance the global competitiveness of universities (MOE, 2018). A total of 157 higher education institutions (71 comprehensive universities and 86 technical institutions) are funded by the HESP.

The HESP has two approaches to achieving the concepts of neoliberalism and public goods. The first part focuses on enhancing the overall quality of universities and encouraging the development of institutional diversity so that everyone has an equal right to education. Based on the original design, NT$8.8 billion will be equally allocated to both universities and technical colleges. According to the allocation guidelines, 20% of the funding is based on the size of the institution, while the remaining 80% is based on the quality of the research being undertaken by the institution. This part of HESP has four components (MOE, 2018).

First, universities are encouraged to promote teaching innovation by enhancing learning effectiveness and teaching quality. Students' basic and professional competencies, graduate employability, employer satisfaction, teacher–student ratios, and the use of innovative teaching methods can be considered when measuring universities' performance for funding allocation. Developing learner autonomy and capacity for innovation and creativity and promoting the learning of programming language are highlighted in this component of the project, which should receive a weighting of over 50% of funding to promote teaching quality per campus (MOE, 2018).

The second component is about enhancing the awareness of higher education. This includes financial openness and the promoting of social mobility. In this regard, higher education institutes (HEIs) are encouraged to recruit more students from underprivileged backgrounds and provide them with counseling and financial support. To fund this additional support, a matching fund scheme is introduced to provide incentives for universities. This scheme will attract more donations from the universities' community partners, thereby diversifying their funding sources and strengthening their link with the private sector (MOE, 2018).

Third, universities are required to uphold their social responsibility, called university social responsibility (USR). This component of the project emphasizes strengthening the link between HEIs and local communities. In this regard, universities are requested to make contributions in various areas, namely the economy, education, ecological conservation, democratic development, long-term care, culture, and the urban–rural development of local communities.

The fourth component is to develop the unique characteristics of universities. HEIs can thus employ self-established performance indicators to assess quality for promoting diversity in higher education (MOE, 2017, pp. 17–32).

The second approach of the HESP focuses on pursuing an international reputation of excellence for selected universities and research centers. NT$5.3 billion has been

allocated for this phase, with NT$4.0 billion for leading universities and NT$1.3 billion for research centers. In addition, the MOE provides NT$2.57 billion for higher education institutions to implement projects of local concern and to support disadvantaged students. In total, the funding from the MOE is NT$16.67 billion. The MOST provides another NT$0.7 billion to augment the HESP (MOE, 2017).

This part of HESP is called Global Taiwan, the aim of which is to enhance global competitiveness for the selected top universities and research centers. The Global Taiwan project included two subprojects. The first of these identified four universities as leading institutions in pursuing all-round excellence: the National Taiwan University, the National Tsing Hua University, the National Chiao Tung University, and the National Cheng Kung University. The second subproject funds 65 research centers from 24 universities. The funded research centers are expected to establish collaboration with foreign research institutions, researchers, and various local industry sectors to enhance their research capacities. In addition, they must strive to attract and nurture research professionals (MOE, 2017).

Compared with previous policy initiatives, the most significant change brought about by HESP is the transporting of USR from campuses to other sectors and communities. The goals of USR are to strengthen university–industry collaboration, foster cooperation among universities and senior high schools, involve ministries and local governments in university-led projects, and nurture talent required by local economies. In broad terms, HESP aims to improve the quality of all HEIs and balance institutional excellence with supporting disadvantaged students. Even though enhancing international competition has become a major focus of Global Taiwan, the selected leading universities are also expected to take responsibility for local research at institutional level. According to the design of the HESP, higher education in Taiwan can be seen to be serving the public good and is funded directly by the state in the implementation of the new policy. Over the past decade, higher education policy has shifted from neoliberalism to the pursuit of public goods.

3.5 Future Challenges in Higher Education

Taiwan's HEIs are divided into two tracks: one for academic orientation, and the other for occupational training. The institutes comprise four-year colleges, universities, institutes of technology, and two- to five-year junior colleges (MOE, 2015). From the social perspective, these institutes are designed to receive equal weighting for the purpose of enhancing students' learning. Although higher education is now seen to be central in the global competition for knowledge, innovation, and human capital, HEIs under government control have shown little intention of relating to the markets (Marginson, 2016; Trow, 1973, 2000). Facing the challenges of global competition and local needs, higher education in Taiwan has moved to a new stage.

According to the latest White Paper for Talent Cultivation (MOE, 2013), Taiwan has an aging population and a declining birth rate, compared to the time before the higher education expansion of the mid-1990s. Related issues now confront the

higher education system—for example, a less friendly environment for learning and instruction, due to the market-driven educational policies and the HEI environment (Chou and Wang, 2012; MOE, 2013). Chou (2017) notes that in the past few decades, Taiwan has responded to the worldwide trend of neoliberalism and globalization through a process of political and social restructuring. Simultaneously, HEIs have undergone a transformation by prioritizing accountability. However, these strategies do not offer an immediate solution to the issue of declining enrollment. In the first part of the HESP, promoting high-quality and innovative teaching in higher education are emphasized, and developing local linkages and nurturing talent are also considered as key goals. The focus of the HESP on the basic needs in the current higher education institutions may well be ineffective in solving the emerging crisis in the system.

When considering the funding allocation, the HESP is still too focused on academic excellence. The institutions focusing on the academic path are allocated 35% of the HESP's total funding, which means that just four institutions receive 35% of the HESP's total funding for the next five years. What might change after implementing the HESP? This study found that competition driven by neoliberalism still exists in HESP. For example, while the public goods are part of specific institutional projects like USR, desired changes are still limited by budget constraints. The basic funding for USR is also allocated according to competitive proposals. Excluding the top four universities, current HEIs funded by the HESP are focused on teaching and learning, and supporting local communities. In addition, these universities are also encouraged to promote the internationalization of teaching and learning by establishing student and faculty exchange programs. While the Taiwanese government encourages the retention of internationalization practices in higher education, these strategies seem to receive too much weighting in HESP's funding scheme. According to the regression analysis, the institutional articles publication in Scopus have made a significant difference in the funding scheme. The number of faculties is also likely to be the key component in the funding scheme, while it has become a negative factor in the regression model (see Table 3.1).

Based on the funding scheme, the HESP has tended to focus only on academic performance. The size of the institution is not significant in the funding scheme. The MOE has encouraged all the HEIs to prepare innovative long-term strategic plans, while the official guideline might become a new constraint under the current funding scheme. The HESP is likely to mislead the HEIs for their long-term development in the future. Moreover, the academic performance of the selected top four universities, in terms of academic articles published in Scopus, declined between 2016 and 2018 (see Table 3.2). Based on the finding, the system might reflect a new crisis—the lack of both ambition for internationalization and leading quality teaching and learning in HESP.

It is difficult to find any specific institution that has allocated over 20% of its budget for enhancing their institutional HESP. This phenomenon reflects the fact that HEIs are over-dependent on government funding, which might cost them their autonomy in the long run. The HESP is mid-way in its five-year plan, so there is still time to reshape its implementation.

Table 3.1 Testing funding in HESP with regression models

Model 1: dependent variable = Funding (unit: NT$10000)[a] (funds received by each institute)								
Model		Unstandardized		Standardized	*t*	*p*	Multi-collinearity	
		B	Std. error	*Beta*			Tolerance	VIF
1	(Constant)	1573.849	691.404		2.276	0.025		
	Scopus[c]	1.422	0.041	.955	35.010	0.000	1.000	1.000
Model 2: dependent variable = Funding_per_student[b] (received funding divided by undergraduate students on a campus basis)								
1	(Constant)	6673.080	907.437		7.354	0.000		
	Scopus[c]	0.621	0.053	0.732	11.658	0.000	1.000	1.000
2	(Constant)	12729.642	1662.930		7.655	0.000		
	Scopus[c]	0.973	0.097	1.145	10.051	0.000	0.265	3.770
	Full-time faculty[d]	−24.879	5.875	−0.483	−4.235	0.000	0.265	3.770

Note a. "Funding (unit: NT$10000)" refers to the funds for 157 institutions. The total amount is about NT$15.34 billion (excluding the funding for research centers and the funding supported by MOST) in HESP

b. "Funding_per_student" refers to the funds for each institution according to the number of undergraduate students. The calculation considers the value of funds received by each institution divided by its undergraduate students

c. Scopus = total articles collected from Scopus database (from 2011 to August 5, 2019) for each HEI

d. Full-time faculty in terms of the faculty hired in the year and excluding part-time faculty

Table 3.2 Number of research articles in Scopus for selected top universities

Universities/year	2016	2017	2018	Declining (2016–2018)
National Taiwan University	6314	6272	6246	68
National Tsing Hua University	2369	2343	2293	76
National Chiao Tung University	2408	2344	2307	101
National Cheng Kung University	3109	3097	2928	181
Total	14,200	14,056	13,774	426

Source Scopus data bank. (2019). *Affiliation search.* Retrieved from https://www-scopus-com.ezproxy.lib.tku.edu.tw/search/form.uri?display=basic#affiliation

3.6 Conclusion

Previous studies have argued that government or business has no trust in the academic community's ability to control funding and the mechanism of accountability (Marginson, 2016; Trow, 1996). This phenomenon is reflected in higher education in Taiwan, which has been governed by large volumes of legislation and numerous regulations. Under this system, HEIs under government control have shown little intention of relating to the markets (Marginson, 2016).

When Taiwanese higher education moved into the age of global competition, the question of how to incorporate public goods in neoliberal times needed to be addressed. The concept of public goods may play a significant role in reshaping what the universities do in an environment of growing uncertainty and demands for greater accountability. This study found that the target of the government-initiated HESP was the delivery of quality education to all, and that excellence in HEIs should be balanced against supporting disadvantaged students. According to the design of HESP, higher education in Taiwan is expected to serve the public goods and is funded directly by the state. In terms of the allocation of funds, this study found that the HESP is still too focused on academic excellence. The Taiwanese government encourages higher education to retain internationalization practices, but these strategies seem to be too heavily weighted in the HESP's current funding scheme.

Based on these findings, the higher education system may be facing a new crisis—a lack of ambition for internationalization, and a lack of superior quality teaching and learning under the HESP. The selected leading universities have received more resources, but they are producing fewer international publications. The current funding scheme did not adequately reflect institutional needs, this might emerge as an issue needing attention. Certainly, most of the resources for HEIs have been based on academic performance. To address the imbalance inherent in the HESP, this study provides the following suggestions for higher education institutions:

First, because higher institutions are facing an uncertain future, it is necessary that they reshape individual projects and promote institutional characteristics for substantive development.

Second, institutional budgets need to be reallocated to institutions to reduce over-dependency on the HESP's funding scheme.

Third, most importantly academic excellence needs balancing against quality teaching. Institutions should prioritize the development of strategies for innovative and high-quality teaching.

Fourth, the five-year period allocated to the HESP is likely to too late for reviewing the emerging overexpansion crisis affecting the less competitive institutions. These institutions have an immediate crisis: the issue of their survival needs to be addressed with alternative strategies to those of the HESP.

Fifth, higher education institutions need to attract resources from social and business enterprises to enhance their long-term development plans under budgetary constraints.

Finally, evidence-based policy and practice are a continuous process requiring interconnected sources. Policymakers need to hold ongoing discussions with different partners to overcome gaps that might cause dysfunctionality in the higher education setting.

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Part II
Transforming Taiwan Higher Education into Global Players

Chapter 4
Quality Assurance in Taiwan Higher Education: Regulation, Model Shift, and Future Prospect

Alan Shao Ren Lin, Angela Yung-Chi Hou, Sheng-Ju Chan, and Tung-liang Chiang

Abstract For the past two decades, the quality assurance (QA) system in Taiwan has undergone substantial transformation from an unsystematic approach to a more comprehensive mechanism. As a result of notable university requests for deregulating university governance and management, the Ministry of Education (MOE) in Taiwan decided to launch the self-accreditation policy in 2012 in order to increase university autonomy and build internal QA mechanisms on campus (MOE, 2013). In 2017, the policy was applied to all Taiwan universities. Based on this wider policy context, the purpose of this paper is to better comprehend: (1) governmental policy in constructing a national QA system in Taiwan higher education since 2000; (2) a QA model of Higher Education Evaluation & Accreditation of Council (HEEACT) in Taiwan, and its impact; (3) context of the paradigm shift from a focus on external review to internal QA; (4) future prospects for QA policy and an examination of a new role for the national QA agency. In addition, Olsen's governance model as an analytic framework is applied for examining the relationship between QA agencies, government, and institutions in Taiwan over the past decade.

Keywords Quality assurance · Higher education · HEEACT

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4.1 Introduction

Higher education has undergone significant and rapid changes due to external driving forces—weak economies, graduate unemployment, and underemployment, internet technology, and social media in particular (Daniel, 2016). In particular, quality has been always the focus of higher education globally. The concept of quality might vary from time to time due to massification, privatization, and emergence of new providers in the rapidly changing landscape of higher education (Harvey & Green, 1993). Traditionally, quality was often defined by policymakers and university administrators and staff. In recent years, the engagement of students, graduates, employers, and society in higher education escalates the level of complexity in quality assurance (QA) system. According to Harvey and Green (1993), quality typically consists of five dimensions due to different purposes, including excellence, perfection or consistency, quality culture, fitness for purpose, value for money, and transformation. For example, most governments may adopt the concept of quality as "value for money" to measure the accountability of higher education providers. In contrast, QA agencies and accrediting bodies that consider the mission diversification of institutions as a major concern would adopt the approach of "fitness for purposes."

QA is "a process of establishing stakeholder confidence that provision (input, process and outcomes) fulfills expectations or measures up to threshold minimum requirements" (The International Network for Quality Assurance Agencies in Higher Education (INQAAHE), 2018). It consists of two major parts: internal QA and external QA. According to INQAAHE, "internal evaluation" is a "process of quality review undertaken within an institution for its own ends." Accordingly, development and management of internal QA systems is "at the discretion of the higher education institution, which usually carries out this mandate in the context of available institutional resources and capacities" (Paintsil, 2016, p. 4). This means that with an appropriate policy and mechanism, an institution can ensure that "it fulfills its own purposes and meets the standards that apply to higher education in general, or to the profession or disciplines in particular" (Martin & Stella, 2007, p. 34). Principle One of the Council for Higher Education Accreditation (CHEA) states that "assuring and achieving quality in higher education is the primary responsibility of higher education providers and their staff" (Hou, 2016, p. 7). Higher education providers are thus expected to take primary responsibility for assuring the quality of the programs they offer, through internal QA systems and through the process of engaging faculty members (academic staff) and administrative staff.

On the other hand, external QA agencies (EQA), with a "self-critical, objective, and open-minded' character, undertake third-party review activities of higher education institutions, in order to determine whether the quality of universities meets the agreed or predetermined standards" (Martin & Stella, 2007, p. 34). Normally, internal QA is considered as the part of the external process that an institution undertakes in preparation for an external QA. Both indeed are so much "two sides of the same coin that the activities are inextricably interrelated" (Vroeijenstijn, 2008, p. 1).

The national QA system in Taiwan was not formed until the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) was established in 2005. With funds from the government and 153 colleges and universities, HEEACT became the first national accreditor, acting as a quality regulator of higher education in Taiwan. The 2005 revised University Act stipulates that universities should periodically undergo self-evaluation on teaching, research, service, counseling, administration, and student engagement (Ministry of Education (MOE), 2019). In addition, the Act commissioned the government to "organize an Assessment Committee or commission academic organizations or professional accreditation bodies to carry out regular assessments of the universities, and it shall make the results public" (MOE, 2019).

HEEACT is mandated as the leading accreditor in Taiwan to ensure the activities of universities in adherence to established quality standards and accountability. Given the fact that all universities and programs are required to be reviewed externally by a professional QA body on a regular basis, HEEACT is requested to operate both institutional and program-based accreditation with a compulsory approach. Over the past 10 years, more than 80 institutions and 3,000 programs were under HEEACT's review, and their detailed final reports were published on the HEEACT's official website (HEEACT, 2015).

For the past two decades, the QA system in Taiwan has undergone substantial transformation from an unsystematic approach to a more comprehensive mechanism. As a result of university requests for deregulating university governance and management, the MOE in Taiwan decided to launch the self-accreditation policy in 2012 in order to increase university autonomy and build internal QA mechanisms on campus (MOE, 2013). In 2017, the policy was applied to all universities in Taiwan. Hence, the purpose of this paper is to better comprehend: (1) governmental policy over constructing a national QA system in Taiwan higher education since 2000; (2) the QA model of HEEACT and its impact; (3) the context of the paradigm shift from a focus of external review to internal QA; (4) future prospects for QA policy, and an examination of a new role for the national QA agency. In addition, Olsen's governance model as an analytic framework is applied for examining the relationship between QA agencies, government, and institutions in Taiwan over the past decade.

4.2 QA Concepts, Theories, and Governance Models

Due to marketization, massification, and privatization in higher education, and with deregulation bringing in competition, over the last two decades QA has become a widespread, multipurpose policy tool for reforming higher education systems, assessing higher education providers' accountability, and pursuing academic excellence (Harvey & Newton, 2007; Jarvis, 2014; Stensaker, 2007; Westerheijden, Stensaker, Rosa, & Corbett, 2014). Since 2000, QA practices, as one of the most effective means of ensuring the quality of higher education institutions (HEIs), have been widely adopted by higher education policymakers and placed in national agendas

(Marginson, 2011; Saunders 2010). Westerheijden et al. (2014) point out that "the adoption of quality assurance schemes becomes a process of copying instruments and policies that exist elsewhere, or to legitimate political action regardless of its actual effect" (p. 3). Shin (2018) argues that "states prefer to use quality assurance as a strong driver to reform higher education while universities prefer to maintain their prestige without strong state influences" (p. 2). National quality assurance schemes are therefore often managed by a commissioned agency with a national mandate; and yet, due to the policy aimed at establishing top-ranked universities, some QA agencies are even commissioned to play the dual roles of accreditor and ranker (Hou, 2012).

It is agreed that the external review processes "have encouraged and convinced HEIs to adopt more robust mechanisms for continuous quality enhancement, more rigorous self-evaluation, increased transparency, and a better understanding of the notion of quality and best practices" (Zoqaqi, 2011, p. 3). Accordingly, Paintsil (2016, p. 26) interprets Olsen's governance models in higher education and suggests a four-dimensional model of QA management that can "be steered through severing state, institutional, supermarket or the corporate pluralist governance models." These four QA governance models explain the QA change process and conceptualize the interactive dynamics between internal and external QA systems. Initially, most QA systems were government established. State control was quite prominent to achieve national objectives (Olsen, 2007). A university-led QA approach was widely adopted in developed nations, where higher education providers were given more autonomy to set up a sound internal QA mechanism after few cycles of external reviews' implementation (Olsen, 2007; Paintsil, 2016).

In addition to the traditional twin purposes of accountability and teaching quality enhancement, corporatist and supermarket approaches are rather appealing in mature systems. The corporatist–democratic QA model emphasizes the respect for the interests of varying internal constituencies and their engagement in the QA process, including faculty, staff, and students. Although this governance model can delay the decision-making process and make institutional changes difficult and ineffective, it reflects the current global trend in regard to power balance among different higher education stakeholders' engagement in the QA process, particularly employers and students (De Boer & Stensaker, 2007; Olsen, 2007; Paintsil, 2016).

Without direct government involvement, a supermarket governance model is gradually emerging, altering the relationship between QA agencies and HEIs. Under this scheme, accreditation is voluntary, creating the situation whereby accreditors tend to operate as business-like enterprises. Most of them are professional and overseas accreditors (Dobbins, 2012). However, although it is regarded as an effective tool for global competition and global branding, Knight (2015) addresses the negative impact of the model, including the emergence of rogue providers, fake diplomas, and even accreditation mills. Overall, the development of multi-roles and functions in QA agencies is necessary in order to respond to accompanying national policy changes. State control governance models exist in more centralized systems, where the national accreditor is the sole agent undertaking external reviews. In contrast to the centralized QA system, corporatist and supermarket approaches would likely emerge in a

decentralized context. However, a university-led monolithic QA approach usually supports strong institutional leadership to ensure education quality on campus.

4.3 Diversification of the National Quality Assurance System in Taiwan and a Recognition Scheme for Local and International Accreditors

In general terms, there were four main phases to the QA system in Taiwan, including the initial (non-professional) stage, the developmental stage, the professional stage, and the new reform stage. Passing through these stages, a mature QA system has been gradually developed in the higher education system of Taiwan (HEEACT, 2018).

4.3.1 The 1980s: The Initial (Non-Professional) Phase of QA

Because the number of Taiwan's HEIs increased dramatically after the 1980s, the public's desire to maintain and increase both quantity and quality has placed tremendous pressure on Taiwan's government. Apart from encouraging institutions to conduct self-assessments on their own, a few professional associations such as the Chinese Management Association (CMA), the Chemical Society, and the Physical Association of the Republic of China were chartered by the MOE to exercise program-based academic assessments, beginning in the 1980s. However, the QA system was still in its initial phase, as there was no professional QA body and national accreditor during this time.

4.3.2 The 1990s: The Developmental Phase of QA

In the 1990s, the government of Taiwan, in the face of continuous pressured from the public, began to implement a wide range of comprehensive institutional evaluations with the goal of establishing a nongovernmental professional QA agency, the purpose of which was to conduct compulsory evaluations of HEIs (Hou, 2011). In 1994, the Legislative Yuan passed the University Act, and the national government was allowed to carry out institutional accreditations in order to assure the quality of higher education. During this period of time, the government began to implement a wide range of comprehensive institutional accreditation, with the goal of establishing a nongovernmental professional QA agency whose purpose was to conduct evaluations of HEIs.

4.3.3 The 2000s: The Professional Stage of QA

In early 2000, the QA system in Taiwan became more professional, but it was also decentralized. Several independent QA agencies were founded in order to carry out professional QA for the higher education system during this period. In 2005, the University Act was amended in order to make it clear that the EQA (External Quality Assurance) system of all HEIs needed to be overseen by the MOE in order to enhance both the quality of teaching and assessments. The Act also stated that an internal QA mechanism was needed to carry out self-evaluation on teaching, research, services, counseling, administration, and student engagement on campus. In general, all HEIs and programs were encouraged to develop measurable learning outcomes, to design a variety of assessment tools at program and institutional level, and to evaluate whether the learning outcomes had been met.

A self-funded accreditor, Taiwan Assessment and Evaluation Association (TWAEA) was the organization chiefly responsible for undertaking institutional and programmatic assessment of Taiwan's technological universities. There are three other Taiwanese professional accreditors, in the areas of medicine, nursing, and engineering. As the oldest professional accreditor, Taiwan Medical Accreditation Council (TMAC), established by the National Health Research Institute in 1999, aims to assess all medical schools. The other professional accreditor, Taiwan Nursing Accreditation Council (TNAC), was set up by the MOE in May 2006 to conduct nursing program evaluations. After the establishment of HEEACT in 2005, TMAC and TNAC were officially moved into the HEEACT office. Founded in 2003, the Institute of Engineering Education Taiwan (IEET) is an independent, nongovernmental, and not-for-profit organization committed to accreditation of engineering and technology education programs in Taiwan. However, there was a strong demand to establish a national accreditor to govern and steer the quality of all HEIs.

Besides this clear statement regarding the external QA and internal QA for all HEIs, the 2005 University Act also established HEEACT as the third-party professional accreditor in order to help conduct EQA and supervise these institutions in developing their internal QA. Since then, HEEACT has acted as a national accreditor in Taiwan, has carried out various QA and accreditation tasks, and has provided training, workshops, and seminars for onsite reviewers and university staff. The MOE also commissions HEEACT to recognize other private and self-funded professional QA bodies. During this period, the Taiwanese QA framework was successfully established.

4.3.4 The 2010s: The Reform Stage of QA

In order to promote the self-improvement mechanism of universities, and in consideration of requests from various universities, the MOE decided to launch a self-accreditation policy in 2012 in addition to the institutional and program accreditation. This helped to increase university autonomy and build a culture of quality on campus (Department of Statistics, 2019). In general terms, the goal of this self-accreditation policy has the same purpose as the internal QA mechanism stated in the University Act.

However, according to the 2012 MOE self-accreditation policy, only a limited number of institutions were eligible for self-accreditation status. University applicants should meet one of the three following requirements: (1) they should be awardees of the MOE Development Plan for World-Class Universities and Research Centers of Excellence; (2) awardees of the MOE Top University Project; (3) or awardees of the MOE Teaching Excellence Project granted at least USD 6.7 million over four consecutive years. Sixty universities were eligible for self-accreditation, including 34 general universities and 26 universities of technology; and in 2016, 14 out of the 60 universities fully developed a self-accreditation system and conducted their first self-accreditation process (Hou et al., 2018).

To conclude, a diversified QA framework in Taiwan was formed after 2005 (Hou, 2011; HEEACT, 2020). The difference between local accreditors and HEEACT is that the accreditors are self-funded institutions offering services on a voluntary basis. Those who voluntarily apply for accreditation from the local accreditor have to pay the fees themselves. Up to present, there are six QA agencies and professional accreditors in Taiwan, including one national EQA agency, HEEACT (including its sub-agency TMAC, and four private EQA agencies: CMA, IEET, TWAEA, and one international agency, the Council on Education of Public Health (CEPH). All agencies are recognized by HEEACT (Fig. 4.1).

4.4 HEEACT Accreditation Model—Program and Institutional Accreditation

As a national accreditor, HEEACT operates both institutional and program-based accreditation on a compulsory basis. The external review costs are covered by the MOE. The detailed final reports are published on HEEACT's official website (HEEACT, 2019). Up to present, HEEACT has completed two cycles of program and institutional accreditations, respectively.

In 2006, HEEACT began a five-year, program-based, nationwide accreditation. The standards developed in the first cycle of program accreditation were as follows: (1) goals, features, and self-enhancement mechanisms; (2) curriculum design and teaching; (3) learning and student affairs; (4) research and professional performance; (5) performance of graduates. There were three types of accreditation outcome:

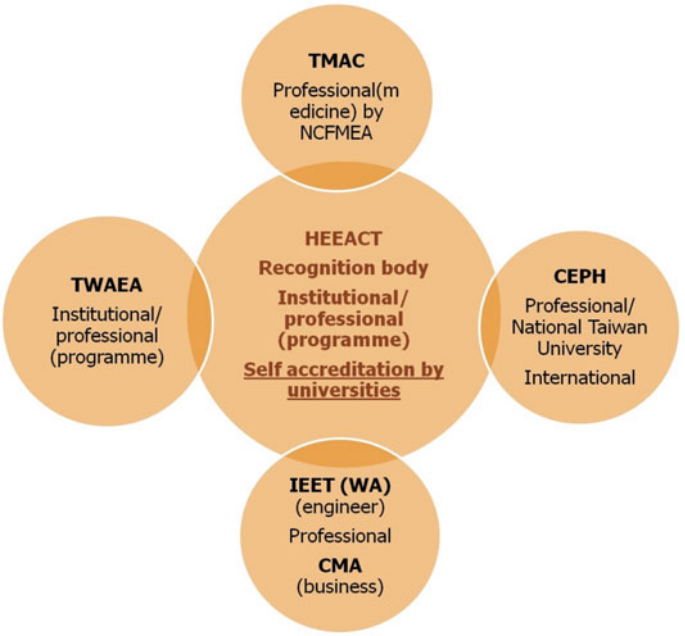

Fig. 4.1 Diversified QA framework in Taiwan higher education (*Source* by authors)

accredited, accredited conditionally, and denial (HEEACT, 2012). According to HEEACT, the average rate in the first cycle for accredited status among a total of 3120 programs was 87.11%; for conditionally accredited it was 11.5%; and for denied it was 1.3% (HEEACT, 2012).

Following the global trend of QA, both institutional accreditation and the second cycle of program accreditation focused on the assessment of student learning outcomes. Starting in 2011, HEEACT conducted an institutional assessment of 81 national and private universities and also continued the second cycle program accreditation. HEEACT's handbook for the 2011 institutional accreditation emphasized that an institution would be evaluated and examined according to the PDCA (Plan–Do–Check–Act) model, and based on quantitative data such as faculty–student ratios, admission rates, research funding, and research output. This model concentrates three features. First, the institution should have a clear mission to state its institutional identity; second, it should have favorable governance to integrate and allocate resources; third, it should have an internal mechanism to assess student learning outcomes (HEEACT, 2012). HEEACT's five review standards included self-positioning; government and management; teaching and learning; accountability; and continuous quality improvement. Each institution was accredited by each standard respectively, meaning that the institution would be given five individual results for each standard. According to HEEACT, 47 institutions were fully accredited according to the five standards, with a pass rate of 69% (Chiang, 2015).

The second cycle of program accreditation focused on realizing the development and operation of student learning outcomes and its evaluation mechanisms within programs and disciplines. The new accreditation model has been adopted to assist universities in analyzing their strengths and weaknesses to facilitate successful student learning. The new standards for the second cycle of program accreditation are as follows: (1) educational goals, features, and curriculum design; (2) teaching quality and learning assessment; (3) student guidance and learning resources; (4) academic and professional performance; (5) alumni performance and self-improvement mechanism (HEEACT, 2012). Generally speaking, universities and programs were encouraged to develop measurable learning outcomes, to design a variety of assessment tools at course, program, and institutional level, and to establish whether the learning outcomes were being met. According to HEEACT, the pass rate of the second cycle program accreditation from 2011 to 2015 rose to 91% (HEEACT, 2015).

As soon as the second program accreditation was complete, the second cycle of institutional accreditation was undertaken from 2016 to 2017. Eighty-five universities put under review including police academies, and military and religious institutions. Considering the diversity and size of higher education providers, several changes were made in the second cycle of institutional accreditation, including number of standards, composition of panel, and selection of interviewees during onsite visits. There were 66 institutions fully accredited by four standards, with a pass rate of 85.7% (HEEACT, 2019) (Fig. 4.2).

In general, the core elements of HEEACT accreditation are university self-assessment, peer review, and onsite visits. Institutional accreditation and the HEEACT's program accreditation share similar processes through five main stages: (1) preparation; (2) document review; (3) onsite visits; (4) decision-making; and (5) follow-up. In the document review stage of both types of accreditation, HEIs should prepare and submit a self-assessment report (SAR) according to the established timelines, and the HEEACT will proceed with reviewer selection and training followed by an onsite visit (Table 4.1).

After two cycles of institutional and program accreditation, the Taiwan QA exercise has had positive and negative impacts on higher education since the national QA framework was built in 2005. A study by Hou (2018) showed that the accreditation results had a great impact on institutional governance and management. First, the QA system inspired universities to identify their mission and objectives. The institutions not only made a great effort to develop their distinctive features, but also

Fig. 4.2 Years of institutional and program accreditation timeline (*Source* HEEACT, 2019)

Table 4.1 Institutional and program accreditation standards and indicators since 2016

Accreditation Type	Accreditation Standards and Indicators	
Institutional accreditation	Standard I: Governance and Management	1.1 Development plans and distinct features correspond with the institution's self-positioning 1.2 Practices and mechanisms to ensure quality governance 1.3 Collaborative relationships with partners in academia, government, and industry, which are relevant to the institution's self-positioning 1.4 Guarantee of equal access to educational opportunities; the institution demonstrates social responsibility
	Standard II: Resources and Support Systems	2.1 Resource plans to support development 2.2 Practices and mechanisms to support the development of academic careers and improve the teaching capability of the faculty 2.3 Practices and mechanisms to achieve student learning outcomes
	Standard III: Institutional Effectiveness	3.1 Institutional effectiveness demonstrated based on the institution's self-positioning 3.2 Student learning outcomes achieved 3.3 Public accessibility of information to stakeholders
	Standard IV: Self-Improvement and Sustainability	4.1 Practices based on internal and external evaluation results for discussion, improvement, and implementation 4.2 Practices and plans for innovation and sustainable development 4.3 Practices to protect the rights and interests of faculty, staff, and students 4.4 Practices and mechanisms to ensure the institution's financial sustainability

(continued)

Table 4.1 (continued)

Accreditation Type	Accreditation Standards and Indicators	
Program accreditation	Standard I: Program Development, Operations, and Improvement	1.1 Goals, distinct features, and development plans 1.2 Curriculum planning and implementation 1.3 Operations and administration support 1.4 Self-analysis and continual improvement
	Standard II: Faculty and Teaching	2.1 Faculty composition and appointment of instructors for the program's educational goals, curriculum, and students' learning needs 2.2 Development of instructors' teaching capacity and related support systems 2.3 Development of instructors' academic careers and related support systems 2.4 Teaching, academic, and professional performance of faculty
	Standard III: Students and Learning	3.1 Management of student enrollment and retention 3.2 Course-related learning and support systems 3.3 Other forms of learning and support systems 3.4 Student/graduate learning outcomes and feedback

strengthened governance and management on resource allocation, program revitalization, curriculum reform, and staff recruitment. The other aspects are program survival and closure rate. In other words, two-thirds of the programs that were not accredited suffered closure. Generally speaking, institutions used the accreditation results to restructure institutional organization, staff hiring, and program mergers, or closure. Several concerns were raised by the public, including the problem of increased workloads, the reviewers' quality and qualifications, and the limited use of the evaluations by employers and students (Hou, Ince, Tasi, & Chiang, 2015). There was also a strong demand that the Taiwan QA needed to embrace society's needs and build public trust.

Overall, Taiwan's universities took a positive attitude to MOE QA policy and design under the "state control model." HEIs widely agreed that HEEACT institutional accreditation brought significant impacts, particularly in the areas of governance and management, as well as the quality of education. Moreover, universities continued to improve issues addressed in the accreditation report. QA was also widely

used by Taiwan's institutions to strengthen their internal quality mechanism, and to respond to the new challenges of a globally changing environment, which led to the development of a university-led governance model in Taiwan. To conclude, governmental QA policy in Taiwan is not only successfully implemented by universities, but also supports them to have internal QA regulations in place.

4.5 Launch of Self-Accreditation Policy: From a State-Controlled to a University-Led QA Approach

In order to respond to the call for state deregulation and institutional empowerment, a new practice of external quality assurance—self-accreditation—was proposed by the MOE in 2012. Self-accreditation is "a process or status that implies a degree of autonomy, on the part of an institution or individual, to make decisions about academic offerings or learning" (INQAAHE, 2019). Derived from accreditation, it is defined as the status accorded to a mature institution conducting its internal QA activities, and which is exempted from the process of external accreditation. A self-accrediting institution is fully authorized to invite its review panel to inspect institutional or program quality. With greater familiarity with the specific nature of the institution itself, ideally, self-accreditation can lead institutions to a more informed process of self-improvement (Hou et al., 2018; Kinser, 2011; Sanyal & Martin, 2007). By 2019, Malaysia, Hong Kong, Australia, and Taiwan have implemented this approach.

However, the 2012 MOE self-accreditation policy, conducted as a pilot study, only identified a limited number of institutions as eligible for self-accreditation status. The two goals of the policy are to deregulate the national higher education system and to enhance autonomy over institutional governance and management. In general, applicants for self-accrediting status engage in a two-stage review and approval process. In the first stage, the applicant is required to submit a proposal and related evidence demonstrating capacity to conduct an external review process. The proposal is then reviewed by the Accreditation Recognition Committee, organized by the MOE. In addition, applicants are required to comply with the designated eight standards (Hou et al., 2018; MOE, 2013). The second stage focuses on the QA implementation undertaken by self-accrediting institutions, and the review's outcomes and related documents should be submitted to HEEACT for approval. With HEEACT's approval, the MOE allows self-accrediting institutions to publish their program review decisions on their official website (Hou et al., 2018).

In early 2017, the government announced a new QA policy, indicating that program accreditation would change from a compulsory to a voluntary system. In particular, the self-accrediting policy likewise entered a new phase of development. Eligibility for self-accrediting institutional status was opened to all Taiwan higher education providers. This means that all HEIs are now eligible to undertake self-accreditation program reviews if capable of doing so according to the new quality

policy. As a protection mechanism, HEEACT still sets a minimum standard of at least an 80% pass rate of the previous cycle HEEACT program accreditation for applicants, in order to ensure that the university has sufficient capability to execute self-accreditation activities (HEEACT, 2018). Surprisingly, only 18 HEIs have applied for the recognition of self-accreditation up to present. Furthermore, several top research universities chose to apply for HEEACT's accreditation voluntarily, which meant that they gave up their self-accreditation status. Both accreditation paths will be funded partially by the government (HEEACT, 2019).

4.6 Changing Roles of Quality Assurance Agencies and Accrediting Bodies

In response to the new challenges in higher education and policy changes, QA agencies are expected to transform their traditional role and reposition the relationship with the government and higher education providers so as to maximize its full capacity. In most countries, QA is primarily used as a policy instrument to regulate the quality of higher education. A dilemma known as the principal–agent problem may likely exhibit in the states, where integrated QA into national education reform initiatives. Their roles and functions would be affected by governmental policy changes. In this sense, concern about whether the autonomy and independence of the QA agencies would be threatened or intervened emerged (Brown, 2013; Dill, 2011; Martin & Stella, 2007).

The 2017 MOE QA policy has slightly changed the QA ecosystem in Taiwan. QA agencies and accrediting bodies no longer have the mandate to undertake program accreditation, which has pressured them to think of multi-functions as an external QA agency, particularly HEEACT. In response to the MOE policy, HEEACT developed four major roles and responsibilities, including being a quality gatekeeper, serving as a governmental think tank, acting as an educational trainer for universities, and acting as an international mediator between Taiwan's universities and the globe. Furthermore, building a solid research capacity is a new trend fostered by HEEACT to strengthen professionalism, shifting the approach from a regulatory role into a policy advisor. These challenges are part of the impact that globalization is having on Taiwanese higher education.

Undoubtedly, the more that Taiwan's government concerns itself with maintaining the universities' competitive edge, as well as lifting academic autonomy by adopting voluntary program accreditation and launching a comprehensive self-accreditation policy, the more challenges QA agencies will face. In addition, the diversifying roles and functions arising from globalization and higher education policy change give QA agencies an opportunity to expand their strategic roles domestically and internationally. Although state policy and regulation over QA agencies still continue to increase, capacity building for international accreditation as a way to stabilize financial status

may become an increasingly important task for HEEACT in the future. These problems—which include professional training of reviewers, international capacity building of quality assurance and accrediting agencies, and self-accrediting institutions' commitment to quality self-improvement—will thus continue to challenge Taiwan's QA system and higher education. As Jamil Salmi states:

I think that QA agencies can play multiple roles, especially in terms of promotion and enhancement of quality through capacity building activities. The important caveat is that the QA agency should not do anything that comprises its intellectual independence via *government and the other higher education institutions (Personal communication, July 20,* 2018*).*

4.7 Concluding Remarks

Over the past decade, national QA systems have been established in Taiwan and have made great impacts on higher education providers. However, accountability, validity, and evidence-based approaches in QA remain major concerns. Quality assurance has been developed as a policy instrument in Taiwan. In addition to their regulatory role, QA agencies, are "responsible for monitoring institutional and program quality, are under pressure from multiple constituencies to address ever more complicated expectations" (Altbach, Reisberg, & Rumbley, 2009, pp. 52–53). Concurrently, the HEEACT has begun to choose other governance models to fulfill its new obligations and to prove its accountability in a flexible manner, such as the university-led model and the market-driven model, although the effectiveness and objectivity of these approaches remain a major concern.

The national accreditor may seize the opportunity to transform its traditional role into a variety of functions—quality regulator, basic quality gatekeeper, or project convener—into new multi-roles of quality improvement instigator, capacity developer, international facilitator, and even future thinker. Hence, in response to the impacts and challenges brought on by the MOE's new QA policy, HEEACT has developed a new partnership with the government and universities, and is ready to adopt a new risk-based approach. If QA agencies wish to demonstrate accountability to higher education stakeholders domestically as well as internationally, "it is essential to provide the appropriate education and training program to the reviewers and agency staff who are involved in the review process and results" (Woodhouse, 2016, p. 3). Hence, it can be foreseen that professionalism and internationalization will be future manifestations of QA in Taiwanese higher education.

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Chapter 5
What Are the Challenges for Building World Class Universities in Taiwan? Assessing Taiwan's Excellence Initiatives Since 2005

Angela Yung-Chi Hou and Christopher Hill

Abstract In response to the problem of building a world class university efficiently, several Asian nations chose to invest in the development of research universities and centers to increase their volume of research output, and subsequently move up the global rankings. Taiwan was no exception. From 2005 to 2016, the Taiwanese government launched various types of excellence initiatives with different objectives, including three big projects: Development Plan for World Class Universities and Research Centers of Excellence, Teaching Excellence Initiative, and Academia-Industry Collaboration. Beginning in 2017, the Ministry of Education introduced a new direction in higher education policy by launching a new excellence initiative, the Higher Education Sprout Project. It concentrates on "University social responsibility and accountability" instead of solely the pursuit of academic excellence. This chapter analyzes the development and impacts of Taiwan's Excellence Initiatives from 2005 to 2016. It then presents and discusses the 2017 Higher Education Sprout Project. The relationship between building world class universities and excellence initiatives and the associated challenges are examined in the conclusion section of the paper.

Keywords Excellence Initiatives · World Class University · Global competitiveness

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5.1 Introduction

Over the past decade, the term "world class" has been used widely to describe how a university develops its capacity to compete in the global higher education marketplace. With the growth of competition between nations in knowledge-based economies, the creation of world class universities has become a national agenda matter in developing, as well as developed countries in Asia and other regions. Consequently, policymakers believed that "building research universities would help their countries obtain a superior position in the global competition," particularly in the Asian region (Shin, 2009, p. 669). Marginson (2011) indicated that accelerated public investment in research and "world class universities" has forged a unique culture which he called the "Confucian Model" in the region.

In order to build at least one, or indeed, several world class universities, Asian nations began to invest in research universities and centers to increase their volume of research output in order to move up the global rankings (Marginson, 2011; Shin, 2009). Several excellence programs were subsequently created in Asia prior to 2000: in 1998 China approved a special funding program to build research universities as part of its 985 project; the South Korean government supported the 1999 Brain Korea 21 (BK 21) program; and in 2001, the Japanese government established a plan to foster around 30 universities to become "world class" institutions (Lo, 2019; Yonezawa & Hou, 2014). Similarly, the Taiwanese government launched Five Year—50 Billion Excellence Initiative in 2005 to build at least one university that would be in the world's top 100 within five years, and to have at least 15 key departments or cross-campus research centers as the top in Asia within ten years in Taiwan (Department of Higher Education, 2011).

Pressured by global competitiveness in higher education, the Taiwanese government began reforming its higher education system in the late 1990 s, with a particular focus on provision, regulation, and financing (Hou, 2011). In 2002, the Taiwan government founded the Higher Education Macro Planning Commission (HEMPC) with the aim of promoting the country's higher education excellence. In 2003, HEMPC proposed a national plan in support of a number of selected universities and research centers through concentrated investment. Meanwhile, the Ministry of Education (MOE) launched various excellence initiatives with different objectives from 2005 to 2016, including Development Plan for World Class Universities and Research Centers of Excellence (hereafter the Excellence Program), Teaching Excellence Initiative, and Academia-Industry Collaboration (Hou, 2012).

During the new phase of excellence initiatives in 2017, the MOE launched the Higher Education Sprout Project, focusing on "university social responsibility and accountability." The new initiative aims to "comprehensively enhance the quality of universities and promote the diversification of higher education so as to secure students' equal right to education." In addition, it aims to reinforce international competitiveness through facilitating universities to achieve world class status and developing cutting-edge research centers in cooperation with the Ministry of Science and Technology (MOE, 2018, p. 1).

This chapter analyzes the development and impacts of Taiwan Excellence Initiatives from 2005 to 2016. The 2017 Higher Education Sprout Project is then presented and discussed. The relationship between building world class universities and excellence initiatives and challenges created are examined in the conclusion section of the paper.

5.2 Examining the Relationship Between Building World Class Universities and Launching Excellence Initiatives

Since 2000, the intensification of global competition in higher education has been highlighted in the literature, which has drawn great attention from governments and academics. In this regard, building world class universities was widely considered a national strategy to not only respond to global challenges but also to enhance international competitiveness. What does a world class university look like? In basic terms, world class universities are top research universities striving for excellence. This means that "its quality must surpass the expectation of their various stakeholders" (De Maret, 2007, p. 33). Altbach (2007) describes world class universities in a more specific way, indicating that the key elements of a world class university should include excellence in research, top professors, academic freedom, governance, adequate facilities, funding. Feng (2007) states that there are two generic features for a world class university: presidential leadership and producing graduates with global citizenship. The former Tertiary Education Coordinator at the World Bank, Jamil Salmi (2009), defined a world class university as having three major indispensable components: 1. a high concentration of talent including excellent faculty and brilliant students; 2. abundant resources to offer a rich learning environment and conduct advanced research; and 3. favorable governance features that encourage strategic vision, innovation and flexibility, and which enable institutions to make decisions and manage resources without being encumbered by bureaucracy. Shin and Kehm (2013) characterized world class universities by analyzing the top 200 globally ranked universities. These were found to be research productive related, as well as attracting internationally renowned professors and talented students. Heyneman and Lee (2013) specifically identified that a world class university should have at least 20–40% foreign faculty members, and 10–20% international students. Annually, each faculty contributes six papers on average. Student tuitions represent less than 25% of the total income. In practice, Salmi (2009) concluded that generally, most nations would adopt one of three major strategies for establishing world class universities: upgrading a small number of existing universities; merging existing institutions into a new university; or creating a new one. Marginson (2011) specifically proposed that the establishment of a world class university undergoes three phases: developing international capacity; building global connectedness; and engaging administrators, faculty and staff in global activities.

Table 5.1 Geographical allocation of excellence initiatives by regions

Region	1989–2004		2005–2016	
Africa	–	0	Nigeria	1
Asia	Australia, China, Hong Kong, Japan, New Zealand, South Korea	8	China, India, Japan, Malaysia, Singapore, South Korea, Taiwan, Thailand	14
Europe	Denmark, Finland, Ireland, Norway	4	Denmark, France, Germany, Luxembourg, Norway, Poland, Russian Federation, Slovenia, Spain, Sweden	19
Middle East	–	0	Israel, Saudi Arabia	2
North America	Canada	1	Canada	1

Source Salmi (2015a)

The literature highlights that there is a strong association between building world class universities and national policy in higher education excellence initiatives. Excellence initiatives were adopted as a national strategy to restructure higher education landscape and enhance international competitiveness, particularly in many non-English speaking countries, including Germany, France, and Asian nations (Shin & Kehm, 2013). Meanwhile, when the establishment of world class universities becomes part of the national agenda, excellence initiatives are implemented in an effort to achieve world class status (Yonezawa & Hou, 2014). According to Salmi (2015a), the number of national excellence initiatives in Asia was only eight before 2004. Up to 2016, there were 14 excellence programs in China, India, Japan, Malaysia, Singapore, South Korea, Taiwan, and Thailand. In addition, the number of excellence initiatives in Europe had increased rapidly over a decade (Table 5.1).

Most excellence initiatives adopted "selection and concentration" policies with regard to public investment in higher education. Investment under the principle of selection and concentration as an antonym of piecemeal or incremental is a term used frequently in public administration and business management, and is recognized as an adequate approach in the more severe competition of the global age. On the other hand, selection and concentration also means the actual reallocation of resources through drastic cuts to public expenditure in other existing budgetary items (Yonezawa & Hou, 2014; Salmi, 2016). With selection and concentration policies, elitist universities are able to boost research productivities, attract talented scholars, recruit international students, and provide more English taught programs.

Kehm (2013) indicates that world class universities, with the support of excellence initiatives, would likely contribute positively toward higher education systems by creating an injection of external resources into higher education as a whole, and through increased effective governance and innovation in teaching and learning via a concentrated funding policy. Most importantly, it was believed that the reputation of higher education as a whole would be promoted and recognized worldwide. Although it is not easy to measure the effectiveness and impact of excellence initiatives on the selected universities (Salmi, 2016), some of the literature provides critical reflections

on the elitist university making policy. Due to the fact that concentrating resources in a few selected universities would "lead to a neglect of the ordinary universities" (Cremonini et al., 2013, p. 101), Salmi (2016) notes that "policy makers and university leaders must keep in mind the risk of harmful effects on teaching and learning quality because of the research emphasis of most excellence initiatives" (p. 18). As J. Lo (2019) states, the process of building world class universities has resulted in a strong tendency toward homogenization under the influence of Western hegemony, as well as the weak connection between universities and local communities in pursuit of academic excellence. In fact, there has been continuous debate over the effect of these policies and on the performance of the recipients of this concentrated funding within each nation.

Despite these issues, Asian nations—particularly China, South Korea, Japan, and Taiwan—still hope that the selection and concentration policy will have the same result for them as it has had for the US and the UK. In general, the Asian nations have aimed at building world class universities, attracting more international talent, and enhancing the reputation of their higher education system, as well as developing global competitiveness (Table 5.2).

5.3 Development of Excellence Initiatives in Taiwan Higher Education from 2005 to 2016: Were World Class Universities Being Built?

With the selection and concentration policy, the MOE launched three main excellence projects based on the mission and objectives: the Development Plan for World Class Universities and Research Centers of Excellence (2005–2016); the Teaching Excellence Initiative (2005–2016); and the Technological University Paradigms (2013) (Authors, 2012; Department of Higher Education, 2011).

5.3.1 Development Plan for World Class Universities and Research Centers of Excellence (2005–2016)

In its quest for a world class university, the Taiwanese government launched the Development Plan for World Class Universities and Research Centers of Excellence in 2005. As indicated in the previous section, the program aimed to develop at least one university that would be one of the world's top 100 universities after five years, and at least 15 key departments or cross-campus research centers as the top in Asia in ten years. The second phase from 2011 to 2016 changed the program's name to Aim for the Top University Project ~~Moving into Top Universities Program~~, and continued the aim of building a world class university based on the achievements of the first phase. It set five specific goals, including internationalizing top universities and

Table 5.2 Comparison of excellence programs in China, South Korea, Japan, and Taiwan by 2015

	China 985	Korean Brain 21	Japanese COE and Global 30	Taiwan 5 year 50 Billion
Starting year	Phase one: 1998–2003 Phase two: 2004–2007	Phase one: 1999–2005 Phase two: 2006–2012 (7 years)	COE: 2002–2007 Global 30: 2008–	Phase one: Five-year 50 Billion Program: 2006–2010 Phase two (Aiming for the Top University Project): 2011–2015
Goal and mission	Developing 10 Chinese universities to global rankings	Cultivating global leaders	Recruiting 300,000 international students	Developing at least one university as one of the world's top 100 universities in five years and 10 fields or research centers as "world class"
Focus	Research/international reputation	Ph.D. programs/future leaders	Internationalization/economic growth	Research/international reputation
Number of recipients	39–49 universities	67 universities	19–30 universities	11–12 universities
Total funding	US$5 billion	US$3.5 billion	US$2.5 billion	US$1.67 billion

Source By author

broadening students' global perspectives, promoting universities' research and innovation quality, building international capacity of faculties and students, strengthening collaboration between universities and industry, and enhancing graduates' competence in response to social and market demands (Department of Higher Education, 2011).

At the initial stage, all universities and colleges were equally encouraged to apply for the Excellence Program, although they had to meet the basic requirement of at least USD10,000 expenditure per student first. However, in order to promote two major national polices of National University Corporation and institutional mergers, public university applicants had to promise that they would incorporate themselves as an autonomous institution and develop their own educational initiatives. They were also required to make a separate proposal as supplements. Institutions, whether public or private universities, that were willing to merge together to strengthen their global edge were advised to make a strategic plan to realize their ambition.

Considering the universities' complaints, the MOE did not adopt incorporation and merger as requirements in the second phase, but new applicants had to meet three of the following criteria: 85% of teaching faculty members above assistant professor level; a student/faculty ratio below 25:1; total number of citations over the last 11 years in the international top 1%; 90% of programs accredited or recipients of the Teaching Excellence Program (Department of Higher Education, 2011). Generally speaking, in addition to the goal of topping world rankings, recipient universities in the Research excellence program were also expected to "develop more international counterparts, broaden the global outlook of faculty members and students, and better meet the needs of the local industry by turning themselves into an R&D hub that excels in both academic research and practical applications" (Department of Higher Education, 2013, p. 27).

Twelve universities received a grant in the first phase from 2006 to 2010. National Taiwan University received $500 million, up to 30% of the total funds available, compared to National Cheng Kung University with 17%, National Tsing Hue University with 11.2%, and National Chiao Tung University with 8.6%. Five recipients were funded with less than 5% of the total. Only two private universities were funded initially, but one of them was not funded after 2008 (Table 5.3).

A total number of 30 universities applied for the grant in the second phase. After careful evaluation of the quantitative and qualitative achievements of each applicant, including a meticulous assessment of its world ranking status, research and teaching quality, and effectiveness in the first phase, 12 institutions were awarded subsidies through block funding, including 11 public universities and one private university (Department of Higher Education, 2014) (Table 5.4).

Table 5.3 MOE grants received by Taiwan's Universities in the first phase (2006–2010) (USD in million)

Institutions	2006	2007	2008	2009	2010	2006–2010 (%)	
National Taiwan University	100.0	100.0	100.0	100.0	100.0	500	30
National Cheng Kung University	56.7	56.7	56.7	56.7	56.7	283.5	17
National Tsing Hua University	33.3	33.3	40.0	40.0	40.0	186.6	11.2
National Chiao Tung University	26.7	26.7	30.0	30.0	30.0	143.4	8.6
National Central University	20.0	20.0	23.3	23.3	23.3	109.9	6.6
National Sun Yat-sen University	20.0	20.0	20.0	20.0	20.0	100	6
National Yang Ming University	16.7	16.7	16.7	16.7	16.7	83.5	5
National Chung Hsing University	13.3	13.3	15.0	15.0	15.0	71.6	4.3
National Taiwan University of Technology and Science	10.0	10.0	6.7	6.7	7.3	40.7	2.
National Cheng Chi University	6.8	10.0	6.7	6.7	6.7	36.9	2.2
Chang Gung University	10.0	10.0	6.7	6.7	6.7	40.1	2.4
Yuan Ze University	7.7	10.0	–	–	–	17.7	1.1
National Taiwan Normal University	–	–	–	–	–	0	
Total						1613.9	100

Source Department of Higher Education. (2011). *Development plan for world class universities and research centers of excellence*. Retrieved April, 2011, from http://www.edu.tw/high/itemize.aspx?itemize_sn=3520&pages=1&site_content_sn=1234

Table 5.4 MOE grants received by Taiwan's Universities in the second phase (2011–2016) (USD in million)

Institutions	2011	2012	2013	2014–2016	2011–2016 (%)	
National Taiwan University	103	103	103	206	515	32.3
National Cheng Kung University	53.3	53.3	53.3	103	262.9	16.5
National Tsing Hua University	40	40	40	82	202	12.6
National Chiao Tung University	33	33	33	68.7	167.7	10.5
National Central University	23.3	23.3	23.3	47.3	117.2	7.3
National Sun Yat-sen University	13.3	13.3	13.3	26.7	66.6	4.2
National Yang Ming University	16.7	16.7	16.7	33.3	83.4	5.2
National Chung Hsing University	10	10	10	20	50	3.1
National Taiwan University of Technology and Science	6.7	6.7	6.7	11.3	31.4	2.0
National Cheng Chi University	6.7	6.7	6.7	12.7	32.8	2.1
Chang Gung University	6.7	6.7	6.7	12.7	32.8	2.1
National Taiwan Normal University	6.7	6.7	6.7	13.3	33.4	2.1
Total					1595.2	100

Source Department of Higher Education. (2014). *Funding for 12 selected universities by Aim for the Top University Project*. Retrieved November, 2019 from https://depart.moe.edu.tw/ED2200/News_Content.aspx?n=90774906111B0527&sms=F0EAFEB716DE7FFA&s=BA25383ABEF34933

5.3.2 *Teaching Excellence Program vs. Technological University Paradigms*

In contrast to the Development Plan for World Class Universities and Research Centers of Excellence (2005–2016) project, the Teaching Excellence Program focused more on teaching quality enhancement and curriculum reform, rather than research output. The most significant difference was that it emphasized that recipients should enhance their learning and teaching infrastructure and develop their internal quality assurance mechanism through the intended learning outcomes. The MOE stated "It aims to upgrade the quality of teaching by instructors and learning by students alike" (MOE, 2013, p. 1). In the final phase (2013–2016) the recipient universities needed to strengthen curriculum contents of knowledge application in the job market—that is, universities were encouraged to integrate internship programs into curriculum design within credit system and nurture talented students in order to support national development. In total, the program was awarded to around 31–33 universities.

The other excellence initiative, the Technological University Paradigms, came later in 2013, aimed at assisting vocational education "with cultivating professionals and industry-academic cooperation and innovation R&D squarely at the center" (MOE, 2013, p. 3). The recipients were required to focus on industry-academic cooperative R&D through technology transfers. At the same time, faculty members were expected to improve teaching pedagogy to equip students with practical skills, knowledge, and employability. In addition, the recipients had to establish an incubation and innovation center in accordance with its own distinctive characteristics, which would drive the development of Taiwan local industries. From 2013 to 2016, 12 selected universities of technology were awarded with a total of USD 200 million.

In comparison, 12 selected research universities, accounting for 7.3% of all Taiwanese higher education institutions, were granted the Development Plan for World Class Universities and Research Centers of Excellence, with a total of USD 3.3 billion, compared with 31–33 teaching excellence recipients awarded USD 530 million, and 12 Technological University Paradigms with USD 200 million. The Taiwanese government allocated most resources to selected research institutions, with 85% of the total budget aimed at building several world class research universities, 4.2% for building world class universities, 1.3% for the Teaching Excellence Project, and 0.54% for Promoting Technology Excellence.

Has Taiwan actually built several world class universities with the support of excellence initiatives? From the global rankings results, the answer is yes. The data shows that there has been a significant increase in the number of top ranked 500 universities, and in the quantity and quality of research outputs from 2005 to 2016. The number of top ranked Taiwanese universities rose from five in 2005 to seven in 2006 in the Shanghai academic ranking of world universities (ARWU); from one in 2005 to 11 in 2016 in QS World University Rankings; and from four in 2010 to seven in 2016 in the Times Higher Education World University Rankings (THE). On average, there were more than seven Taiwanese universities ranked in the top

500 by 2016. Regarding research output, the total number of publications almost doubled from 16,126 in 2005 to 26,271 in 2016. Citation impact increased from 0.88 in 2005 to 0.96 in 2016 (Huang, 2019). Salmi (2016) asserts that Taiwan's excellence initiatives "have facilitated sustained investment in support of their top universities" (p. 18).

5.3.3 Universities' Responses and Societal Expectation

In spite of great achievements in research outputs, the government, as requested by the academic community, began to review the impact and effectiveness of selection and concentration policy on Taiwanese higher education (Hou, Ince, & Chiang, 2012a). A MOE report on the impacts of Research Excellence Initiative by Hou et al. (2016) showed that selected university leaders expressed their concerns over funding sustainability, unclear definition of internationalization, and limited support for research centers' operation. Most universities were worried about the problems of reliability of global rankings and the obsession with global ranking races in Taiwanese society. In addition, some evidence demonstrated that selected universities of the Research excellence program did not perform as well as expected in national accreditation, which led to increased public apprehension over the teaching quality of the selected research universities (Hou, 2011).

5.4 Higher Education Sprout Project in Search of Egalitarianism

Due to dissatisfaction with former President Ma Ying-jeou's pro-China policies, on May 20, 2016, Dr. Tsai Ing-wen, the chairman of the opposition party—the Democratic Progressive Party (DPP)—was elected as the first female President of Taiwan, and the DPP also gained a majority in the Legislative Yuan for the first time. The doctrine of egalitarianism, which emphasizes that people should be treated equally regardless of distinctions such as social class, ethnicity, and gender, was adopted by the Tsai administration in their educational policy (DDP, 2019; Zha, 2013). The problems created by excellence initiatives and a world class university building policy have been voiced again. As a result, the selection and concentration funding schemes of the former KMT government in support of world class university building were immediately overruled. The heavily debated issue of elitism versus egalitarianism led to the emergence of the Higher Education Sprout Project, which was regarded as a reflection of extremist elitism and obsessive pursuit of global rankings.

With a new focus on university social responsibility and equity in higher education accessibility, in 2017 the Tsai administration launched the five-year Higher Education Sprout Project, which is expected to cultivate a variety of high-quality talent at all levels and help universities develop their features and competitiveness. In order to achieve the above objectives, universities are encouraged to engage local communities closely in addition to striving for global outreach. In contrast to the previous two cycles of excellence initiatives for a few selected universities, the new project took an egalitarian approach and awarded a total of 156 institutions. It meant that all types of higher education providers were now eligible for government funding grants. The project is expected to accomplish four goals: implementing teaching innovation; developing universities' features and uniqueness; improving public goods; and fulfilling social responsibilities (MOE, 2017a). Likewise, the project attempts to strike a well-balanced emphasis on student teaching quality and research outputs.

The project is divided into two parts. The first part aims to improve university education comprehensively and promote higher education diversification, to secure students' right to education. The second part, named Global Taiwan, aimed at propelling universities to the sphere of excellence and building leading research centers (MOE, 2017b). Initially, all institutions were funded with a total of USD 326.7 million each year, including two subsections, USD 20.6 million at University Social Responsibility program (USR), USD 20.6 million and USD 23.97 million at Support for Underprivileged Students program respectively; the second part allocated USD 182.19 million for four selected research universities and 24 research centers. Four selected universities were selected for part two: National Taiwan University, National Cheng Kung University, National Chiao Tung University, and National Tsing Hua University (Huang, 2019). In contrast to the more than 85% of funding allocated to 12 research universities and research centers, only 35.8% is distributed to 24 research-oriented institutions (Table 5.5). In particular, the funding for National Taiwan University has dropped drastically from USD 100 million in the previous excellence initiative to USD 56.7 million in the Higher Education Sprout Project, a reduction rate of 56%.

5.5 Impact, Challenges, and Role of Government in World Class Universities Building in Taiwan

5.5.1 Global Competitiveness Is Declining Gradually

When the Tsai administration initiated a more egalitarian approach with the Higher Education Sprout Project, Taiwan's academics expressed concerns over whether the global competitiveness of Taiwan's top research universities would be gradually eroded. It appears these concerns are coming to fruition. According to WoS and Scopus databases, the number of papers published by four selected Taiwan universities—National Taiwan University, National Cheng Kung University, National Chiao

Tung University, National Tsing Hua University—dropped drastically from 2015 to 2017, and the same pattern was seen across all Taiwan's universities (Table 5.6). It was also found that there is a high correlation between the number of publications and the funding awarded after examining the relationship between them (Table 5.7). It demonstrated that the government funding cut impacted research output significantly after 2016.

Table 5.5 Comparison between Taiwan HE initiatives before and after 2016

	Three excellence initiatives	Higher Education Sprout Project
Year launched	2005/2016	2017–
Focus	1. Pursuit of excellence 2. Building world class universities 3. Selection and concentration	1. Teaching quality and learning outcomes focused 2. University social responsibility 3. Global competitiveness 4. Egalitarianism
Funding	Five years 16.66 billion	Part I: US 326.7 million each year Part II: US 182.19 million
Number of participating institutions	1. Research Excellence: 12 2. Teaching Excellence: 31–33 3. University and Industry Collaboration Excellence: 12	Part I: 156 Part II: global Taiwan (top ranked institutions)—4 global Taiwan (research center)—24
Impacts/challenges	1. Increasing research output 2. A number of universities were ranked top 500	1. Funding scheme shifts from con in a wider dispersion approach 2. Decreasing research outputs

Table 5.6 Number of publications from Taiwan's Universities by WoS and SCOPUS

Database	WoS			SCOPUS		
Year	2015	2016	2017	2015	2016	2017
National Chiao Tung University	1585	1574	1469	1598	1610	1514
National Cheng Kung University	2506	2491	2319	2671	2565	2407
National Tsing Hua University	1714	1674	1572	1787	1785	1668
National Taiwan University	5055	4740	4679	5319	5042	4981
Average on four institutions	2715	2620	2510	2668	2567	2466
In Total (all Taiwan's universities)	27,074	26,902	25,663	28,989	28,502	27,137

Source Authors

Table 5.7 Correlation between number of papers and funding awarded

National Chiao Tung University	2016		2017	
	1574 (No of papers)	33 (Million)	1469 (No of papers)	33 (Million)
National Cheng Kung University	2491	53.3	2319	37
National Tsing Hua University	1674	40	1572	33
National Taiwan University	4740	103	4679	60
Correlation coefficient	0.998		0.994	

Source Authors

5.5.2 *Ranking Syndrome: To Be or Not to Be a World Class University?*

Examining current global ranking outcomes, it can be seen that universities in the top rankings have many of these attributes, such as publications, funding, etc. Many nations tend to use rankings as a basis for building world class universities despite their well-documented methodological flaws, particularly reductionism, where the nature of higher education quality is reduced to one or two simple or fundamental measurements (Hou, 2012; Lo, 2014). Since the excellence initiative was launched in 2005, there has been widespread discussion of the appropriate use of global rankings for measuring selected research universities in Taiwan. Altbach (2015) warns that "using citation counts as a way of measuring excellence presents serious problems," because these data "emphasize material in English and journals that are readily available in the larger academic systems," such as the UK and the US (pp. 1–2).

It is nevertheless evident that there is indeed a high correlation between the global ranking of institutions and their funding from government. World class university building would likely accelerate inequality in Taiwan higher education. Global ranking inevitably causes fiercer competition between Taiwan's universities and triggers tensions and confrontations over the allocation of government resources between selected and nonselected institutions. The more funding the institution gains, the higher its global ranking, which makes "ordinary" institutions worry that a poor global ranking might marginalize them in Taiwanese higher education.

As a matter of fact, Taiwan did attempt to launch its own ranking systems in both global and local levels in order to play a more proactive role in response to pressure brought about by the world class university movement. Early in 2003, the first college ranking nationwide was published by Tamkang University on a basis of calculation of 8 criteria with 16 indicators to assess overall performance of Taiwan's universities, which drew great attention but severe criticism from universities. In 2007, the Performance Ranking of Scientific Papers for World Universities' from the Higher Education Evaluation & Accreditation Council of Taiwan (HEEACT),

was calculated on the basis of the quantity and quality of papers on the Science Citation Index (SCI) and Social Science Citation Index (SSCI) journals and has been published annually since 2007 (Hou, Morse, & Chiang, 2012b). Yet, these two rankings were terminated respectively in 2012 and 2016 due to political pressures and strong feeling of antagonism from universities. As Salmi (2015b) stated, "The focus on world-class universities is likely to further promote elitism. In the search for academic excellence, top universities are very selective, which bears the risk of keeping away talented students from families with low-cultural capital" (p. 18). Mok (2016) noted that two serious consequences had emerged in Asia under "ranking syndrome", "first, a stratifying of universities and; second, negative impacts upon students – particularly those who fail to get a place at one of the highly ranked universities, which, for the student, can result in being perceived as a second-class citizen" (p. 1).

5.5.3 Political Factors Matter in Building World Class Universities

Over the decades, the nation-state has continued to play a dominant role in policy shifts regarding Taiwan's higher education development and governance. This engagement has largely taken place irrespective of the type of policy change in place: transformation from the aim of building world class universities to a new focus on social impact and responsibilities; from a selection and concentration-based funding scheme to an egalitarian approach; and from accountability to autonomy. As Lo (2019) argues, "on this basis, it is suggested that the reorientation reveals an attempt to balance the external/global trends and requirements (which are revealed by the world-class movement) and the internal/local pressures (which are institutionalized by democratic elements in higher education governance)" (p. 4). Concerns remain that policy connected strongly with local politics could to some extent destroy the sustainable development of education when a new administration takes office.

Over the past decade, the Taiwanese government has endeavored to elevate the top universities to world class status by launching numerous excellence initiatives. Although there has been remarkable progress, several challenges remain in respect to continuity and transformation amidst fierce competition for global positioning and wider participation by internationally competitive universities, particularly with a new direction for Higher Education Sprout Project. Building world class universities nevertheless remains necessary if Taiwan's government is to further its impressive economic progress and global influence. The importance of human resource development must be stressed in world class universities if they are to achieve excellence in research performance. Although the Tsai administration reorients the focus of previous excellence initiatives, establishing world class universities remains desirable for Taiwan's future.

5.5.4 *Implication of Academic Ethics and Integrity in Science and Social Science Researches as a Growing Concern in Governmental Policy*

Due to the severe competitions in research publications globally and nationally under the world class university building initiative schemes, academic integrity has become a growing issue in Taiwan society. Several cases in academic corruption from well-known universities in Taiwan appeared over years, which had forced the government to make a clear policy over research misconducts and to regulate academic integrity in all public and private universities. Early in 1996, a Joint Institutional Review Boards (IRB) has been set up for medical research with the endorsement of the government (Medical Research Ethical Foundation, 2020). Under the law of Human Subjects Research Act enacted in 2011 and revised in 2019, the implication of IRB becomes imperative to all types of related human subject studies done by the investigators. The purpose of the law aims to ensure the quality of academic researches, research design in order to protect the participants in the study (Ministry of Health, 2019).

In 2017, Ministry of Education requested all universities and colleges to set up code for research ethics, providing training workshops for researchers, and streamlining the handling procedures of research misconduct cases in accordance with the regulation of Ministry of Science and Technology. In other words, IRB is considered as the basic requirement for the governmental research funding and subsidies. In support of universities and individual researchers, Ministry of Education set up Center for Taiwan Academic Research Ethics Education (AREE) in 2014 to offer online platform of Academic Ethics and Research Integrity in Taiwan higher education (Center for Taiwan Academic Research Ethics Education, 2020).

5.6 Concluding Remarks

This chapter has described and discussed how Taiwan's government strategically built world class universities through excellence initiatives, as well as why the new policy was initiated based on the doctrine of egalitarianism after 2016. Following the selection and concentration policy prior to 2016, it was found that Taiwan had successfully established a few top ranked universities with a significant increase in research outputs. However, the Taiwan case also demonstrates that the worries about inequality became realities in Taiwanese society. Additionally, Taiwan's experience shows that controversy over using or not using rankings to build world class universities still exists between institutions and the government. In responding to the negative impacts, the 2017 Higher Education Sprout Project requested the selective research institutions in Taiwan to demonstrate university social responsibility and local community engagement. Concurrently, the fact that a declining number of research outputs in the selected four top universities under the new initiatives caused academics and government to worry whether Taiwan universities would lose

global competitiveness in these years. Besides, academic integrity started to draw the attention of the higher education policymaking by the government.

In addressing the issues of world class universities, it should be noted that a clear vision, institutional features, favorable governance, and sufficient resources are all crucial if a university is to develop itself into a world class university. The example of Taiwan demonstrates that a world class university cannot be created overnight, and it may vanish under different government policy. As Salmi (2012) states, "there is no single road to excellence." Likewise, Daniel Lincoln says "excellence, like all things of abiding value, is a marathon, not a sprint." What kind of approach will enable a world class university to be built in Taiwan is still a noteworthy issue.

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Chapter 6
Internationalization and Universities in Taiwan: Policies, Practices, and Prospects

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Abstract Universities in Taiwan have undergone significant transformations in terms of institutional mission and vision. One of their main drivers has been the extraordinary development of internationalization. This chapter aims to decipher this powerful trend by focusing on four dimensions. First, we revisit the issues of inbound and outbound student mobility before the 1990s through a historical perspective; hence, we investigate why overseas Chinese students (海外華僑學生) were recruited to Taiwan and why local students seek to have higher degrees in Western countries. Second, we offer a systematic review of recent major internationalization policies. Efforts as a result of these policies include recruiting international students, strengthening cross-border cooperation, pursuing world-class universities, becoming higher education hubs, and forging an educational zone for economic purposes. Third, institutional restructuring at the university level is examined in relation to rationales and strategies for greater internationalization. Finally, this chapter discusses the issues and challenges that Taiwan has faced, including talent shortage, world-class universities, provider mobility, and increase in inbound student quality. These hurdles indicate the special efforts required for further development.

Keywords Internationalization · Student mobility · Institutional restructuring · Cross-border cooperation

6.1 Introduction

One of the most prominent phenomena in higher education over the past two decades has been internationalization. Transforming the operations of universities, changing the perceptions of the public toward them, and bringing unique educational experiences to staff members and students are some of its several remarkable effects. When we refer to the internationalization of higher education, we relate to many different matters simultaneously, such as international students, university rankings, studying

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abroad, joint degrees, international academic cooperation, exchange programs, sister schools, and international accreditation. This long list indicates that internationalization has been deeply rooted in the daily life at universities. Knight (2008) argues that four factors drive internationalization: social or cultural, political, economic, and academic factors. This classification reflects the complicated motivations of international engagement.

In this chapter, we aim to incorporate these macro perspectives into our examination of the historical developments before the 1990s in Taiwan, with a focus on inbound and outbound student mobility. The second part systematically reviews recent major internationalization policies, such as recruiting international students, strengthening cross-border cooperation, pursuing world-class universities, becoming a higher education hub, and forging an educational zone for economic purposes. Thirdly, institutional restructuring at the university level is examined in relation to internationalization concerning rationales, governance, operations, services, human resources, and specific prominent features. In the fourth section, we critically address the issues and challenges that Taiwan has faced in recent years. Finally, we conclude the chapter by identifying the implications of this study.

6.2 Historical Revisit: Inbound and Outbound Student Mobility

Two aspects of the historical development of Taiwanese universities speak about internationalization: inbound overseas Chinese and outbound local talent. The former highlights the experiences during which Taiwan became a leading study destination from the 1960s to the 1980s, inspired by political confrontation. In contrast, the outbound movement of local students overseas represents the need for talents to learn front-line knowledge in science and technology to raise the standards of the Taiwanese academic community and help the nation prosper; we then set out to briefly describe these two dimensions.

6.2.1 Inbound Mobility: The Political Intertwining Between Southeast Asia and Taiwan

Universities and higher education institutions (HEIs) in Taiwan have engaged in internationalization since the 1950s as a major destination for the Asia Pacific region due to Taiwan's peculiar history of segregation from mainland China. As is widely known, Taiwan retained its independent position after the civil war in China in 1949. In strengthening its legal status and intellectual attraction in the international stage, Taiwan began to systematically recruit overseas Chinese student (海外華僑學生, 簡

稱僑生) since the mid-1950s. Politically, Taiwan reacted to the opposition from mainland China by seeking overseas Chinese assistance and recognition or legitimacy. During the 1960s and the 1970s, Taiwan had to preserve international recognition and legitimacy to keep its political status in the United Nations. Therefore, one of the effective strategies to enhance its visibility and connection became education diplomacy. Overseas Chinese students were sponsored to study in Taiwanese universities throughout the 1950s until the late 1990s. Both short-term (skill training) and long-term (degree-seeking) students were welcomed. In deepening their acceptance and linkage to Taiwan, they were encouraged to settle down and granted a Taiwanese identity or passport.

Before the late 1980s, Taiwan portrayed itself as the cultural homeland for overseas Chinese students, who were regarded as ethnic nationals or "one of us" in Taiwan and treated as quasi-citizens, receiving special treatment such as permanent residency, employment, or health care. By participating in the Taiwanese education system, these overseas Chinese students acted as the primary channel to strengthen the undiplomatic relationship with these countries. Political motivation thus was the major propeller to internationalize universities through recruiting nonlocal students.

An examination of sources about overseas Chinese students reveals that they predominantly came from the Asia-Pacific region. Table 6.1 presents the fluctuations of student inflow from Southeastern Asia between 1995 and 2016. The primary sending countries throughout this period were Burma, Hong Kong and Macao, Indonesia, Malaysia, Thailand, and Vietnam. Before the 1990s, the number of overseas Chinese students gradually increased along with a rise in Taiwan's economic growth. Given the political dispute of national identity within the island, the influx of overseas Chinese students was not so favorable at the policy level during the 1990s, as they were not regarded as local Taiwanese ethnically. Nevertheless, the scenario changed again after the year 2000 in line with the rise in internationalization: Chinese students were increasingly deemed as beneficial to university competitiveness and talent attraction at the international level. Their number thus expanded significantly after 2002. Currently, there are more than 32,000 overseas Chinese students in Taiwan.

An investigation of the history of overseas Chinese students and their connection to the changes in the international political economy reveals that inbound students as a whole, as shown in Fig. 6.1, are also changing. Before the mid-1990s, the number of international students (holding foreign passports) had been consistently stagnant, as they were useless as political symbols in Taiwan. However, as argued previously, the rise in international competition within the economic arena triggered the inflow of students to Taiwan. Before 2000, overseas Chinese students had been more than foreign students. However, such a comparison is reversed in terms of much more foreign ones. Nevertheless, both numbers rose after 1997, signifying the increasing importance of inbound students for internationalization.

The inbound movement of nonlocal students before the 1980s had been constant in Taiwan since it previously already was a major destination for some overseas Chinese. Such inflow of students indicates that Taiwan is a recipient country with a better academic environment, higher living standards, and a more stable political

Table 6.1 Inbound overseas students to Taiwan from 1955 to 2016

	1955–1981	1982–1986	1987–1991	1992–1996	1997–2001	2002–2006	2007–2011	2012–2016
Brunei	227	69	84	83	42	4	13	24
Burma	1,330	537	916	523	400	1,656	1,227	831
Cambodia	275	120	36	6	–	0	1	0
HK & Macao	12,245	4,078	4,550	3,295	2,208	6,386	10,853	17,211
India	125	9	9	16	25	123	26	2
Indonesia	3,075	784	816	364	351	973	1,596	1,998
Korea	2,842	1,278	996	432	276	258	229	237
Laos	512	156	14	–	–	0	1	4
Malaysia	9,649	3,553	3,406	3,267	2,404	4,789	5,930	10,557
Philippines	400	27	45	21	8	11	46	72
Singapore	314	133	132	101	37	70	105	113
Thailand	735	403	422	191	85	254	484	347
Vietnam	3,089	303	183	47	27	69	204	570
Total	34,818	11,450	11,609	8,346	5,863	14,593	20,715	31,976

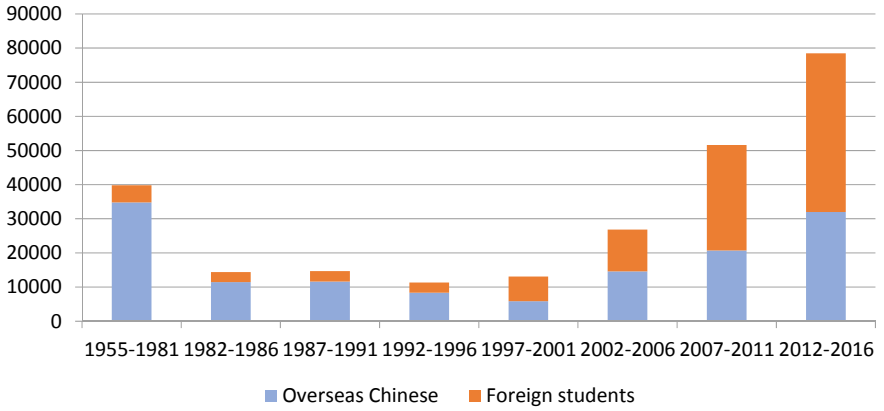

Fig. 6.1 Changing numbers of nonlocal students from Southeast Asia to Taiwan

atmosphere when compared to other Southeastern Asian countries. Nevertheless, in pursuit of leading knowledge and scientific innovation in higher education, some talented Taiwanese students chose to study abroad beginning in the mid-1960s.

6.2.2 Outbound Talent: An American Dream

As previously demonstrated, talented students began to seek better education since the 1960s based on two motivations. On the one hand, the unstable political confrontation with China inspired a few students to undergo economic migration through the education channel in the form of studying abroad; one the other hand, the government in Taiwan become aware of the fact that sending students to gain cutting-edge and frontier knowledge in scientific areas could bring a prosperous future for this island country. Both factors contributed to the outbound talent seeking of higher scientific training, particularly in America.

As claimed by an old saying at National Taiwan University (NTU), "Come! Come! Come! Come to NTU. Go, Go, Go, Go to America" (來來來, 來台大; 去去去, 去美國). This proverb demonstrates that the top students in this island targeted American higher education institutions, while NTU was a relay station only. At its peak, the number of outbound students was more than 40,000 per year, causing substantial social debate and developmental issues. First of all, few local students returned to Taiwan when finishing their degrees overseas, as they had already found a better career in America. Such brain drain prevented the accumulation or formation of a local academic and knowledge system as they remained with overseas organizations. Secondly, substantial subsidies were granted due to the abundant government scholarships offered to these talented students. However, after two decades of "vertical mobility" from Taiwan to Western countries, horizontal mobility has gradually taken

place in Taiwan and other countries (Chan, 2012). As we have seen in Table 6.1, more diverse international students originated from neighboring countries. These new achievements can be at least partially attributed to the active policies, initiatives, and schemes aiming for greater internationalization. We will illustrate these new plans in the next section.

6.3 Contemporary Major Policies: International Competition, Pursuit of Excellence, and Talent Recruitment

This section illustrates how the government in Taiwan incorporates the international dimensions into the higher education sector by referring to the seminal works by Jane Knight (2004) and Hans de Wit (2008). Their original ideas on internationalization can help us to pinpoint the precise positions of mainstream discourses and approaches adopted in Taiwan. As Knight (2004) argues,

> there are many different approaches to addressing the process of internationalization…. An approach to internationalization reflects or characterizes the values, priorities, and actions that are exhibited during the work toward implementing internationalization. (p. 18)

We do believe that the Taiwanese approach, to some extent, has been unique in expressing its values and priorities over the past two decades. The timeline to review the current main policies starts from the early 2000s, as there was no systematic or careful planning for internationalization at the national level before then. Table 6.2 summarizes the main policies and initiatives adopted since the twenty-first century in Taiwan. However, we will mainly focus on the education and learning dimensions of internationalization instead of research, which is another major aspect to be explored independently (please refer to Chan, Yang, & Tai, 2020, for details).

The first document that formally touches upon the international dimensions is the *White Paper for Universities*. In 2001, this official paper formally identified the problem that "the degree of internationalization [was] insufficient" (Ministry of Education Taiwan, 2001, p. 54). As we have seen, universities had been domestic- or national-oriented, having a limited connection with the outside world except for inbound overseas Chinese and outbound degree seekers. Therefore, the universities were criticized for not being internationalized. In reaction to such concern, two related programs—Enhancing International Competitiveness of University Plan and Improving English Proficiency of Higher Education Students—were released in 2002 to remedy this deficiency. The adopted strategies intended to enhance engagement with foreign universities through greater mobility and better language proficiency. The proposed channels included the promotion of the personnel exchange (faculty and students), conference participation, and the establishment of joint programs or degrees. Indeed, raising the English proficiency of university students has plaid a key part in deepening internationalization. These were short-lived schemes, as they were replaced by more overarching plans launched later.

Table 6.2 Main internationalization policies and initiatives since 2000

Year	Policy/Initiative	Notes (international elements)
2001	White Paper for Universities	Lack of internationalization in universities
2002	Enhancing Universities International Competitiveness Project	Personnel exchange program, conference attendance, and academic cooperation
	Funding scheme for enhancing students' foreign language proficiency at technological institutions	English-taught programs and foreign language enhancement for students
2003	Higher Education Macro Planning Commission (HEMPC)	Proposal over "selection and concentration" policy for international excellence
2004	Expanding recruitment of foreign students	Included as national key development plan by Executive Yuan
2005	Aim for the Top University Project and Research Centers of Excellence Initiative	Aiming for world-class universities and excellent research centers
2006	Foundation for International Cooperation in Higher Education of Taiwan (FICHET)	A government-funded foundation to promote Taiwanese higher education overseas. There are 10 centers now in Asia
	Higher Education Evaluation and Accreditation Council of Taiwa n (HEEACT)	A professional quality assurance agency for cross-border quality assurance and recognition
2009	Policy Blueprint on foreign student recruitment at higher education	Recruiting foreign student
2010	Recruiting students from China	Conditional admittance (三限六不)
2011	Study in Taiwan Enhancement Program	Having more students
	The Construction of Higher Education Center in East Asia	Recruiting students from Southeast Asia and China
2013	Whitepaper for Talent Cultivation	Aims for talent nurturing, retention, and attraction
	Free Economic Pilot Zone	Education innovation to host international cooperation/branch campus
2016	New Southbound Policy	Deepening cooperation with Southeastern Asia countries
2017	International Industry-University Cooperation Bachelor Degree Program (New Southbound International Industry-University Cooperation Program)	Collaboration with industries by providing internship training; now 69 programs run by technological universities
2017	Higher Education Sprout Project	Funded for Global Taiwan and excellent research centers
2018	Global Talent Recruitment Program (Yushan Scholar Program)	Attracting leading international scholars to Taiwan

The following policies centered on the pursuit of university excellence and international student recruitment (Deem, Mok, & Lucas, 2008). With the greater pursuit of a world-class university and the new positioning of the nation-state on the global stage, the Ministry of Education (MOE) in Taiwan began to engage in the construction of world-class universities in the early 2000s. The Higher Education Macro Planning (HEMP) (高等教育宏觀規劃) was initiated by the Executive *Yuan* (行政院) to propel the development of higher education and the country's international competitiveness. Proposals for "selection and concentration" (擇優與集中) of international excellence were prevalent during this time. Research-intensive universities were set to be funded for their academic performance by concentrating on selective institutions. This imperative was triggered by the worldwide movement of university league tables initially ignited by the Academic Ranking of World Universities (Shanghai Ranking). In echoing this academic competition and international visibility, the Development Plan for World-class Universities and Research Centers of Excellence Initiative was implemented by MOE in 2005. Only 12 universities were selected and funded, as the initiative targeted the leading position of academic excellence. The main concern for such initiatives was to raise the research standards and international publications to enhance international competitiveness on the global stage. Indeed, creating a higher proportion of foreign staff and students on campus has been the main criterion to achieve better rankings. Due to such external stimuli and internal drivers for better national development as a whole, excellence initiatives have been enormous enablers in transforming the higher education sector for research production and attracting inbound overseas students (Tang, 2019).

One of the prominent measures in Taiwan to internationalize higher education has been the recruitment of international students, thus emulating many Western and Asian countries (Mok & Yu, 2016). Several policies or initiatives revolve around recruiting nonlocal students. The Executive Yuan (行政院) in 2004 announced that "expanding recruitment of foreign students" was included in its national key development plan. Five years later, in 2009, a Policy Blueprint was released, stressing the importance of admitting nonlocal students. In expanding the intake of Chinese students, several laws and regulations were revised by recognizing China's degree and qualifications and thus accepting its students. Though with some conditions (six limitations and three rejections), intensified bilateral student mobility is accelerating between Taiwan and China (Chan, 2014). The reelection of President Ying-Jeou Ma in 2012 led him to make a proposal for erecting Taiwan as a higher education center in East Asia (東亞高等教育重鎮). In terms of creating an education hub *par excellence* (Lee, 2015), this policy would indeed establish Taiwan itself as a key player by exporting its higher education industry to neighboring countries. By nurturing talent in Southeast Asia and China, Taiwan can serve as the talent hub for East Asia. Among the admitted students, some would come to Taiwan to learn Mandarin—an advantageous language considering the economic rise of China. This move also indicates that education is deployed to exercise its soft power as cultural currency (Lee, 2015).

The Foundation for International Cooperation in Higher Education of Taiwan (FICHET) was jointly established by MOE and all universities in 2006 to promote

Taiwanese higher education abroad by facilitating international cooperation, educational exhibition, conference hosting, and the promotion of Taiwanese academics and culture. Furthermore, Taiwanese education centers funded by the government and operated by universities have been set up across several Asian countries, with 10 centers now located in Japan, Korea, Thailand, Malaysia, Vietnam, Mongolia, and Indonesia. The centers provide information about education in Taiwan, thus helping recruit students from host countries.

The world has witnessed intensified internationalization, the integration of global trade and commercial activities, and changing social and demographic structures, and it is time for Taiwan to adapt. The Whitepaper for Talent Cultivation (人才培育白皮書) lists the enhancement of "students' international competitiveness" as one of its main goals. Released in 2013, it highlights that students should be equipped with international mobility, foreign language proficiency, multicultural literacy, and global citizenship. Nevertheless, this white paper asserts that "our internationalized talent distribution and mobility are too shallow and supercritical." This is due to the fact that we "lack strategic talent distribution for internationalization" and have an "incomplete international learning environment." Such claims are critical self-reflections on the deepening internationalization.

In order to extend the internationalized learning environment and education innovation, a Free Economic Pilot Zone was proposed in 2013. Under this virtual free trade zone, foreign education providers would have been allowed to operate their branch campus or set up joint programs with local higher education institutions. However, this pilot project never saw the light due to incomplete lawmaking, possibly due to regulations, quality of inbound providers, competition with local providers, and degree mills. This proposal was put aside with the change in the ruling party. Since the election of President Ing-Wen Tsai, internationalization has translated into greater cooperation with Southeast Asian countries. The New Southbound Policy (新南向計畫) was strategically launched in 2016 to enhance the integration with this wider region socially, economically, and educationally. Subsequently, the International Industry-University Cooperation Bachelor Degree Program (新南向國際產學合作專班) was released in 2017, endorsing the macro vision proposed by President Ing-Wen Tasi. The program admits students from Southeast Asia in cooperation with industries under the hope that these students can be trained with hands-on skills.

Extending the effort of the Development Plan for World-class Universities and Research Centers of Excellence Initiative that ended in 2015, a new higher education policy—Higher Education Sprout Project (高等教育深耕計畫)—started in 2018. This project integrates various purposes, such as fostering teaching innovation, social responsibility, and research excellence into a comprehensive scheme. Unlike the previous project that focused on achieving academic excellence, the new scheme aims to ground the local, link the international, and embrace the future (連結在地、接軌國際及迎向未來). Research internationalization is not the only focus of the latest initiative, which pursues broader objectives such as teaching innovation. Only four universities were selected for global competition, while 65 research centers were funded separately to improve their academic performance. Furthermore, the Global

Talent Recruitment Program (Yushan Scholar Program) was implemented to recruit the brightest scholars with add-on salaries from overseas organizations. Such a move supports the stance that Taiwan should have better performance in university league tables and excellent research.

6.4 Institutional Rationales and Strategies for Greater Internationalization

As shown in the previous session, awareness of internationalization arose around the late 1990s and into the 2000s. Major university restructurings engaged through a deeper international dimension around the same time. Policy-driven development has had a direct impact on the institutional direction. Nevertheless, the achieved degree of internationalization in universities has been an improvement for the past two decades at the organizational level. This section is divided into three parts: the first one addresses the rationale behind Taiwanese universities pursuing internationalization; the second part assesses the adopted organizational strategies with reference to Knight's (2008) framework; and the final part focuses on further prominent features.

A wide range of motivations has been put forward to urge greater internationalization at the institutional level. Notable reasons include international branding and profiles, quality enhancement and international standards, income generation, student and staff development, strategic alliances, and knowledge production (Knight, 2004). Initially, the main motivations were to strengthen the exchange and cooperation with overseas partners following previous policies. However, the recently intensified actions have been highly related to international branding and profile, strategic alliances, and student exchange. In contrast, less attention is placed on international standards, income generation, or knowledge production because international connection and engagement can help local universities promote their image and branding at the international stage. Profile establishment, therefore, becomes an essential attraction for institutions to demonstrate their features and uniqueness with the public or potential students. Based on such intentions, strategic alliances with overseas partners through cooperative agreements are desirable and beneficial for both sides. In addition, student development and exchange are the main rationales for internationalization. Nearly all universities in Taiwan are keen to send their students to engage in short-term mobility for academic enrichment. Conversely, Taiwanese universities are not as keenly focused on achieving financial benefits as internationalization costs much more than having a surplus. Some university leaders even say that internationalization is a "money-losing business" (賠錢事業). Furthermore, the pursuit of international standards is increasingly less attractive as local universities become mature after two decades of development. The only exception is the adoption of international accreditation when branding themselves. Lastly, knowledge production is the least used rationale for internationalization since such motivation is highly associated with research excellence and academic development (Chan et al., 2020).

This reason is principally applied by research-intensive universities instead of other universities.

After understanding the main rationale for internationalization, we turn to the organizational strategies adopted by universities in Taiwan. Using the work of Knight (2008), Table 6.3 presents four dimensions and 16 items that highlight the overarching structures and practices applied to sustain proper internationalization. We can review

Table 6.3 Organizational strategies for internationalization

Dimensions	Items	Analysis on Taiwan
Governance	1. Expressed commitment by senior leaders 2. Active involvement of faculty and staff 3. Articulated rationales and goals for internationalization 4. Recognition of the international dimensions in institutional mission/mandate statements, and planning, management, and evaluation of policy documents	Widely accepted by leaders including the mission and task but not clearly articulating the goals and lack of detailed documents
Operations	1. Integrated into institution-wide and department/college-level planning, budgeting, and quality review system 2. Appropriate organizational structure 3. Systems (formal and informal) for communication, liaison, and coordination 4. Balance between centralized and decentralized promotion and management of internationalization 5. Adequate financial support and resource allocation systems	Having international affairs office or units but not operational planning and management or sufficient financial support
Services	1. Support from institution-wide service units, i.e., student housing, registrar, fundraising, alumni, and information technology 2. Involvement of academic support units, i.e., library, teaching and learning, curriculum development, faculty and staff training, and research services 3. Student support services for incoming and outgoing students, i.e., orientation programs, counseling, cross-cultural training, and visa advice	Equipped with basic institutional service units but demonstrating weak academic support and improving student support

(continued)

Table 6.3 (continued)

Dimensions	Items	Analysis on Taiwan
Human resources	1. Recruitment and selection procedures that recognize international expertise 2. Reward and promotion policies to reinforce faculty and staff contributions 3. Faculty and staff professional development activities 4. Support for international assignments and sabbaticals	Weak professional development for HR regarding internationalization as an administrative process without encouraging international assignments

Source Knight (2008, p. 34)

the current situation in Taiwan (the right column of the Table 6.3) by referring to those dimensions and items. First, in terms of governance, senior leaders have widely accepted the new elements of internationalization into the institutional mission and task, and they are willing to support many types of international activities. However, the goals and motivations have not been articulated clearly. Events, activities, and cooperation are scattered throughout institutions. Specifically, official statements recognize the incorporation of internationalization, but detailed documents have been absent from planning, management, and evaluation policy.

The second dimension for institutional restructuring is operations. Many universities in Taiwan have already established an international affairs office or unit within the organizational structure. Some larger or research-intensive institutions even appoint a vice president to oversee internationalization. However, when the operations extend to college or department levels, less planning, budgeting, and quality review take place. This is attributable to the fact that the international office or unit is relatively small, with few personnel and no corresponding workforces equipped at college or department for such coordination operations. For example, one university with 10,000 students and 400 academic staff members is served by roughly only 8–5 persons at the international offices. Very few colleges have a specific workforce for international work except the college of management and engineering. Indeed, there are resource planning and allocation at the central level but not at the lower levels.

The third dimension is related to the services offered for internationalization. Taiwanese universities are equipped with basic institutional services for housing, library, and ICT services; still, they are relatively weak in academic support, particularly for curriculum, teaching and learning, and staff training. Student support services are improving with the inclusion of orientation, student clubs, intercultural communication activities, and visa applications.

Finally, human resources represent the weakest of the four dimensions. In principle, those employed at the international offices are not recognized as professionals but as administrative staff. Few training courses or professional development opportunities have been offered to these workers. As part of a wider bureaucratic system, restricted opportunities are provided to these employees for rewards and promotions.

As to the international assignments, there are few chances to sustain such joint adventure exploiting mutual benefit. In summary, human resources for internationalization have not been considered in terms of professional expertise, which has led to limited career prospects and the reinforcement of bureaucratic mechanisms.

The previous analysis of Taiwanese scenarios reveals both positive and negative developments in internationalization at the institutional level. Senior leaders should ponder how institutional goals can be supported by tailored planning, management, and quality review, particularly at the college and department levels. In fact, international expertise and professional training require more considerable attention to human resources. Without their competent planning and performance, the internationalization of the university is still far off.

We now set out to address some of the latest features implemented at universities. As we know, their specialized international offices were established around the early 2000s in compliance with policy initiatives. The most prominent activity for internationalization is the signing of MOUs or cooperative agreements for student exchange, joint programs, or conferences. Nearly all universities claim to have excellent opportunities for students for short-term study abroad, ranging from a couple of weeks to one year (Chang & Chan, 2019). Summer schools or camps are held both for domestic and international participants. Indeed, some joint programs or degrees are bilaterally or trilaterally designed and have been offered since the late 1990s. However, the numbers are not significant, and the degree of cooperation also needs to be improved on the quality side (Hou, 2016).

As far as the provider and program mobility are concerned, Taiwanese universities have relatively limited experiences with both inbound and outbound dimensions. Specifically, after joining the WTO in 2003, no foreign provider and separate program are operating locally due to the strict legal requirements for entry into the domestic market (Chiang, 2004). Regarding the outbound mobility of local providers, very few private universities have expanded their education services overseas to America, Australia, and the Philippines. The most notable cases are the Fo Guang education system (佛光教育系統) and Ming Chuan University (銘傳大學). Outbound program mobility has been allowed by the MOE since 2007 to deliver quality education in other countries. According to official statistics, these overseas degree programs (境外專班) had 399 students in 2014, and that figure increased to 930 in 2018. At present, 16 universities operate these programs, mainly in Vietnam and Malaysia, providing courses in business management and health and caring (MOE, 2019).

Turning our attention back to domestic education offerings, two prominent developments stand out: international degree programs (國際學位學程) and international colleges. In order to attract international students, growing numbers of international degree programs taught entirely in English have been established through the joint effort of faculty within colleges and universities (National Chung Cheng University, 2019). This emerging quick-fix measure does play a supporting role in easing the restriction of the existing rigid departments. Conversely, international and global colleges are purposely created to act as an umbrella unit, implementing all English-taught programs with necessary administrative authority within the university. In

fact, international or global colleges, which serve both academic and administrative functions, become "a small university" within the larger university (I-Shou University, 2019; Tamkang University, 2019). This design aims to streamline the special needs of inbound students, thus easing the administrative burdens. However, it also causes concern regarding internal segregation between local and international students, leading to limited interaction between these two groups.

Despite these structural innovations, Rudzki (1998) once argued that curriculum innovation should be a key part of strategic management for internationalization. However, according to the survey undertaken by Chiang (2009), among the 1925 examined departments, one-third have included the word "internationalization" in the curriculum design—mainly, in the area of business and management—but it is more of a rhetorical device than a real intent. This confirms that the internationalization of curricula still has great room for improvement at universities.

Another new trend for greater international involvement is the application for accreditation from an international accreditor (Hou, 2015). A certain number of Taiwanese universities and departments seek accreditation overseas as transnational recognition and mobility are increasingly important in this globalized world. The frequently mentioned agencies are the Institute of Engineering Education of Taiwan (IEET) and the Association to Advance Collegiate Schools of Business (AACSB). Colleges and departments of engineering and business regard the recognition of these professional accreditors with high value for international branding and profile improvement. Similar action is also taken by the hospitality and tourism departments.

Finally, having foreign faculty tends to be seen as a critical indicator of internationalization (Marginson, 2007). Their participation in local universities also contributes to the diversification of the teaching lineup, provides various academic perspectives, and creates opportunities for intercultural understanding. However, the progression of the appointment of foreign nationals has been plodding. There were 1,055 full-time university teachers in 2008, and this number remained almost the same at 1,088 in 2018. This roughly constitutes around 2.2% of the total university teachers in Taiwan. Such a low percentage reflects multiple barriers to campus-wide internationalization(Control Yuan, 2017).

6.5 Issues and Future Challenges

Previous discussions on historical development, policies and initiatives, and institutional restructuring have indicated that internationalization is deeply intertwined with the uneven political, economic, and social or cultural needs. In echoing these different forces, there are several critical issues and challenges to be addressed at the policy and university level.

6.5.1 Policy Level

At the policy level, Taiwan must upgrade itself to an advanced society with cutting-edge knowledge production and industry, inclusive and diversified social and cultural environment, and a stable international relationship. The first challenge in policy is how to attract and retain talent within this island country. A global survey conducted by Oxford Economics (2012) has shown that Taiwan was ranked among the countries with the greatest talent shortage in 2021. Similarly, the recently released World Talent Ranking by IMD in 2019, though ranking Taiwan at 20th place worldwide, confirmed that brain drain (ranked at 46th), foreign highly skilled personnel (48th), and attracting and retaining talent (38th) are the weakest indicators for Taiwan (Institute for Management Development, 2019). Even worse, Taiwan demonstrates less than 5% of foreign faculty in its leading universities (Control Yuan, 2017) and only has 1,088 foreign teachers in total. All of these factors indicate that Taiwan is not attractive to the high-end workforce, including academic positions at universities. Furthermore, the migration regulations and reward systems are not friendly for inbound students.

Secondly, it is essential to make Taiwanese universities competitive within the main international league (Tang, 2019). Two major policy concerns arise: stagnant budgets for research-intensive universities and the rise of competitors. With the introduction of a new high education policy in 2017 (Higher Education Sprout Project), the allocated budget to raise research excellence is not as substantial expected. There is a wide-spreading concern for universities' academic performance, as their rankings have been stagnant for the past years (Chan et al., 2020). Maintaining and improving their performance has become a major policy issue to be addressed.

The third policy challenge is related to the mobile providers and programs both for inflow and outflow. As demonstrated previously, Taiwan welcomes nonlocal students at the individual level. However, this is not the case if institutions or programs wish to enter the local market. This policy position has also led to the failure of the free economic pilot zone in 2013. However, if a more international and diverse education offering is desirable, the allowance of nonlocal education providers operating in the local market should be reconsidered. Similarly, education export (教育輸出) continues to be among the main ideas addressed by the government. However, the international branch campus and overseas programs have been very limited, indicating a conservative attitude in expanding the country's educational offerings overseas.

The primary target areas for internationalization have been Southeast Asia and China. A balanced inbound student composition would be beneficial to internationalized learning. Current policies are much more restricted toward Chinese students, which requires rules relaxation in order for the treatment to be equal to that of other nonlocal students. In addition, the Taiwanese government should adopt more quality-driven policies to attract inflow students, which is now at more than 100,000. The priority is to increase student quality, as some admitted students do not even possess basic abilities and language proficiency. Furthermore, diversifying the nationality

of the student body—mainly from the Asia Pacific region, at present—could be a subject of long-term consideration.

6.5.2 University Level

In support of admitting quality students, a comprehensive internationalization at the university level would be one in which critical steps would be followed (Beelen & Jones, 2015). Though senior leaders agree on the importance of internationalization, the planning-budgeting-management process is not systematically plotted, looking more like an add-on model instead of a comprehensive internationalization (Hudzik, 2015). Taiwanese universities have their goals and mission statements about internationalization, but they are not carefully planned and designed for the implementation. Particularly, the coordination and financial systems at the college and department levels are not well aligned with these goals as they should be realized through decentralized units accordingly (Chiang, 2014). Unfortunately, the lack of alignment is a common phenomenon at universities.

Another major challenge to be overcome is the human resources devoted to the task. Frequently regarded as an administrative job, international engagement is highly professional work requiring staff's interculturality, English proficiency, and autonomy in assisting with such complicated matters (Hunter, 2018). Our previous analysis confirmed that limited staff members and a lack of professional training and career prospects are the major weaknesses that arise. If universities want to strengthen professional operations in international affairs, human resource management is a crucial area to improve.

The third issue is related to the potential segregation experienced by staff and students. Independent international degree programs and colleges apparently fail to facilitate the interaction between domestic and foreign students as they are purposely created for nonlocal students. Even worse, these units tend to be seen as segregated from the main organization as they constitute a cultural, language, and territorial barriers among local staff and students. This is why "students [feel] disengaged with internationalization" (Chiang, 2014). This issue, therefore, links to the critical issue of internationalization at home (Beelen & Jones, 2015), where international elements should be organically incorporated into the activities of teaching, research, and service (Hudzik, 2015). This idea can contribute to meaningful guidance for future research development.

Finally, what are the main purposes and meanings of internationalization for specific universities? In Chiang's (2014) survey, faculty members critically questioned the idea of internationalization. Some local teachers adopt a severe approach against international benchmarking, rankings movement, indexed publication, and knowledge colonialism (Chen & Chien, 2009; Chou, 2016). This constitutes a

substantial challenge for senior university leaders regarding why they make a commitment to internationalization. Thus, it is difficult to determine what type of internationalization is the correct one to pursue. As a very broad notion, internationalization can encompass all of the relevant missions of teaching, research, and service. Universities must ponder the appropriate approach to engage with internationalization.

6.6 Conclusion

Knight (2004) argues that the international dimensions of education involve policies related to "foreign relations, development assistance, trade, immigration, employment, science and technology, culture and heritage, education, social development, industry and commerce, and others" (p. 13). Taiwanese institutions have demonstrated that these intertwined factors have strongly affected internationalization approaches in the past decades. Historical development has shown that we have solid experiences reaching out to the Southeast Asian countries, primarily driven by the notion of soft power, in a political manner. However, our policy analysis in the second section confirmed that economic rationales such as trade or commerce are becoming more important as education is increasingly recognized as a service and product within the global framework. Nevertheless, it is undeniable that internationalization has a profound connection with cutting-edge knowledge, technology, and industrial development. The constant growth in cooperation with enterprises admitting those from Southeast Asia has shown that the triple helix (government, university, and industry) can also work together for international purposes. For those governments or countries who would like to admit international students, they may consider how the local industries could contribute to university internationalization.

Looking into the future, Taiwan needs to play an active role regionally by heavily engaging with Asia Pacific countries (Hawkins, 2012). If comprehensive internationalization is still beneficial to Taiwan, its universities must improve their internal planning-budgeting-management process with specifically tailored goals in line with their developmental agendas and missions. Many universities still think of internationalization as an additional, decorative, and activities-oriented element. Such mentalities inhibit full-fledged internationalization inside the campus. In addition, a wide range of issues and challenges in internationalization should be addressed for long-term development. The most crucial obstacle thus appears to be the inward-looking, protective, and segregated position toward outsiders and others; these traits tend to prevent internationalization. This valuable lesson can inform other countries to reflect upon how universities sincerely embrace the strength of internationalization while overcoming these obstacles.

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Chapter 7
University Autonomy of Higher Education in Taiwan: Developments and Consequences

Jason Cheng-Cheng Yang

Abstract University autonomy is a university's ability to determine its operations independently. Taiwan experienced a democratic movement and education reform in the 1990s and is still making progress in enhancing university autonomy. This chapter collects policy documents and discourses to depict the historical development of university autonomy in Taiwan. Statistical data from MOE and MOST are also provided. Furthermore, the present work analyzes the current status of university autonomy by reviewing relevant laws and regulations based on EUA's framework. A review of the effects of higher education policies and HE's accountability movement after 1995 on the development of university autonomy is also provided. Finally, the chapter includes suggestions for both future policy and research on university autonomy.

Keywords University autonomy · Accountability · Higher education · Taiwan

7.1 Introduction

University autonomy is a university's ability to govern and manage internal affairs independently, thus being an essential indicator of a modern university's successful operations as well as university's decision-making powers on its daily operations (Chiang, 2004). University autonomy is the key to develop features and uniqueness. University autonomy relates to a university's outcomes, such as graduates' competencies and university research output (Ritzen, 2016).

Many governments in Asia want to offer more autonomy to their universities to increase their universities' financial independence, efficiency, and effectiveness (Varghese & Martin, 2013). Some countries in Asia, such as Korea (Rhee, 2007) and Japan (Yamamoto, 2004), incorporate their national universities. Taiwan experienced

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many educational reforms in its education history and tried to enhance university autonomy by amending relevant laws and implementing new policies.

The emerging concept of the accountability of higher education relates to university reforms in Asia. This concept is widely accepted by the public (Huisman & Currie, 2004) and has considerably affected universities in the past two decades. Universities are asked to provide quality teaching (Jones, 2009). Hallinger (2010) asserts that quality assurance is strongly encouraged by governments and accreditation agencies in Asia to prove that local universities can keep improving in a globalized world. In the case of Taiwan, universities receive public support and are thus responsible for their teaching, learning, and research, and have to ensure their performance to respond to public expectations (Hou, 2014).

Governments in Asia use diverse methods to guarantee the accountability of higher education, such as establishing domestic evaluation agencies (Hou, 2014), giving incentives for decent performance (Kitagawa, 2003), highlighting domestic or global rankings (Marope, Wells, & Hazelkorn, 2013), and even reducing funding for low performing universities. A long time ago, Albornoz (1991) warned that university autonomy could be harmed if too much emphasis was placed on accountability.

Chiang (2004) reminds higher education researches that university autonomy has no linear relationship with governmental sponsors. Study university autonomy involves considering contexts and political factors (Neave, 1988). Higher education in Taiwan is an important case for analysis because it is a relevant economic entity in Asia, to the extent that it has been called "Asian Four Tigers" (Midgley, 1986). Taiwan is also a country that highly emphasizes education and human resources. Higher education in Taiwan started early: it can be traced back to the Tsing Dynasty (Chan & Yang, 2017). The first modern university in Taiwan was the National Taiwan University (NTU) established in 1928. A rapid expansion in higher education occurred in Taiwan between 1990 and 2010. After 2010, the growth of higher education institutions (HEIs) became slower. In 2018, there were a total of 153 HEIs, including 127 universities, 14 colleges, and 12 junior colleges (MOE in Taiwan, 2019a). HEIs in Taiwan can be divided into three main types of institutions: junior colleges, colleges, and universities. Junior colleges can only award graduates associate bachelor's degrees. College and universities can offer bachelor, master, and doctoral degrees. In 2018, a total of 1,245,000 students were enrolled in Taiwan's HEIs (MOE in Taiwan, 2019a). Higher education in Taiwan has been influenced by the models that are present in Japan, the US, and China (Chan & Yang, 2017). Since the late 1980s, the educational reform and democracy movement in Taiwan urged the government to decentralize its power to teachers (Law, 2004). University autonomy soon developed, which makes it a suitable case to study in its relationship with later higher education reforms of Taiwan.

Although Taiwan has experienced a significant development of its higher education system, it was previously a centralized education governance system. Before July 1987, Taiwan was under martial law. After 1987, the country went through a series of political and social reforms. As people could directly elect the country's president, Taiwan was gradually moving to become a democratic society with greater freedoms. However, it is important to explore the current status and efforts to develop

university autonomy in the nation. Since 2000, Taiwan's government has been influenced by the neoliberal idea of higher education reforms. Neoliberalism is viewed as a strong political idea that has accompanied globalization and influenced many aspects of higher education, such as the trends to privatize universities, introduce market strategies into universities' management, and de-regulate state's control on universities (Olssen & Peters, 2005). When neoliberalism has a strong influence on national higher education policies, the government releases more autonomy to universities and instead reviews universities' performance (Layzell, 1999). As universities are viewed as agents to fulfill governmental goals in the context of neoliberalism, this chapter uses neoliberalism as one theoretical framework. Emphasizing accountability is an emergent concept of higher education policies in Taiwan. Regarding organizational theories discussing the owner of organization and its manager, there are two competing theories: agent theory (AT) and stewardship theory. Agent theory, based on economics, views the relationship between the owner and manager as one of control, distrust, and individualism. The governance mechanism occurs through monitoring and incentives to stimulate the agent's motivation to work (Puyvelde, Caers, Bois, & Jegers, 2012). Meanwhile, stewardship theory views the relationship as one of collaboration, trust, and collectivism. The governance mechanism occurs by empowering structure within the organization to stimulate the stewardship's motivation to enhance the effectiveness of the organization (Puyvelde et al., 2012). AT's assumption is similar to neoliberalism's economic approach to governing universities. Both AT and stewardship theory serve as additional theoretical frameworks of this chapter.

The primary purpose of this chapter is to review the development and current status of university autonomy in Taiwan by analyzing relevant laws and regulations. The second purpose is to depict the linkages between higher education policies and the development of university autonomy in Taiwan after 1994. The third purpose is to analyze the latest movement of science policy and its potential influences on university autonomy in Taiwan.

Data were collected from policy documents of the Ministry of Education (MOE) and the Ministry of Science and Technology (MOST) websites. Discourses about the development of university autonomy in Taiwan were collected through a review of the literature. Higher education statistics were gathered from the statistical bureau websites of MOE and MOST. Some supplemental statistics data about academic publications were obtained from SCImago Journal & Country Rank database. The author utilized these documents and data to depict university autonomy in Taiwan.

7.2 The Development of University Autonomy in Taiwan: From the Initial Stages to the 1990s

In the initial stage of higher education in Taiwan, although leaders highlighted the importance of university autonomy, it was not entirely granted before the 1994 educational reform. The need for university autonomy was evident in the fact that Fu Ssu-nien—the fourth president of NTU (appointment time: January 1949–December 1950)—actively sought the academic independence of the university and tried hard to resist any external interference on academic affairs (NTU, 2019). As Wu (1990) points out, universities initially were like affiliated organizations under the supervision and management of a central government, and academic freedom and autonomy in the 1930s through to the 1950s were very limited. In her reviews of the history of university autonomy in Taiwan, Chiang (2004) claims that in the earlier times of China's retreat to Taiwan in 1949, the Taiwanese government adopted centralized strategies to control the education system. Since national development was much more important than academic freedom and autonomy, the university's role was to transmit nationalism and offer workforce for economic development. Chou (2009) argues that before 1987 Taiwan was still under the special regulation of martial law, and the political authority of the central government was very high. Academic independence was not protected. Furthermore, most universities relied on the government's financial support; hence, university education was dependent and conservative.

According to the "White Paper on University Education Policy" (MOE in Taiwan, 2001), before 1994, universities in Taiwan had little autonomy; MOE determined all regulations about the internal practices of university education. In January 1994, the education reform in Taiwan urged the amendment of the University Act. The Taiwan government deregulated the law; since then, universities in Taiwan can manage their internal affairs about organization structure, human resources, curricula design, student admission, and faculty recruitment. The presidents of national universities, before 1994, were directly appointed by MOE. After 1994, they are elected by university committee members. In 1995, the new "Public University Institutional-Based Fund Management System" was introduced, and public universities have more flexible rights in determining their financial affairs and budget usage.

7.3 The Current Status of University Autonomy

In 2009, the European University Association (EUA) developed a conceptual framework to measure university autonomy in Europe. EUA (2017) divided university autonomy into four dimensions: organizational autonomy, financial autonomy, staffing autonomy, and academic autonomy. EUA listed a number of indicators to measure the status of universities' autonomy relative to those dimensions.

Organizational autonomy in EUA's framework refers to a university's ability to make decisions without external influences on its administrative leadership and internal academic structures (EUA, 2017).

Financial autonomy is about a university's ability to manage its funds and budget independently (EUA, 2017).

Staffing autonomy is about a university's ability to recruit faculty and staff independently and develop regulations on salaries, dismissals, and promotions (EUA, 2017).

Academic autonomy in EUA's framework refers to a university's ability to decide on overall student numbers, select students, introduce and terminate academic programs, choose the language of instruction, select quality assurance mechanism and providers, and design the content of degree programs (EUA, 2017).

In the second section of this chapter, relative to the development of university autonomy in Taiwan up to the 1990s, we saw that with the educational reform in 1994 and the amendment of the University Act, the rights of selecting the president and other administrative leaders inside the university went back to the universities. Article 9 of the latest University Act (2015) state that "[t]o appoint a new president to a university, the university shall organize a President's Select Committee 10 months prior to the expiry of the present president's tenure; after the new president is selected through a public procedure, he or she shall be appointed by the Ministry of Education or the local government"; article 8 states that "the position of president of a university may also be taken by foreign professionals according to related laws." Thus, universities in Taiwan can organize a committee to elect their president and the presidency is not limited to domestic nationality.

7.3.1 Taiwanese University Autonomy in Determining Student Numbers

Article 12 of the latest University Act (2015) 12 states that "the number of students in a university shall be in accordance with the resources of the university; the standards shall be stipulated by the Ministry of Education, which may also be the basis for the universities to add or adjust colleges, departments, or institutes as well as the planning of courses and quota of student recruitment." Hence, the overall student number of each university is decided by MOE, but each university has the right to determine the internal distribution of student admission to different study levels, colleges, and programs.

According to article 7 of an additional regulation published by MOE named "Standards on Quantity Development Scale and Resource Condition of Postsecondary Institutions" (2019), the "[a]dmission of indigenous students and international students is not limited by the total enrollment number of each university that is regulated by MOE." MOE offered higher autonomy for universities when it admitted international and indigenous students.

7.3.2 *Taiwanese University Autonomy in Selecting Students*

According to article 24 of University Act (2015), "regulations on methods, quota of recruitment (including examinations) and recognition of the examinees' identification…, treatment of students' appeals and other proceedings shall be formulated by the university and reported to the Ministry of Education for approval before implementation." Therefore, while each university in Taiwan has the autonomy to formulate student selection methods and examinations, MOE has the final approval.

Figure 7.1 contains the data of both actual and estimated numbers of first grade bachelor-level students in Taiwan, which show that domestic students will rapidly decrease due to the decline of domestic population. Another important trend observed in Fig. 7.1 is the rapid growth of both foreign and mainland Chinese students enrolled at Taiwanese universities. Thus, in the future, although the University Act offered universities full autonomy to set the standards for selecting qualified students, social change will limit universities' autonomy in selecting domestic students but will enlarge universities' autonomy in selecting international students.

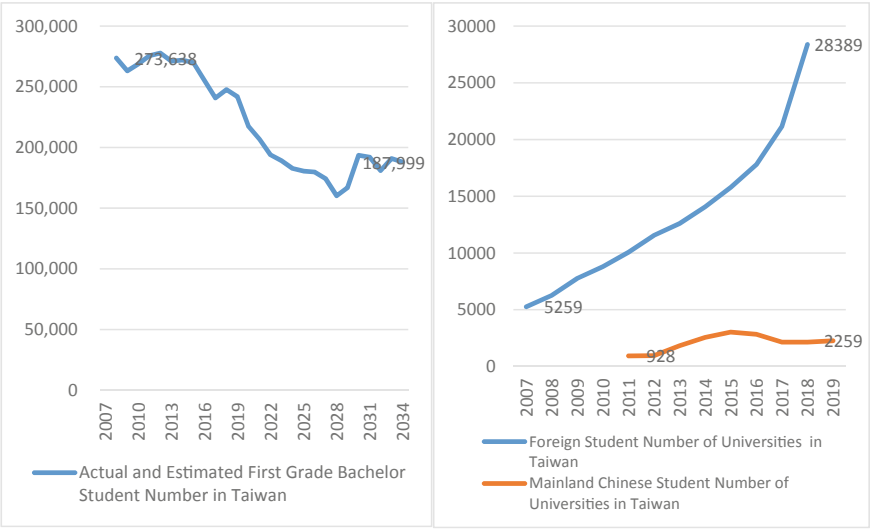

Fig. 7.1 Actual and estimated first grade bachelor student number, foreign student number and mainland Chinese student number of universities in Taiwan (*Note* Blue line data of first grade bachelor student number in Taiwan are estimated after 2019). *Source* Statistical Bureau of MOE in Taiwan (2019a); Foreign Student Statistics Website (2019); University Entrance Committee for Mainland Chinese Students (2019)

7.3.3 Taiwanese University Autonomy in Introducing and Terminating Academic Programs

In terms of the autonomy of Taiwanese university in introducing and terminating academic programs or in determining its internal academic structure, the amendment of the University Act (2015) also offered universities the right to decide on their internal academic structure in their academic affairs meeting. Article 16 of the University Act (2015) states that "the academic affairs meeting shall discuss the following proceedings: (1) Development plans and budget of academic affairs. (2) Organizational procedure and various important rules. (3) Establishment, alteration and suspension of colleges, departments, graduate institutes and auxiliary organizations…" Before 1994, the decision of organizational change at each university was made by MOE. At present, this decision is made in the academic affairs meeting at each university.

Diverse types of academic programs have been newly introduced at Taiwanese universities, such as the international program, the industrial program, the digital and online program, the double-degree program, the joint-degree program, the executive program, and the interdisciplinary program (MOE in Taiwan, 2019b). Besides academic programs, also academic degrees and course-delivery modes have moved toward diversification. MOE amended the "Degree Conferral Act" in November of 2018 to create a highly flexible university education system (Degree Conferral Act, 2018). The revision allows Taiwanese universities to replace the theses for degree completion with other professional works. Students can take courses from different levels of higher education and have more options for minors and majors. Furthermore, Academic fields have replaced the concepts of department and college. Finally, through industry-university cooperation, students can take courses when working or during practicum (MOE in Taiwan, 2019b).

7.3.4 Taiwanese University Autonomy and the Ability to Choose the Language of Instruction

Following the University Act (2015), there are no national laws or regulations to limit universities in choosing the official language of instruction. Professors and teachers of HEIs can select their language of instruction provided that students can understand the content of teaching.

According to the "Blueprint for Developing Taiwan into a Bilingual Nation by 2030," published by the Executive Yuan of Taiwan in 2018, Mandarin Chinese and English will become equally used official languages in 2030 (Executive Yuan of Taiwan, 2018). Subsequently, MOE is gradually encouraging both schools and universities to use English as a medium of instruction and universities to hold international exchange activities and establish international colleges or programs.

English will still be the most recommended second language used for instruction and research at universities. However, it is important to know that universities have the full autonomy to choose the language of instruction and research.

7.3.5 Taiwanese University Autonomy in Selecting Quality Assurance Mechanisms and Providers

Article 5 of the University Act (2015) states that "[u]niversities shall regularly carry out self-evaluation of their teaching, research, services, counselling and guidance, academic affairs, administration, and student participation; regulations governing the evaluation shall be formulated by each university." Taiwanese universities have the autonomy to formulate their own evaluation regulations. Article 5 also states that "… the Ministry of Education shall organize an Assessment Committee or commission academic organizations or professional accreditation bodies to carry out regular assessments of the universities…" Taiwanese universities have the autonomy to choose local or international quality assurance agencies and accreditation bodies to conduct their evaluations.

7.3.6 Taiwanese University and Publication Autonomy

Article 11 of the Constitution of the Republic of China (Taiwan) states that "people shall have freedom of speech, teaching, writing and publication"; article 1 of the University Act (2015) states that "universities shall be guaranteed academic freedom and shall enjoy autonomy within the range of laws and regulations." Hence, the University Act highly protects academic freedom and university autonomy in Taiwan.

Ranking and performance-based initiatives are still influencing the publishing behaviors of academics, as shown in Fig. 7.2. Between 2006 and 2016, MOE had a higher education policy called "Aim for the Top University Plan," whose main goal was to stimulate the research performances of 10 research universities in Taiwan. To be ranked higher in the global higher education rankings is also a goal. To differentiate universities in Taiwan into "research" and "teaching" types is another hidden purpose. This performance-based policy encourages research universities to publish academic works internationally, and a significant increase in publishing is found in Fig. 7.2.

If global ranking partly represents a voice from the market, international and domestic students, too, view ranking as a guidance for selecting universities when they apply. Not only will research universities in Taiwan will pursue ranking; teaching universities will also follow this movement. Ranking and this policy may influence university autonomy.

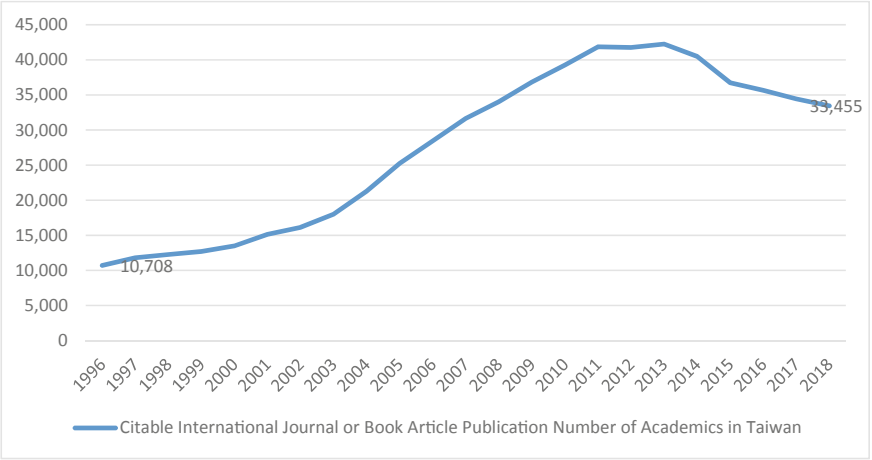

Fig. 7.2 Number of citable international journals or book chapters published by academics in Taiwan: 1996–2018 (*Source* SCImago Journal & Country Rank (2019))

7.4 Higher Education Policies and University Autonomy in Taiwan After 1994

Table 7.1 lists the principal higher education policies on university autonomy after 1994. That year, to respond to demands for educational reform and the social movement for democracy, the government revised the University Act and to offer universities higher autonomy rights. University-level meetings determined universities' decisions about their organization, finances, human resources, and academic affairs from then on. MOE became a distant supervisor. In 1996, the "Institutional-Based Flexible Fund System" allowed universities to save external funds for the improvement of education. The tuition adjustment scheme allowed universities to adjust tuition fees based on their plan, followed, nonetheless, by MOE's professional committee's assessment. Figure 7.3 shows changes in the yearly average tuition fee in public and private universities in Taiwan and the annual adjustment ratio, respectively. The figure also shows a significant increase in the ratio of the average tuition fee at the beginning of the 1995 law revision. But after years, although universities can apply tuition adjustment autonomously to the MOE, tuition of public and private universities did not change since 2009 because the Taiwanese government persuaded universities not to adjust tuition for keeping affordability. The adjustment of universities' tuition fees is a case that the Taiwanese government still constrains university autonomy in specific sectors, especially when it relates to financial issues that could harm public satisfaction with the government.

Before the introduction of multiple entrance exams, students' enrollment was based on their overall scores in college entrance exams (paper-and-pen style tests). After 2002, university departments were allowed to determine what kind of students

Table 7.1 List of important higher education policies and their relations with university autonomy

Year	Policies	Impact on University Autonomy
1994	Educational Reform	To amend the University Act and to give Taiwanese universities the authority to decide on internal affairs with less external interference (gradually)
1996	Public University Institutional-Based Fund Management System	To offer national (public) universities in Taiwan the flexibility to use external revenues for education improvement
1999	University Tuition Adjustment Scheme	Universities can propose an adjustment plan of their tuition fees every year upon the approval of MOE's committee
2002	Multiple Entrance System of University	Departments and programs at universities can set multiple criteria and standards for selecting enrolling students
2005	Aim for the Top University Plan	To give special funds to a group of research universities and to lead them to be "globally recognized"
2011	Allow Mainland Chinese Students to Study in Taiwanese Universities	To give Taiwanese universities the opportunities to recruit talented students from mainland China
2018	Higher Education Sprout Project	A revision of the Top University Plan to help universities develops both their features and unique competitiveness locally and internationally
2018	Yushan Scholar Program	To help Taiwanese universities to appoint internationally recognized scholars to work in Taiwan without the limitation of a fixed salary and to reach international salary standards

Source MOE in Taiwan (2019b)

they wanted in their programs. In 2011, the government made an agreement that allowed Taiwanese universities to recruit talented students from mainland China, thus opening a new crucial inbound student population and enlarging the capacity of Taiwanese universities.

Concerning the criticism caused by the implementation of the "Aim for the Top University Plan," most academics of Taiwanese universities "highly emphasized research and neglected teaching and learning of students." As Chou (2014) stated in her edited book, "[a]bove all, the better faculty research performance … the more resources and social prestige universities will obtain in Taiwan," which reveals the adverse impacts of accountability and quantitative measurement of academic performance on the diverse development paths of HEIs.

The new version of the performance-based incentive policy called "Higher Education Sprout Project (HESP)" replaced the original "Aim for the Top University Plan." HESP did not highlight the importance of research but rather the one of relocating

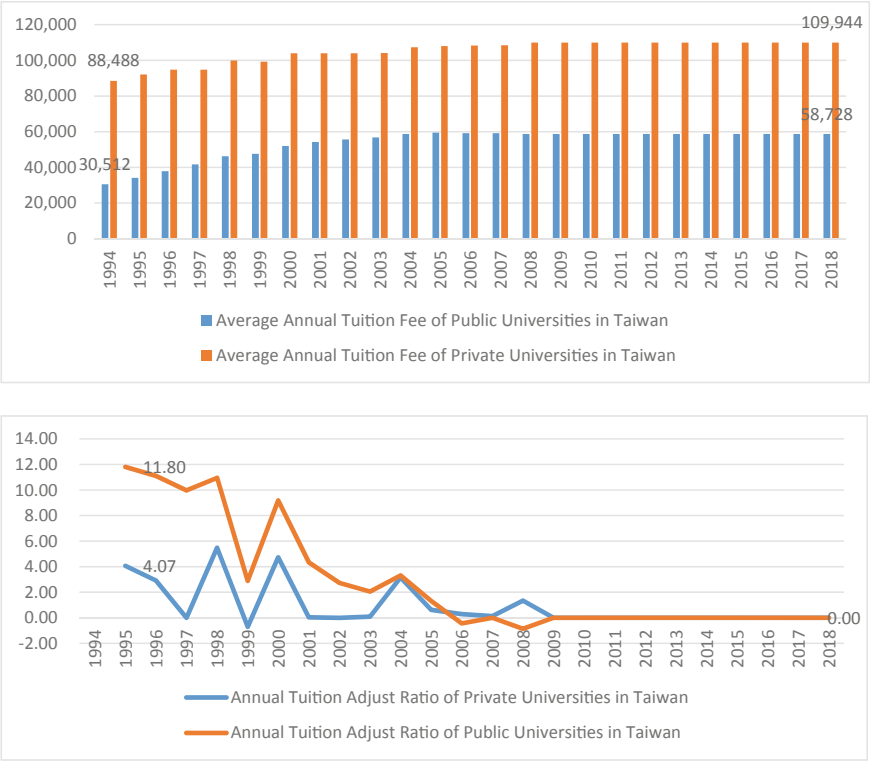

Fig. 7.3 Average annual tuition fee and annual tuition adjustment ratio of public and private universities in Taiwan: 1994–2018 (*Source* Statistical Bureau of MOE in Taiwan (2019b))

all universities in Taiwan into new roles for the society. HESP can be divided into three dimensions: the first is to comprehensively enhance the quality of university education and to promote diverse development paths in HEIs; the second is to help four universities to go after international research competitions; and the third is to encourage universities to contribute to the local communities and social responsibilities by organizing small groups of professors and students to solve local problems. This new policy is meant to reduce direct governmental control on what a Taiwanese university should be like. Governmental intervention can still be observed from this new HESP initiative as a performance-based reward policy that nonetheless created different performance indicators for research, teaching, learning, and interdisciplinary integration and cooperation.

Another recent important higher education policy on deregulating faculty recruitment of universities in Taiwan is the Yushan Scholar Program implemented by MOE in 2018. Formerly, the monthly salaries of professors in Taiwan were paid equally regardless of their academic fields or performance, whereas the new program is based on a service-year salary scale according to different ranks and years of service. Before the program was implemented, professors could receive additional payments when

they worked for external academic or industrial projects or perform other professional services; however, their salary was limited by the standards set by the government. The Yushan Program, instead, offers additional funds and flexible authority to speed up and empower universities to attract internationally recognized scholars. Furthermore, the new program allows universities to set up flexible salary standards for high-performing professors independently.

7.5 Science Policy and University Autonomy in Taiwan

In Taiwan, science policy is implemented by the Ministry of Science and Technology (MOST). MOST was established on February 1, 1959. Formerly the National Science Council, it was upgraded as MOST on March 3, 2014, and is the chief administrative unit for policy planning in promoting science and technology development in Taiwan. MOST supports academic research of public and private HEIs and other research institutes and is responsible for developing science industry parks and managing national science and technology development funds. MOST annually reviews academics' research proposals and offer them research funds based on their accumulated research outcomes. Therefore, MOST has a very high influence on faculty and staff. MOST calls research proposals annually, and research topics cover all academic fields. MOST is the leading research funding source of all HEIs and research institutes (MOST in Taiwan, 2018).

In the past 10 years, MOST has tried not only to encourage academics to choose annual research proposal topics freely but also to create additional MOST policy-oriented projects that foster industry development and help solve social problems. Specifically, MOST is willing to sponsor research based on the following criteria or projects: (1) (fundamental research project) no limitation on research areas: academics can freely apply for annual research projects to improve their research works; (2) (policy-oriented project) academics assist MOST with research on policy implementation; (3) (innovative entrepreneurship project) academics work on projects promoting collaborations between the industry and the academia and innovative entrepreneurship inside or outside universities; (4) (international collaboration project) academics work with international researchers, thus contributing to international collaboration.

Figure 7.4 shows the data collected from the academic statistics of MOST; we can observe the annual change in the total funding for the four-type projects sponsored by MOST. MOST tries to concentrate funds on the fundamental research project to maintain stable support on academics' free-topic research. At the same time, to enlarge the support for policy-oriented projects and to encourage academics and universities to help MOST work on policy issues that will have social and economic impacts for Taiwan. The report on emergent policies of MOST emphasizes the need "to engage diverse humanity values into technology development and to create social application values of academic research," "to promote industry and university joint research projects and facilitate industry and university collaboration ecology circle,"

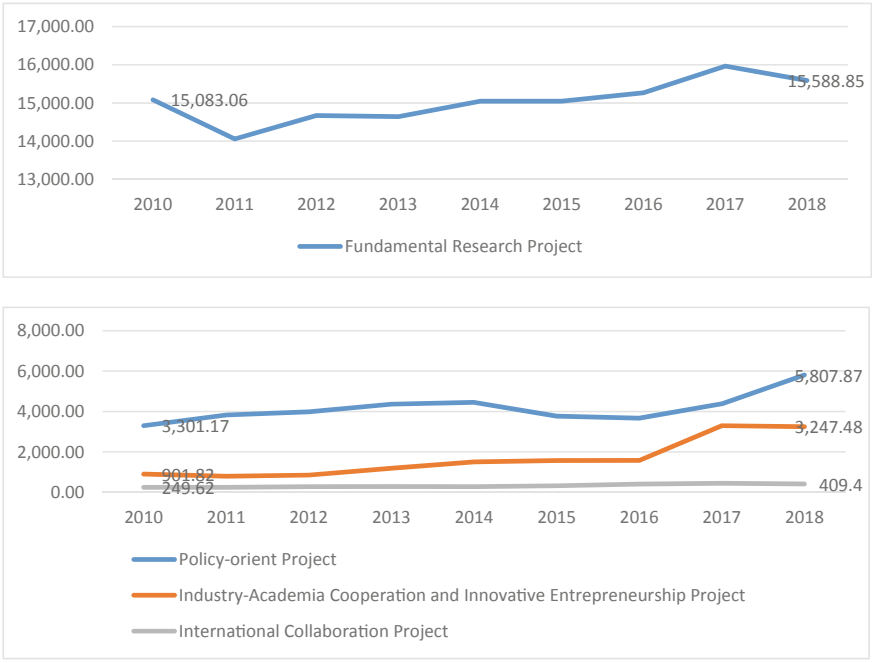

Fig. 7.4 Total amount of funding of four-type annual MOST sponsored projects from 2010 to 2018 (Unit: Million New Taiwan Dollar) (*Source* MOST in Taiwan (2019a))

and "to help industrialization of academic research outcomes and to create new enterprises for adding social benefits" (MOST in Taiwan, 2019b).

Because MOST is the leading research-fund source for academics in Taiwan, being able to work on one of its research projects is an important performance indicator for both universities and academics. Science policy implemented by MOST could influence action and decisions made by universities. Based on the analysis of the University Act amendment since 1995 until now, Taiwanese universities already have high autonomy in organization, finance, staffing, and academic affairs. Taiwan is also a country with very high freedom of expression in academic works. When observing the trend of research funds for the four types of research proposals in the past 10 years, one can see that MOST has tried to preserve the total capacity of free-research topics grants for academics while encouraging them to do research that can help solve social and industrial problems, work with industries, build innovative entrepreneurship, and strive for international collaborations.

7.6 Conclusions and Implications

Looking at the history of university autonomy development in Taiwan, state authority had a strong influence on universities' internal decisions before 1994. After the continuous amendment of the University Act, universities have higher autonomy in terms of organization, finance, staffing, and academic affairs, but the new forces become the market and the accountability system. Although universities have the right to decide, they have to cope with the globalization of higher education. Specifically, they have to attract more international students, encourage professors to publish internationally, and balance international standards and local traditions. These concerns will keep shaping the autonomous actions of universities' coping strategies in globalizing higher education.

The nature of meritocracy and competition for research excellence is another crucial force impacting university autonomy and faculties' behaviors in Taiwan. Almost all universities, including teaching type or locally rooted universities, were influenced by the standards of academic excellence established by national science policies. However, the new policy-oriented research, industry–academia cooperation and innovative entrepreneurship, and international collaboration—three new policy-oriented research project tracks promoted by MOST—will strengthen the future cooperation between the government and the university, between industries and universities, and between the international and the local.

Taiwan's university autonomy significantly increased since the educational reform in 1995. After continuous efforts of amending relevant laws and regulations, universities in Taiwan can now elect their own presidents, organize their academic structure, and admit students by their own standards. Furthermore, they can freely express their thinking on academic works written in different languages. A series of higher education policies since 1995 has also facilitated the range of autonomy in different dimensions of universities. The Public University Institutional-Based Fund Management System increased flexibility in the usage of the financial income of public universities. The University Tuition Adjustment Scheme offered universities the right to apply for an increase in their tuition charge; however, the scheme has been highly constrained in the last 10 years because of the public protest.

Further important policies include the Multiple Entrance System of University, the Higher Education Sprout Project, and the Yushan Scholar Program. They all help universities have more options with their student selection, institutional feature development, and faculty recruitment.

However, MOE is still playing a supervisory role when offering autonomy to public and private universities. Specifically, university autonomy in Taiwan is still influenced by the market and the state authority at present. Nonetheless, while the state authority had higher power on it previously, the market and the accountability system of higher education are the two main forces ongoingly shaping university autonomy in Taiwan at present.

Therefore, Taiwan's universities enjoy more autonomy than before thanks to the continuing efforts to amend relevant laws. These amendments could be viewed as the

responses of Taiwan's government to globalization and neoliberalism: new public management, market strategies, and privatization. However, the addition to each amendment of higher education law reserves the MOE's right of final approval. The increasing policy-oriented projects called by the MOE and MOST demonstrate that Taiwan's government may still wish to lead universities to achieve their defined accountability goals, although Taiwan is still not yet the international standard of "autonomous universities." A unique balance between autonomy and control exists in Taiwan's higher education system; its universities have autonomy on the surface in terms of regulations and laws, but to work on developing their unique features independently, universities will need more autonomy to determine their operations in all aspects without MOE approval. After years of efforts to enhance university autonomy since the major education reforms in 1994, the MOE still views universities in Taiwan as its agents instead of stewards.

Further qualitative research should be conducted on how to improve university autonomy from the perspective of the higher education stakeholders such as the presidents of leading research universities, the senior government officers of MOE and MOST, and the legislators. Specifically, further investigation would help compare their views and find out the similarities and differences between the policymakers and the practitioners of higher education.

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Part III
Frontier of Rapid Changes

Chapter 8
Doctoral Education in an Aging Society: Strategies and Challenges in Taiwan

Chuo-Chun Hsieh

Abstract An aging population is an important issue for many countries in the world. Based on empirical data, Taiwan is to become a "super-aged society" by 2025, facing that demographic pressure much earlier than most of the western countries. The demographic shift has impacted higher education and further forced doctoral programs to make necessary moves. This study aimed to identify the most pressing issues for doctoral education in Taiwan, where society is expecting an aging profile in a few years. The chapter covers higher education policies that the government has formulated to transform doctoral education, and also reviews the strategies that the universities have adopted to deal with the pressures and meet the needs of an aging society. The article concludes with a discussion of some possible barriers to meeting these challenges.

Keywords Research education · Doctoral education · Professional doctorate · New route PhD · Joint doctorate

8.1 Introduction

8.1.1 Aging Populations: An Imperative Issue for Taiwan

The population of older adults is rising at an alarming rate, which makes a lot of countries in the world either feel a demographic pressure or experience considerable difficulties in almost every aspect of society. According to empirical research findings and statistics, the time period 2010–2030 will witness a worldwide 75% growth in the proportion of persons aged 65 and over (Land and Lamb, 2017; Siegel, 1996). An aging population is a trend anticipated by many developed societies.

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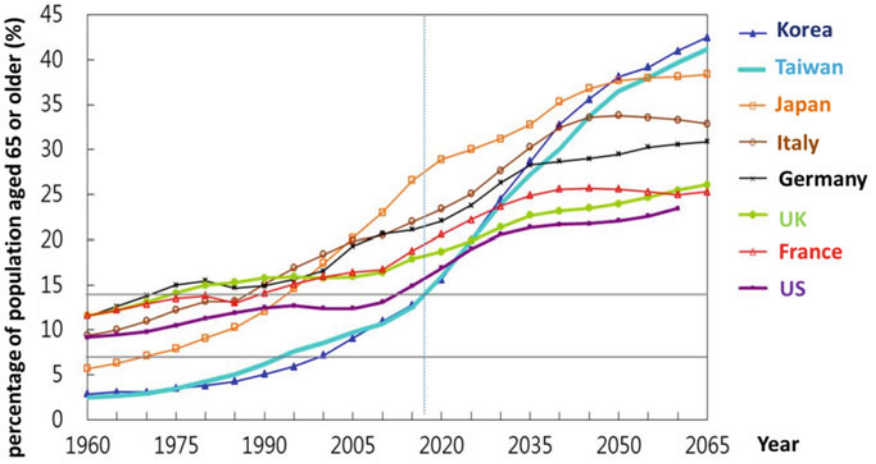

Fig. 8.1 Percentages of population aged 65 or older in aging societies by years (*Source* National Development Council, [2019])

Figure 8.1 indicates that Korea, Taiwan, and Japan are expected to be in the group with the highest percentage of elderly people in 2065 (National Development Council, 2019). The problem seems more serious in Asia than other regions. The demographic shift is an acute social issue in Taiwan. Using the United States as a comparative example, Americans aged 65 or older represented 12.6% of the population in 1990, and the number is set to rise to 22.9% by 2050 (Burroughs, 1999). In contrast, the elderly population in Taiwan will represent up to 20.1% of the total population in 2025 (Liao and Chen, 2010).

Figure 8.1 shows that Taiwan was in the group of countries with the lowest percentage of population aged over 65 in 2018. The percentage is going to jump after 2025, when the island will become a "super-aged society," according to the Population Projections for Taiwan Areas (Liao and Chen, 2010). The United States is projected to become a super-aged society in 2035, 10 years later than Taiwan. In order to address the rise in the elderly population in Taiwanese society, the launched its policy white paper "Toward an Aged Society: Policies on Education for Older Adults" for the forthcoming aging society in 2006, relating education for the elderly to family education, social education, and school education, in order to address this imperative issue.

8.1.2 Higher Education in an Aging Society

The increase in the number of older people, plus a shrinking younger population, has forced the higher education system in Asia to produce necessary responses (Collins, Lee, Hawkins, & Neubauer, 2016). Based on Neubauer and Hawkins (2016), the

development of higher education in this region can be divided into three stages: (A) At stage one, higher education capacity expanded and university enrollment increased rapidly, due to the population explosion. Governments expended effort and resources to meet public requirements of higher education access in order to cultivate human capital and stimulate economic growth; (B) Stage two saw a switch of emphasis in higher education to quality assurance, after the expansion of higher education. The quality of higher education institutions (HEIs) was compromised by outreach to the private sector, which has been participating in producing more higher education capacity; (C) Stage three occurred in the face of a decline in birthrates, accompanied by an aging population. Governments began to highlight the importance of attracting cross-border students, as higher education capacity was outstripping demand.

At stage three in this process, higher education had to evolve in order to move beyond its parameters and respond to a variety of demands, particularly in the aging society. For example, colleges and universities would be required to provide new information about aging for older people and their families (Anderson, 1999). In addition, it was imperative that higher education accentuated lifelong learning. In a society where the number of retirees grows relative to the number of workers, the labor market changes in response to rising life expectancy. With people working longer, employers inevitably turn to colleges and universities for preparing an aging workforce. Furthermore, HEIs have to broaden and integrate programs such as education, biology, psychology, and sociology, equipping individuals with knowledge across disciplines in order to function successfully in the world with an aging population. Innovative or integrative programs are essential for developing the expertise to fulfill societal needs arising from an ever-increasing life span (Weaver, 1999).

Facing these challenges, doctoral education is under pressure to transform too. Not only have the roles of doctorates changed, multiple purposes and different models of doctoral education have appeared too. PhD candidates pursue an expansion of their training, as researchers in their academy and professional practices (Wildy, Peden, & Chan, 2015). The need to transform doctoral education has been high on the policy agenda, especially in countries where governments wish to gain a competitive advantage in the global knowledge economy (Bao, Kehm, & Ma, 2018).

The object of the chapter is to provide an up-to-date picture of doctoral education reforms in Taiwan, where society is facing an aging population profile and also has a shrinking youth population. The 18–21 age group reduced by around 15% between 1990 and 2010, based on the statistics provided by the—(MOE) (2017a). In particular, this study aimed to identify the most pressing issues for Taiwan's doctoral education, including two levels of analysis: the macro level of national policy field and the meso level of institutional practices. This chapter starts by depicting the current state of Taiwan's doctoral education and the impact of an aging society. This is followed by a documentary analysis of higher education policies that the government has formulated to transform doctoral education. As well as the national level, the chapter also reviews the strategies that Taiwan's universities adopt to deal with the pressures and meet the needs of the aging society. The article concludes with a discussion of some possible barriers to meeting these challenges.

8.2 Doctoral Education in Taiwan

Doctoral education in Taiwan has undergone remarkable changes since the 2000s. The current development of doctoral education in Taiwan is illustrated by the statistical data derived from the Department of Statistics in the MOE.

8.2.1 Downsizing of PhD Enrollments

Taiwan is facing a declining and rapidly aging population. In 2018, the proportion under the age of 15 was 12.9% and the proportion aged over 65 being 14.5% (Department of Household Registration, Taiwan, 2019). A shrinking younger population affects higher education, putting pressure on the government to reduce or even suspend recruitment of students in HEIs and programs at risk. As Taiwan's population has been steadily declining, it is believed that higher education should not continue to admit the same number of students or more than can be assured of good jobs (MOE, 2013).

Figure 8.2 compiles the data on the enrollment quotas approved by the government for first-year doctoral students between 2011 and 2018. The general trend is downward. Both public and private institutions saw a decreasing enrollment quota rate, 41% and 28% respectively. The difference is significant, and implies that in terms of the recruitment of doctoral students, the strain put on the public sector was greater than that experienced by private universities. These numbers reveal that the

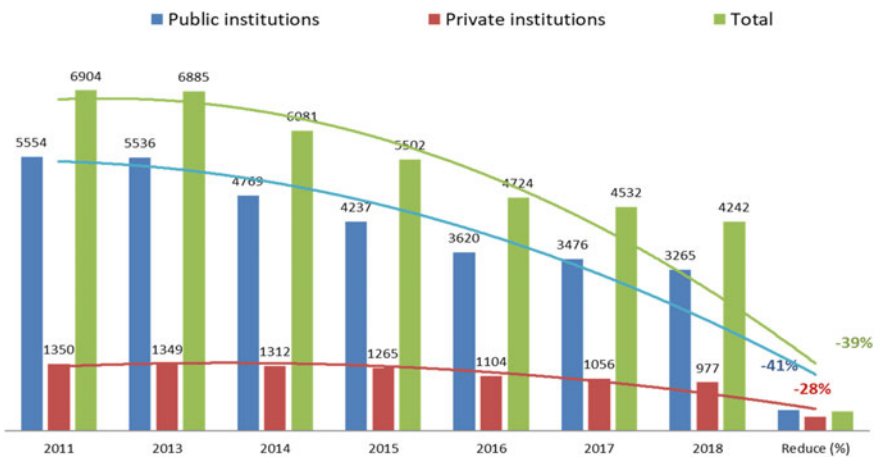

Fig. 8.2 Approved enrollment quotas for first-year doctoral students (by years) (*Source* Department of Statistics, Taiwan [2019])

pressures of youthful demography weaken demand and reduce enrollment, particularly in more vulnerable HEIs in the private sector, some of which were forced to close down.

8.2.2 Daunting Prospects in the Employment Market

Building a career in academia is the primary goal for the great majority of doctoral degree holders in Taiwan. People who hold a doctoral degree have tended to occupy a position at university or a government agency—according to a survey conducted by the Ministry of Science and Technology, 80.8% of the PhDs are currently in academia and the government. However, the traditional job market, particularly the academic one, has undergone profound changes due to the low birthrate and the shortage of incoming students.

A substantial oversupply of higher education forces universities to reduce demand for faculty. There were 10,000 fewer teaching positions in universities in 2020 compared to 2011. As academia cannot absorb all the PhD graduates, the number of tenured positions is dropping steadily across different disciplines. In contrast, the number of hiring contractual faculty is rising significantly. Furthermore, all faculty members are struggling to cope with the heavy workload and constant competition in an increasingly performance-driven environment. In addition, university faculty in Taiwan are paid less compared to those in other Asian countries including Japan, Singapore, and Hong Kong (Cheng, 2018).

PhD holders who have difficulty finding a faculty position may encounter similar obstacles when trying to find a job in the government or an organization related to their professional field in the corporate sector (Yang & White, 2016). This may be caused by the employers' perception of the PhD recipients unable to provide the professional skills or highly educated capacities required by the industry or a specific working environment. With an increasing number of PhD graduates struggling to secure a job for many years after gaining their doctorate, people are less convinced that a doctoral degree can help them gain a position either inside or outside the academic field. Prospective students become understandably reluctant to continue on the academic track and pursue a doctorate, due to the precarious employment conditions and poor salary in academia. In addition, a mismatch between the knowledge possessed by PhDs and demands in the industry job market stimulate the public perception of devaluated doctorates.

PhD programs become less attractive to these young talents, which is illustrated in Fig. 8.3 by the changing numbers of doctoral students between 2008 and 2017. The highest loss rate of doctoral students was 45%, in the Information and Communication Technology sector. The Engineering, Manufacturing & Construction group, which contains the highest proportion of doctoral programs in Taiwan, also faced significant reduction in their PhD student numbers. Groups showing a downward trend of development include information and communication technology, engineering, manufacturing, natural science, and agriculture. On the other hand, Services:

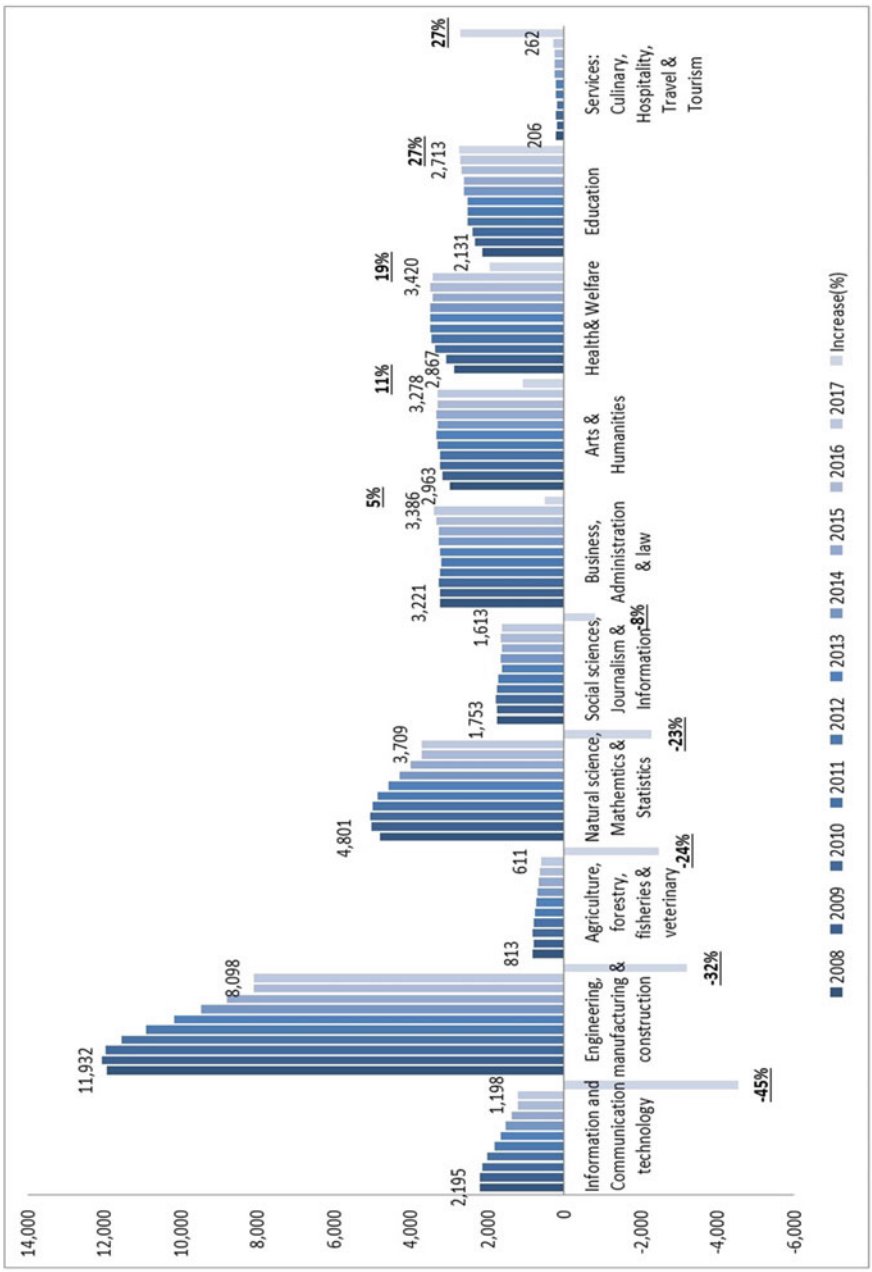

Fig. 8.3 Students numbers in various doctoral programs in Taiwan (by years) (*Source* Department of Statistics, Taiwan [2019])

Culinary, Hospitality, Travel & Tourism, along with Education, share the highest increases in doctoral student numbers, 27%. In general, Fig. 8.3 shows that different groups of doctoral programs have different tendencies in their PhD education development. In particular, those doctoral programs reflecting a downward trend in student numbers are more related to STEM (science, technology, engineering, and math) than humanities and social science.

8.2.3 Social Needs for Innovative Knowledge and Technologies

Figure 8.4 illustrates changes in the number of doctoral programs in Taiwan. The groups Engineering, Manufacturing & Construction and Natural Science, Mathematics & Statistics contain the highest proportions of doctoral programs between 2008 and 2017; while the rate of doctoral programs categorized in the group of Services: Culinary, Hospitality, Travel & Tourism has increased significantly since 2008. During the last ten years, the Services sector has grown 63%, and the Health & Welfare sector saw the second highest rate of increase, with 46% growth.

These numbers indicate that the doctoral programs constituting a very small part of Taiwan's doctoral education, such as culinary, hospitality, health and welfare, and travel, have experienced the most dramatic increase since 2010. In comparison, the programs representing the majority of doctorates, including engineering, manufacturing, natural science, and mathematics, have seen comparatively low increases. For various reasons, PhD holders in Taiwan are expected to provide capacity that is related more closely to the field of practice and more relevant to societal needs, for example services, and health and welfare. As a result, many labs and research institutions have to admit fewer doctoral students and rely increasingly on postdoctoral labor. This trend shows that Taiwan's doctoral education is transforming from a concentration on hard science to more diverse social needs (Fig. 8.4).

8.3 Governmental Responses

Facing concerns over doctoral education and the impact of an aging population, Taiwan's government has developed higher education initiatives and endeavored to provide significant support for PhD programs and students to address the problems mentioned in the previous section and to meet the needs of an aging society. Key reforms implemented include changes in the following areas.

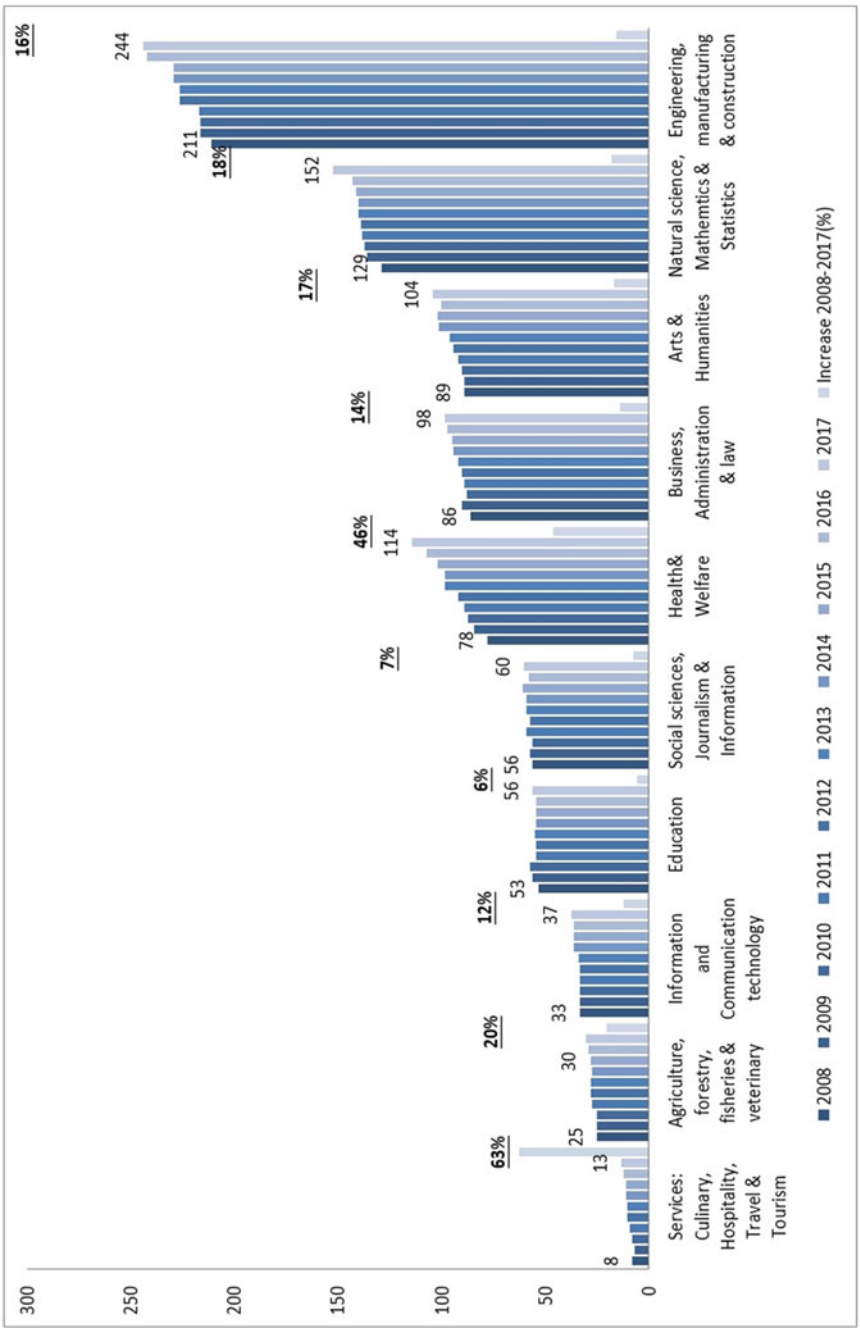

Fig. 8.4 Numbers of various doctoral programs in Taiwan (by years) (*Source* Department of Statistics, Taiwan [2019])

8.3.1 Reducing Enrollment Quotas

In 2013, the MOE presented proposals for doctoral training programs in the white paper Talent Cultivation (人才培育白皮書). One of its key points concerned the reduction of PhD student enrollment quotas. The government announced that it would gradually adjust enrollment numbers for doctoral programs based on the demands of society and industry. More specifically, they would be adjusted in line with their evaluation results, according to Standards of Development Scale and Resource Conditions for Junior Colleges and Institutions of Higher Education(專科以上學校總量發展規模與資源條件標準). Each doctoral program's resources and performance in regard to teaching and research (such as enrollment rate and completion rate) would be under consideration.

This approach was radically different from that adopted by countries in Europe, for example, where national governments encouraged their universities to increase the number of doctoral degrees awarded. European universities reformed doctoral education by equipping students with "generic skills" in order to prepare them for working outside of academia (European University Association, 2009). In Canada, national reforms emphasized professionalization, which means "doctoral programs need to re-think their pedagogical aims and methods at the most fundamental level" (UBC Graduate and Postdoctoral Studies, 2014).

8.3.2 International Connections

It is believed that international collaboration and networking facilitate the exposure to various values and academic perspectives, which stimulates the promotion of international collaboration among universities. The MOE announced the project Taiwan Talent Leap Program (臺灣人才躍升計畫) in 2014. The scheme provides doctoral students and young scholars with more opportunities to enhance international training experience and increase international cooperation. Based on the project, PhD students can receive financial support for spending more than half a year at a foreign university of their choice to carry out research or discuss their research findings. In 2015 the government initiated Doctoral Cultivation 2.0 (博士培育2.0), further encouraging PhD students to participate in international networks. This project is a late version of the Taiwan Talent Leap Program, involving three trajectories of doctoral training, of which research doctorates are one.

In accordance with Doctoral Cultivation 2.0, doctoral programs are delivered by Taiwanese universities in collaboration with foreign research institutional partners, sharing a commitment to cooperative pedagogy. The PhD students who participate are expected to match their research skills with the ability to make connections with international academia. More specifically, local and foreign universities jointly develop a five-year doctoral program, incorporating structured coursework, international advisers in the dissertation process, and a two-year stay at an overseas

university. In the first two years, the PhD students are required to do coursework in Taiwan, followed by two years of coursework at the foreign partner university. In addition, PhD students are necessary to complete their doctoral thesis at the end of their final year. When studying abroad, the student receives a scholarship lump sum of an approximate USD 100,000 (NTD 3,000,000) and around USD 1200 (NTD 36,000) per month. In 2016, 18 programs in seven universities received funding support under this initiative (MOE, 2016).

8.3.3 Restructuring Doctoral Programs

In 2013 white paper Talent Cultivation (人才培育白皮書), the MOE put particular emphasis on the belief that doctoral programs must balance cutting-edge research with industry development. In order to cultivate practical skills, universities were encouraged to transform their PhD teaching style and curriculum content. Through the 2015 Doctoral Cultivation policy, Taiwan's universities were directed to develop new program structures that combine a research approach with an industry orientation. As a result, professional doctorates in Taiwan were developed as a new kind of doctorate degree. They include the Doctor of Business Administration (DBA), Doctor of Public Administration (DPA), Juris Doctor (JD), and Doctor of Education. Since the new route PhD programs are innovative, their development relies heavily on the government revising relevant regulations.

The new route PhD programs can be characterized by two phases: structured coursework, and cooperation between university teachers and practitioners. More specifically, students learn technologies essential to relevant practical fields during the 1.5 years taught phase. They also need to spend at least one semester in apprenticeship. The thesis is still the key output of the doctoral program, but with an added professional dimension. It is expected that doctoral training must contribute not only to furnishing knowledge creation, but also to meeting wider needs beyond academia. The creation of the new doctorate credentials has been driven by several factors, but the main one is related to the traditional PhD being considered insufficient for the rapid expansion of high-level knowledge in contemporary workplaces. It becomes imperative to address the growing complexity of work environments and the increase in technological interventions underlying practice.

8.3.4 Collaborate with the Industry Sector

The MOE included a new trajectory of doctoral training in the 2015 Doctoral Cultivation—industrial doctorates. This program type was created primarily under the assumption that doctoral training must increasingly meet the needs of the employment market, which is much wider than academia. The government thus suggested that HEIs collaborate with the industry sector, to train the next generation of PhD

graduates. For instance, the thesis can be jointly supervised by the faculty at university and professionals in industry. Cooperation between the university and the enterprise is expected to facilitate the university receiving research funding and the enterprise obtaining innovative research findings.

The programs of industrial doctorates are aimed at training doctoral students to closely meet industry demands by means of enhancing work experience. In addition, this approach provides students with employment opportunities. People who hold an industrial doctorate can begin their career in the industry soon after graduation. This kind of programs is delivered in collaboration with enterprise partners that share commitment to cooperation in structuring coursework, internship, and the thesis component. In detail, the program is structured in a five-year time frame. College graduates spend the first three years in coursework and the following two years carrying out research and development work in industry. A thesis component is required. Each doctoral student can receive NTD 200,000 each year from the MOE as a doctoral scholarship, up to a maximum of five years. In 2016, 45 programs in 19 universities were eligible for funding (MOE, 2017b).

In addition to the MOE, the Ministry of Science and Technology (MOST) also formulated a pilot program for encouraging enterprises to participate in training doctoral students (鼓勵企業參與培育博士研究生試辦方案) in 2015. Full-time doctoral students who are awarded an enterprise scholarship (more than NTD 10,000 per month) are entitled to receive extra funding from the MOST, with the amount matching the enterprise scholarship, but within the upper limit of NTD 20,000 per month. The provision of the governmental scholarship aims to promote the partnership of doctoral training and the industry sector.

8.4 Strategies Adopted by Universities

This section of the study provides an up-to-date picture of the institutional approaches to transforming doctoral education in Taiwan, adopted by universities to deal with the pressures on PhD training. It covers three types of attempts.

8.4.1 Retaining Current Students

The number of Taiwanese students applying for PhD programs continues to decline due to uncertain job prospects. Universities have devised strategies to reverse this trend, attempting to make their doctoral training fulfill the learning needs of a large cohort of doctoral candidates.

Retaining students is one of the approaches. For those students with the ability to continue in doctoral training, some universities have made it possible to enter a doctoral program directly after completing a year of a master's degree. At National Tsing Hua University, master's program students can be funded by participating

in sponsored research projects, thereby encouraging more students to pursue PhD programs. In some cases, universities proactively recruit their own students, both at undergraduate and master levels, into their own PhD programs. National Yang-Ming University, for example, recently established a mechanism by which students who show exceptional academic performance and research potential are offered early admission to its PhD program.

Flexibility in recruiting is another strategy applied by the universities, involving consolidated recruitment at school level. National Yang-Ming University, for example, asks individual schools to coordinate recruiting for its various department. This strategy allows the school to better utilize resource to reach out to a larger community and also minimize effort duplication. Theoretically, this approach can avoid departments competing with each other for the top-performing students, and further leverage the brand of the school.

8.4.2 Attracting Top-Performing Students

As the cohort of doctoral candidates shrinks, university recruiting teams implement hiring initiatives, especially for attracting exceptional students into their PhD programs and retaining them. In this matter, National Taiwan Normal University offers a waiver of credit limitations in order to encourage outstanding doctoral students from other universities to select its courses.

In order to attract talented students, including those from low-income families or those contemplating a future academic career, funding offered as scholarships or salaries can be a critical incentive for PhD candidates to participate in a doctoral program. At National Tsing Hua University, fellowships are offered to students who can fulfill requirements of academic performance. This initiative aims to recruit the early entry students with research potential. The selected students are funded by the university and their supervisors, from NTD 10,000 to NTD 25,000 per month, thereby encouraging undergraduates to have aspirations for doctoral study.

International outreach is another means of fostering a stronger pipeline of PhD candidates. National Chiao Thung University, for example, partners with the Indian Institutes of Technology. The initiative aims to leverage the partnership to more proactively promote recruitment of international students. A dual degree program has thus been developed, aiming to recruit 200 Indian PhD students every year. Upon completion, the students are awarded two degrees from each of the participating universities.

8.4.3 Developing Interdisciplinary PhD Programs

In the world with aging population, the labor market shifts as people work longer. Individuals need to be prepared with lifelong learning in order to respond successfully to more diverse and increasing societal demands. This requires universities to set PhD programs to cross boundaries between disciplines for providing integrative expertise and for developing innovative information. To deal with this, universities have to advance collaboration across different academic fields. Tunghai University, for example, is exploring a framework to develop interdisciplinary postgraduate programs to enhance the appeal of its PhD programs by better preparing its students for their future careers.

At the same time, Tunghai University also targets non-traditional college students in the name of continuing education or adult education, trying to increase the number of PhDs in the particular disciplines needed by society. This implies that applied rather than pure research should be incorporated with workplace learning and field-based doctoral studies. Universities are now expected to accord greater legitimacy to workplace-generated knowledge than in previous eras. Considering that, the university's move emphasizes putting more support in place for the lifelong learning of PhD students, with the intention of improving the capability and future-readiness of the PhD cohort by equipping them with the non-technical skills essential for their next steps in industry or academia.

8.5 Challenges Confronting Doctoral Education

The government and the universities have devoted considerable efforts to tackle the problems of doctoral education in Taiwan, while some barriers remain. In order to meet the needs of the aging society, training in transferable skills, mobility across disciplines, and the diversity of the doctoral cohort are the most deficient elements needed to be supplemented.

8.5.1 Strengthening Transferable Skills

After doctoral training was accused of adopting an "ivory tower" approach, the government of Taiwan began restructuring doctoral programs in response to the common complaint of the skills mismatch between graduates and jobs. However, in order to more properly prepare students for meeting the expectations of employers and functioning in the real world, there is still room for improvement.

The skills PhD holders require in an aging society are different from those they required in the past. In the knowledge economy and the competitive, diversified global job market, these competences should facilitate lifelong learning and be equally

applicable to all professional settings. Accordingly, they should consist of a full range of options on courses and modules in order to prepare young researchers for meeting the increasingly multiple-skill demands of their future jobs, either within or outside academia. This suggests that Taiwan needs to pay more attention to the various "skills" elements of doctoral education. These include not only research skills (including research methodology and techniques, research management, analysis, and problem-solving, etc.), but also transferable skills.

In Europe, since the 2000s research training has become a process of equipping students with more mobility, flexibility, adaptability, and highly specified expertise. Doctoral programs in Europe need to cover personal and professional skills, such as the ability to act autonomously and to function among heterogeneous groups. The necessary competencies—including effective communication; managing people and budgets; networking and team-working; and flexible adaptation of technological advances and ever-changing methodological skills—are offered on a voluntary basis and usually organized in the form of lectures and seminars, short-term workshops, or summer schools (European University Association, 2005; Nerad and Evans, 2014).

Taiwan's doctoral programs currently provide PhD students with little support for career development, and little guidance on the non-research skills essential for a successful career. By offering comprehensive transferable, personal, and professional skills training, the capability and career-readiness of Taiwan's PhD cohort would be significantly improved, which in turn would have a positive impact on PhD recruiting. A successful PhD program produces well-rounded graduates who are well prepared for their next steps in industry or academia.

8.5.2 Increasing Mobility Across Disciplines

Doctoral education is a dynamic field, in which the key challenges of higher education and research come together (Hasgall, Saenen, & Borrell-Damian, 2019). Current and future holders of doctorates face an increasingly challenging environment compared to PhD graduates in the past. In order to solve the pressing societal issues of an aging society, it is critical to create knowledge across disciplines to meet the society's needs. Careers in industry and academia place increasing demands on skills and backgrounds in multiple disciplines. Hence, rather than being specialized, doctoral training should expose students to different experiences of mobility and collaboration across research sectors. That means doctoral education has to be more interdisciplinary.

In order to address the changing nature of the labor market in the globalized economy, mobility in interdisciplinary collaboration is critical. According to the European University Association (2005), mobility can refer to either an international or inter-sectorial dimension, which provides wider academic experiences for doctoral candidates to develop interdisciplinary skills. Both the government and the institutions should endeavor to facilitate networking and collaboration between research groups and between doctoral programs, to better support interdisciplinary study and

training for doctoral students. In many cases in Taiwan, however, doctoral candidates stay within the same country, often at the same university. Some PhD holders even go on to do research at the institution from which they originally obtained their degree. In an effort to train the next generation of PhD graduates, the country focuses on collaboration with the industry sector, while few efforts have been made to prepare for an aging workforce or to broaden and integrate PhD programs. Strategies designed for supporting mobility range from competitive grants to obligatory mobility periods spent at other universities or in other programs. Also, PhD candidates can have more than one supervisor and work on a project jointly run by different programs and universities.

Additionally, there are huge discrepancies among different disciplines. For example, graduates in the laboratory sciences have better job placement records, while those in the humanities and social sciences often face great difficulty finding appropriate employment in their field. Moreover, the humanities' models of doctoral preparation are markedly different from those in the sciences. The former is more likely to be course-driven, and the latter based more on laboratory teamwork. Those inconsistencies create stumbling blocks to the development of interdisciplinary programs. Bureaucratic structures and principles also place obstacles in the way of collaboration across sectors. Legal, administrative, and financial hurdles, and established practices that limit mobility across disciplines, are problems still waiting to be overcome.

8.5.3 Promoting Diversity of the Doctoral Cohort

Exposure to a broad range of views and perspectives is the key to fostering breadth and depth in intellectual knowledge, and so is a large and diverse cohort of capable doctoral students to increasing research productivity (Hasgall et al. 2019). To improve diversity, international mobility arrangements and inter-institutional collaboration may help. However, it is also crucial for universities to pay more attention to the number of underrepresented minority applicants. Universities should never focus solely on an increase in the total number of applicants and enrollment to PhD programs. These need to be aligned with the learning needs of a diverse cohort of doctoral candidates, in order to attract more students from diverse backgrounds, and in particular candidates from underrepresented minority groups.

Moreover, in the expectation of an aging profile, the role of doctoral training needs to be in line with "lifelong learning." Part-time doctoral candidates, who can assign themselves to PhD programs after or during an employment period, should constitute an increasing proportion of all candidates. As part-time doctoral training usually requires more than four years, the institutions would need to extend the study timeframe for doctoral training. More flexible requirements regarding enrollment or financial supports also need to be considered in order to encourage promising candidates to pursue doctoral training. For instance, doctoral candidates could be

allowed to switch between full-time and part-time forms of study, in accordance with their personal or financial situation.

8.6 Conclusion

This chapter looks at the recent higher education reform of doctoral programs in Taiwan, especially in response to the rapid declining birth rate, coupled with a rising life expectancy. Since doctoral education worldwide has undergone various challenges, the methods developed to address those difficulties vary in different countries. These methods are decided not only by the characters of the HEIs that offer doctoral programs, but also by the demands of wider society.

The tendency in Taiwan to have fewer children has caused a reduction in the demand for university teaching fellows. Due to the decline in the numbers of tenure track faculty, the academic job market has become increasingly competitive for newly graduated PhD holders and will remain straightened. Graduates, not just in social sciences but also in natural sciences and engineering, thus know early on in their doctoral programs that it is going to be hard to find a job in Taiwan. In addition, the general public and employers are inclined to believe that career preparation in a doctoral program matches neither the careers they would choose themselves, nor the careers that students adopt after graduation. The depreciating value of doctorates, mainly caused by a lack of employment opportunities for doctors, led to attrition and low completion rates in some disciplines, further lowering the domestic supply of PhD graduates.

In order to address this issue, Taiwan's government adopted a different approach to that of many western countries. The first step took by the island country was to reduce enrollment quotas for doctoral programs. This demonstrated the strong, state-controlled governance of higher education. In order to encourage talent to pursue doctorates, the government highlighted the mismatch between the knowledge possessed by PhD holders and the demands of the market. In addition to improving international connections, governmental responses emphasized a restructuring of doctoral program and collaboration between universities and the industry sector.

At the institutional level, the depreciating value of a doctorate forces universities to concentrate their efforts on attracting talent. As a result, the high priority for institutional strategies is to address the serious pipeline problem regarding PhD candidates. The HEIs provide flexibility in recruitment and credit limitations as well as award scholarships, in order to increase the size of the doctoral cohort and attract top-performing PhD students. They have also initiated a more interdisciplinary approach in their doctoral programs and anticipate an increase in the production of PhD holders in the non-academic sectors to help prepare society to cope with an aging population.

Based on the evidence of the reform process of doctoral education in Taiwan, this chapter identifies a number of new challenges. Addressing the fulfillment of

societal needs, the Taiwanese government has paid significant attention to alleviating the mismatch between doctoral training and the needs of society. Its policies in this area are mainly aimed at promoting the alignment between higher education and employment. There is still room for improvement in HEIs in core and transferable skills. Furthermore, the government should loosen control and decentralize power to the universities to facilitate the development of interdisciplinary PhD programs. Criteria and principles as to joint doctoral programs should be more flexible, and organized according to specifically individual situations. That is, interdisciplinary PhD programs should be formed as a result of either a top-down or bottom-up approach. The universities can lead the initiative in new programs as a response to external opportunities (e.g., international support for international and inter-institutional collaboration and mobility, governmental agreements on funding, etc.), while individual partners or research groups can lead in the establishment of a research network to foster interdisciplinary cooperation.

The demographic shift has already had profound impacts on the higher education system, and forced the government and universities to develop new strategies for dealing with the pressing issue. In the process of transformation, those barriers to Taiwan demonstrate how important flexibility, mobility, and diversity can be for a system expecting an aging profile.

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Chapter 9
Higher Education Massification in Taiwan: Equity for Whom?

I-Jung Grace Lu, Tung-liang Chiang, and Angela Yung-Chi Hou

Abstract Equity is the status in which all students, regardless of their personal and social circumstances, are given proper resources and support to achieve their educational potential. Higher education has always been a key element of social mobilization since it is considered a right that should be given to all in a world of knowledge economy. Under the influence of higher education massification, the admission rate to higher education in Taiwan has come to a peak of over 90%. Equity in accessing higher education for all students has still been challenged. In this chapter, the authors discuss the challenge of higher education equity in Taiwan by investigating who benefits from higher education massification. The chapter examines the influence of the two important policies for equity—the Multiple Entrance Program (MEP) and the Tuition and Miscellaneous Fees Exemption (TMFE)—on students' access to higher education. The struggles and challenges that the students from lower socioeconomic backgrounds face before and after they receive higher education are identified. Nonetheless, positive findings regarding the two policies and potentials for Taiwanese higher education institutions in providing quality education for all are also presented in the chapter, which also discusses the remaining concerns and future challenges of fulfilling the goal of equity in higher education in Taiwan.

Keywords Higher education massification · Equity in higher education · Multiple Entrance Program · Tuition and Miscellaneous Fees Exemption

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9.1 Introduction

Equity in higher education has been one of the most discussed topics since the massification of higher education began (Astin & Oseguera, 2004; Chou, 2015; Clancy & Goastellec, 2007; Dias, 2014). Theoretically, higher education massification implies that access to advanced education is provided to the mass public, whereas, in elite higher education systems, only a limited part of the populations is granted with the advanced knowledge needed to become professional (Dias, 2014; Tight, 2019; Trow, 2006). The massification of higher education should thus provide equal opportunities to students from diverse backgrounds and guarantee positive social mobility. However, access to higher education is not equal for all students.

Upon a broad review of the literature on the status of higher education massification in several OECD countries, Marginson (2016) explains that the massification of higher education may lead to a greater division between elite and disadvantaged groups due to the groups with socioeconomic advantage taking control of the higher education market. Marginson (2016) concludes that no clear connection between social mobility and higher education massification was found among these countries. Mok (2016) also suggests that in some Asian countries, such as China, Taiwan, Hong Kong, Singapore, South Korea, and Japan, the rapidly massified higher education system is one of the possible reason of rising youth-unemployment rates, which may lead to inequity for the youth population from disadvantaged backgrounds.

Halsey, Heath, and Ridge (1980) argue that the public might be either too optimistic or negative when viewing the issue of massification in higher education. The former suggested that the education opportunities greatly increased after the massification in higher education but the latter stated that massification in higher education did not narrow down the economic gap between upper and lower classes, nor did it impact social mobility significantly; still, some cases of social mobility did happen during the process (Halsey et al., 1980). The massification of higher education might thus provide a chance for social mobility, which may be explained through the theory of maximum maintained inequality (MMI) developed by Raftery and Hout (1993).

MMI refers to the situation in which cases of educational inequality will start to diminish after the demand of higher education resources by the groups with privilege and advantage is satisfied (Raftery & Hout, 1993). The theory of MMI suggests that once full access to higher education is guaranteed to the privileged groups of the population, it can then be extended to wider groups, such as students from lower socioeconomic backgrounds. Hence, if the capacity of education can fully satisfy privileged groups, the groups with disadvantages are then more likely to access higher education. That is, MMI entails that there is a satisfaction point in the demands for access to higher education among the advantaged groups.

However, Lucas (2001) challenged the concept of MMI and developed the theory of effectively maintained inequality (EMI), stating that there are no satisfaction points of access to higher education for the advantaged groups due to the fact that having access to higher education is not enough. Taking control of access to higher education may be critical, but it is certainly not the only way to control educational resources.

Once access to higher education increases and becomes common, as it occurs with the massification of higher education, taking control of the quality of higher education becomes crucial for the advantaged groups to control educational resources. As a consequence, though been given more opportunities to access higher education under the waves of massification, the disadvantaged groups may only be able to receive higher education with less quality. Educational inequality may thus still exist through the control of quality. Such control of quality education by privileged groups and the ways in which inequity is still efficiently maintained (Lucas, 2001).

9.1.1 Conceptual Framework

Adapting both MMI and EMI, the conceptual framework of this study links unequal access to higher education to unequal quality of higher education for students of higher and lower socioeconomic status, respectively. This conceptual framework explores the relation between higher education policies for equity and the accessibility to better higher education and education resources among students with lower socioeconomic backgrounds. This relation is then connected to students' outcomes in terms of academic achievements and employability (see Fig. 9.1).

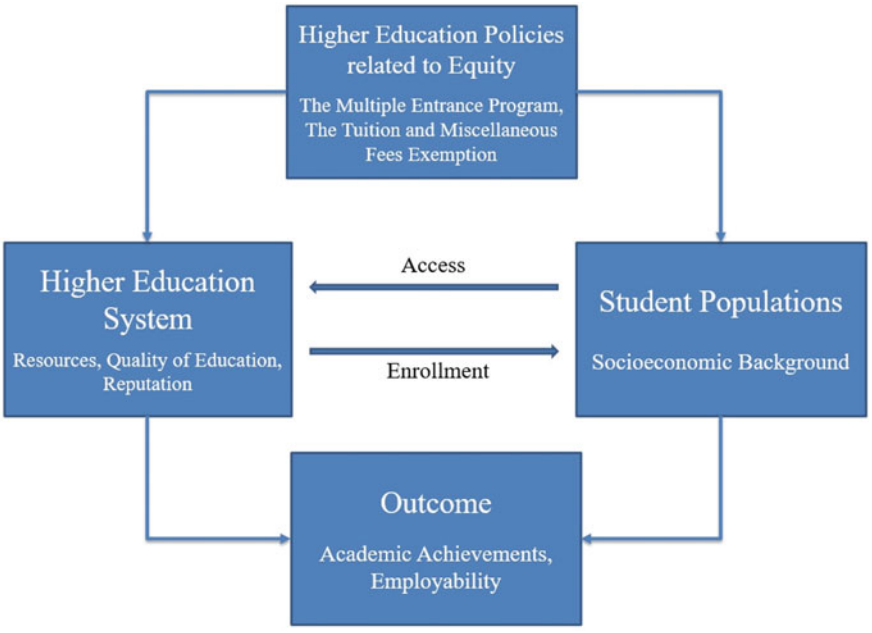

Fig. 9.1 Conceptual framework on equity and higher education massification (*Source* Authors)

Under this conceptual framework, this chapter aims to introduce the issues of inequity in Taiwanese higher education through an analytical literature review. Two important policies—the Multiple Entrance Program (MEP) and the Tuition and Miscellaneous Fees Exemption (TMFE), are examined in their significant relation to higher education inclusion and equity for all students in Taiwan. The influence of the policies on students' academic achievements as well as employment rate is also discussed.

Before introducing the higher education policies for equity, it is important to mention the privatization of higher education institutions (HEIs) in 1990 during the massification of higher education in Taiwan. The privatization influenced Taiwanese students' access to higher education and the quality of higher education, this representing an important background for equity policies.

9.1.2 Taiwanese Higher Education: Massification and Privatization

As mentioned in Chapter 2, after 1994, Taiwan entered a second phase in higher education expansion and massification to respond to the increasing demands for higher education and the increasing needs of the professional workforce due to changing market and economy. From 1994 to 2018, the number of institutions increased from 58 academic universities and colleges to over 150 universities. Furthermore, the net enrollment rate of students aged 18–21 increased from 26.3 to 71.2%, which translates in over 70% of the students aged 18–21 receiving higher education in 2018.

However, not all types of higher education catch on the trend of expansion in its numbers. When examining the types of universities (not including colleges), the number of national (public) universities has remained almost the same, with only a slight increase of 19 universities (from 15 in 1994 to 44 in 2019) (MOE, 2019). However, private universities, founded by private units, individuals, or organizations instead of the government, increased dramatically from 30 to 82 (see Fig. 9.2).

Private universities of technology have played a major role in the increasing number of private universities. The number of technology universities increased from only 2 in 1999 to 49 in 2019, comprising 60% of the total number of private universities. Privatization has namely occurred after 1996 massification among the HEIs, especially for universities of technology.

The dramatic increase in the number of private universities of technology has its roots in the movement for education autonomy and freedom following the lifting of martial law in 1987. The number of universities was highly controlled by the government before martial law was lifted. After the removal of the restriction on establishing universities, most of the technical colleges, which were mainly private, raced to transform their structures to universities, which had a higher reputation for quality education than junior colleges or colleges (Lin, 2002). Chu and Yang

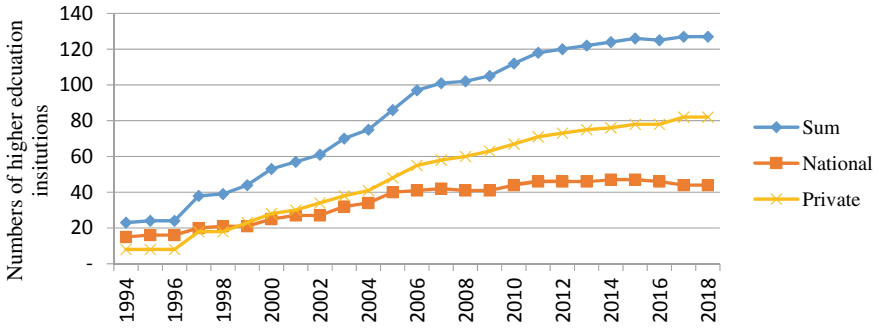

Fig. 9.2 Types of universities and higher education expansion in Taiwan (*Source* Authors using data from MOE [2019])

(2019) label this phenomenon as "Vocational Junior College Universitized" (p. 17). Thus, even though the overall number of universities increased after 1996 massification, the proportion of private universities, or, more precisely, private universities of technology, is among the highest.

However, transforming from a private junior college or even a college to a private university was complicated and time-consuming, as it involved the changing of the policies, the administrative structure of the institution, the curricula for the programs, and the staff and teaching resources. Thus, the vast transformation and "universitization" among private technical colleges and junior colleges has led to both poor quality of education and inequity for students who entered them (Chen, 2014). Furthermore, even though their quality is questionable, their tuition fee is twice higher than that of national universities (MOE, 2019). In other words, students who enter these HEIs not only receive a lower quality of education than that of public universities: they also pay higher tuition fees than those who enter public universities.

On the contrary, students who enter public universities are ensured with better resources, higher academic reputation, and more affordable higher education (Legislative Yuan, 2011, p. 373). Consequently, even after the massification of higher education has reached the enrollment rate of 71.2%, most Taiwanese students strive to enter public universities (Liu, 2019). Therefore, the key equity issue in higher education in Taiwan is: who managing to enter public university?

9.2 Higher Education Policies Related to Equity

Multiple Entrance Program (MEP) and Tuition and Miscellaneous Fees Exemption (TMFE) are two important policies on the equal reception of higher education in Taiwan. Both policies influence students' direct and indirect access to higher education as well as the outcomes of higher education. The following section introduces both MEP and TMFE policies.

9.2.1 The Multiple Entrance Program (MEP)

To provide aptitude assessment and suitable pathways to students based on their character, skills, and interests, the MOE canceled the Joint Entrance Examination, whose sole access criterion was only the examination grades. The MOE then announced the MEP in 2002. Under the spirit of educational equity and diversification, MEP hopes to provide multiple pathways for all students to select from in order to enter the higher education institutions (HEIs) they aspire to.

The MEP is divided into two to three stages. The first stage is the General Scholastic Ability Test (GSAT). According to the University Act, Article 23, student graduated from either public or accredited private senior secondary schools or equivalent shall be entitled to study for a bachelor's degree. All students who hope to enter universities and colleges need to take the GSAT, to verify whether students own the fundamental knowledge and skills of their senior high school programs. After taking the GSAT, students enter the second stage of MEP in which they are given three pathways to apply for their preferred HEIs after receiving the GSAT score: the Stars Program, the personal application, and the admission by the Advanced Subjects Test (AST) score (see Fig. 9.3).

To join the Stars Program, the students need to be recommended by their high schools to the bachelor's program they wish to apply. After receiving the recommendation, the universities or colleges decide whether to provide the admission offers to the students based on their GSAT score or a face-to-face interview. The Stars Program only appeared in 2007 to balance the regional development and include more students from low-income township to better performing universities.

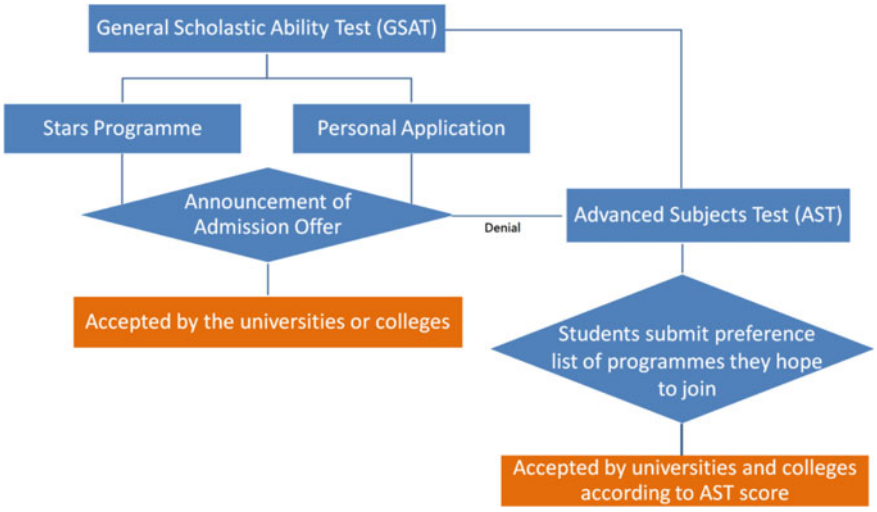

Fig. 9.3 Admission process and pathways to higher education (*Source* Authors using data from MOE [2019])

The process of personal application is similar to that of the Stars Program; however, all applications and recommendations are organized by the students individually. Students who are accepted either through the Stars Program or the personal application do not need to participate in the third stage of the MEP. Whereas those who do not select either the Stars Program or the personal application and those who fail either or both applications enter the third stage of the MEP—the AST.

The AST focuses on a student's advanced knowledge of specific subjects and readiness to study in specific academic programs. After students finish the AST exam, they need to submit a preference list of the programs they wish to join according to their AST score. All universities and colleges then announce their admission result through the Joint Board of College Recruitment Commission or the official website of each institution (see Fig. 9.3 for the admission process).

All admission processes need to follow the principles of equity, justice, and transparency. Regulations on methods, the quota of recruitment, review of grades, treatment of students' appeals, and other proceedings shall be formulated by the university, college, or by the Joint Board of College Recruitment Commission, and be reported to the MOE for approval before implementation. All rules, including the penalties of violation, GSAT, AST, and other entrance examinations carried out by universities or colleges are publicly specified in the College Admission Guidelines and the websites of each higher education institution.

Even though the main purpose of MEP is to provide aptitude assessment and diverse pathways to students, MEP highly influences equity in accessing higher education for students from different backgrounds (Chang & Lin, 2015; Chin, 2004; Yap, 2018). Thus, in many studies, MEP has been identified as an important policy influencing the level of equity for students who have entered public higher education after the massification process.

9.2.2 Tuition and Miscellaneous Fees Exemption (TMFE)

Financial support policies for students with low socioeconomic backgrounds are also carried out by the MOE to help them access HEIs. These policies are divided into two groups: the TMFE and scholarships. The TMFE is the main instrument to promote equity in higher education for students with low socioeconomic backgrounds. For example, in the Regulations for Upper Secondary and Tertiary Education Tuition and Miscellaneous Fees Exemption for Student with Low and Middle-Low-Income Family, all students who are from middle-low and low-income families are given the right to reduce their tuition fees partially or fully when entering all levels of education, including higher education.

There are additional TMFE policies for other groups of students with disadvantaged backgrounds. These TMFE policies include:

- Regulations for Tertiary Education Tuition and Miscellaneous Fees Exemption for Indigenous Students

- Regulations for Tuition Fee Exemption for Students with Physical and Mental Disabilities and Children of Parents with Physical and Mental Disabilities
- Regulations for Ensuring the Academic Progression and Government Sponsorship for Overseas Study for Indigenous Students.

Besides, the universities and other higher education institutions are also given the autonomy to set up additional scholarships for these target equity groups. This provides more opportunities for the students from a disadvantaged background to be enrolled in quality HEIs.

However, one may wonder whether these policies and support suffice or not. The chapter thus sets out to focus on issues: (1) who goes to public universities; (2) whether students with low socioeconomic backgrounds are given equal or more opportunities to study in public universities.

9.3 Who Goes to Public Universities?

As mentioned in the previous section about higher education privatization, in Taiwan, entering a public university has been one of the top priority for students, as public universities are more likely to provide quality education and are much more affordable than private universities. This section examines the issue of who enters the public universities under the influence of the two policies—the MEP and TMFE— which the MOE carried out to enhance equity in the access to quality higher education for students with disadvantages.

9.3.1 Socioeconomic Differentials in University Enrollment Rates

Under the influence of massification since the 1990s, the university net enrollment rate increased from 29.07% in 1996 to 71.03% in 2018 (MOE, 2019). Chan (2014) argues that the relative gap between the net enrollment rate of students from the lowest income backgrounds and the highest income backgrounds still slightly increased from 17.4% in 1996 to 25.2% in 2011. However, between 2011 and 2017, the relative gap did not increase but fluctuated (see Fig. 9.4). In 2014, the gap came to the lowest point of 13.9% but climbed back to 22% in 2017. This indicates that even though the overall situation of higher education accessibility has improved for all students after higher education massification, the relative gap between the enrollment rate of the richest and poorest has not narrowed. The fluctuation of the relative gap may also indicate that there may be other factors that influence the stratification of access to education between the two groups.

It is also important to note that the net enrollment rate between the richest, the second, and the third-highest of the income background has been more and more similar over the years (see Fig. 9.5). This finding supports Kuan, Peng, and Choi's

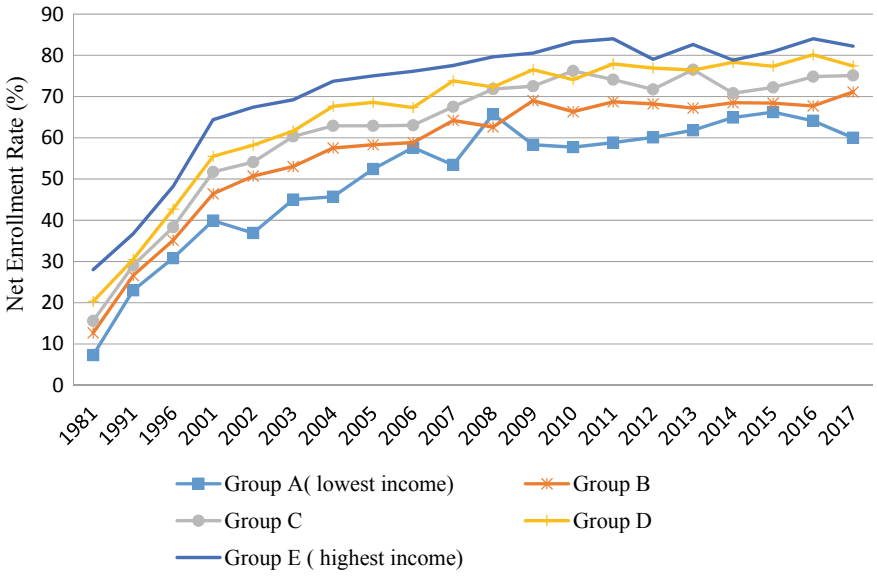

Fig. 9.4 Family income and expenditure of net enrollment rate of the age group 18–23 (*Source* Authors using data from MOE [2019])

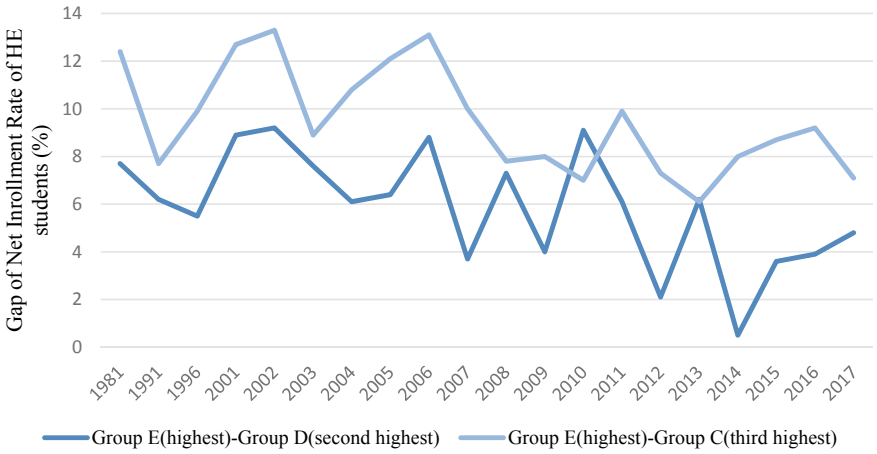

Fig. 9.5 Gap between the highest group, the second-highest, and the third-highest (*Source* Authors using data from MOE [2019])

(2019) research that reveals that society's "compliers"—namely, students from middle-income families—have benefited from the massification of higher education. Kuan et al. (2019) also indicate that compliers are narrowing up their distance with the richest in terms of accessing higher education and occupations.

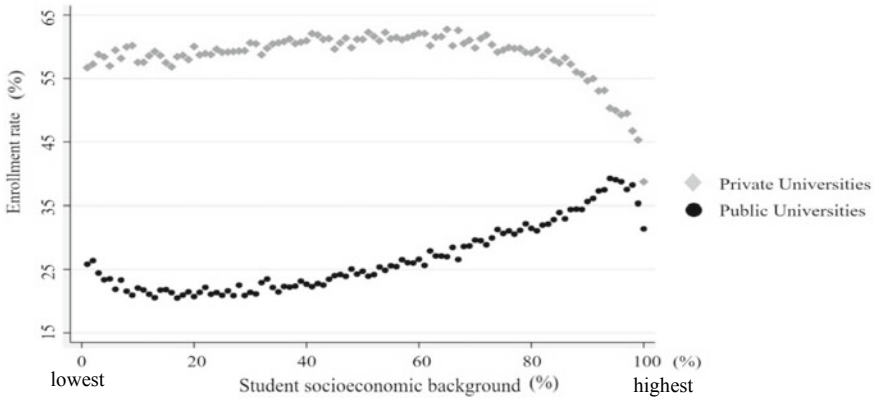

Fig. 9.6 Student income background and the relation with public and private universities. The enrollment rate equals the enrollment number between 2010 and 2014 divided by the total childbirth number between 1993 and 1995 (*Source* Shen & Lin, 2018)

As for the types of universities, students with lower-income backgrounds have a higher percentage of entering private universities, according to Shen and Lin (2018). As shown in Fig. 9.6, if divided the student socioeconomic background into five groups from the lowest 20% the total population to student group of the highest 20% of the total student population in Taiwan, students from the lowest group of socioeconomic background are 10% higher in enrollment rate at private universities than student group with the highest socioeconomic background.

Moreover, Shen and Lin (2018) pointed out that only around 10% of the students from the highest socioeconomic group entered universities of technology, against 40% of the students from the lowest group of the socioeconomic background (see Fig. 9.7).

When it comes to the top 10 universities in Taiwan, the difference between the proportions of the richest and poorest student population becomes even greater (Shen & Lin, 2018; Yap, 2018). According to Shen and Lin (2018), universities that are ranked highly in the world rankings and those with more abundant resources are more likely to have students from the highest socioeconomic backgrounds than universities with lower ranking and funding. Furthermore, research examining the income of townships where National Taiwan University's (NTU) students reside shows that a very high percentage of NTU's students come from high-income municipalities and elite high schools (Luoh, 2018). Though township income and elite high schools do not directly connect to the socioeconomic background of a student, research by Luoh (2018) indicates the significant connection of a student's background and their enrollment in elite universities.

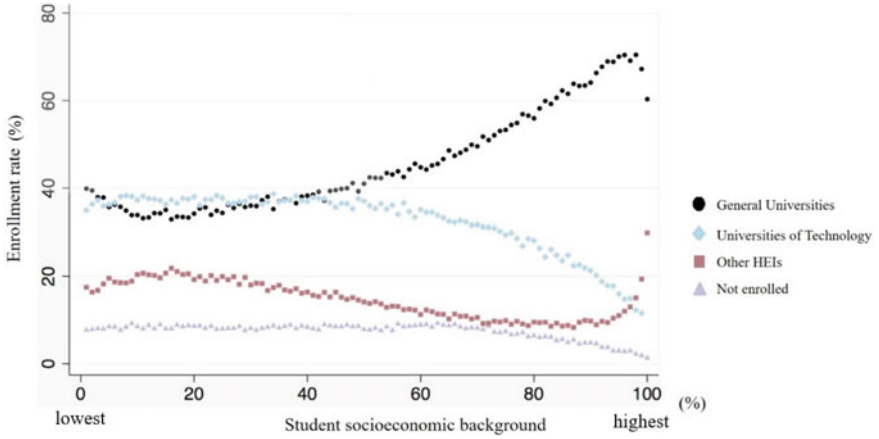

Fig. 9.7 Student income background and the relation with different types of universities (*Source* Shen & Lin, 2018)

9.3.2 MEP and Enrollment Rates in Different HEIs

MEP, as aforementioned, is one of the main strategies to promote the equity of access to higher education. It provides three main pathways: Stars program, personal application, and SAT. However, after MEP was implemented, several studies criticized it for causing disadvantages to students with lower-income backgrounds or students of parents with lower education achievements (Chang & Lin, 2015; Chin, 2004; Chiu, 2009). Specifically, applicants need more resources and time to prepare the documents for the application and the interview. Students from lower-income families or disadvantaged backgrounds may find it more challenging to prepare for the application process than for entrance exams (Chang & Lin, 2015; Chin, 2004). As a result, there were waves of protest by the parent groups to ask MOE to restore the old entrance exam system (Fen, 2015). In response, the MOE released a report in 2015 arguing that through the MEP and the TMFE policies, students from lower-income families were more likely to receive higher education. The 2015 document also reported a growth in students' enrollments at the national top 10 universities (MOE, 2015). Lee and Lien's (2016) study on the impacts of MEP on students from National Chengchi University also indicates that MEP increases the opportunities for students from disadvantaged backgrounds and states that MEP does not specifically benefit students from higher-income families.

Though the MEP does help students from a lower-income background in accessing a better public university, this positive influence mainly appears in the Stars Program, as Yap (2018) suggests, due to the assessment mechanism. Applicants for the Stars program are students who are recommended by high schools. This recommendation, which is merely based on school performance, grades, and personal features (such as school behavior and community volunteering credits), provides seemingly equal

opportunities for all students in school. Echoing Yap's (2018) research, Luoh (2018) also found out that the Stars Program valorizes the diversity of students' locality and reduces both township income differences and the concentration of students from particular high schools, such as elite high schools.

The other two pathways—personal application and AST—may lead to a greater disadvantage for students with lower-income backgrounds in accessing higher education and even make their situation worse (Yap, 2018). Students who go for personal applications tend to be students of higher socioeconomic status, and their parents, most likely, come from higher education backgrounds. These students are also more likely to be accepted in public universities due to cultural influence from their parents, which may enable them to perform suitable behaviors, prepare decent presentations and projects, and speak the language which is considered as proper by the university professors who interview them or examine their work (Yap, 2018). These advantages increase the students' chances of being accepted into the program. Conversely, students with parents of lower socioeconomic and educational backgrounds are less likely to be accepted through the personal application process due to their performance during the interview because their interaction and communication skills may be influenced by their family's cultural and living environments, which are less similar to the professors' (Yap, 2018).

Even though most of the studies suggest that the Stars Program helps create more opportunity for students from lower socioeconomic background to entre higher education, some of the studies still point out the potential issues of Stars Program. For example, Chiu (2018) argues that the positive influence of the Stars Program on increasing opportunities for students from lower socioeconomic backgrounds may not be as simple and positive as it seems. Chiu (2018) examines students from nine community public high schools and 16 struggling private high schools who later entered medical departments in elite universities. Results reveal that the socioeconomic status remains a key factor for students to enter elite programs and universities. Chiu (2018) suggests that the Stars Program seems to include more students of lower socioeconomic status into better universities. However, when examining the actual socioeconomic status of these students, most of them come from high-income backgrounds regardless of their high school being a struggling private high school. Therefore, even though the Stars Program may include more students from high schools of lower socioeconomic communities, the program may still only truly benefit the rich of such communities rather than the poor.

Interestingly, in terms of the number of applications for each pathway, the number of personal applications increased dramatically from around 10% in 2002 to over 43% of the total students in 2019 (see Fig. 9.8). The number of students going for personal applications has even surpassed the number of students taking AST since 2016. On the other hand, the percentage of students taking the Stars Program has been fluctuating since 2002. It has increased from around 6% of the total student number of taking entering higher education in 2002 to more than 13% in 2018 after a small decrease in 2017 (MOE, 2019). More and more students may thus be gaining advantages in applying through personal applications, especially the students from high- or middle-income families. The number of students who enter university through the

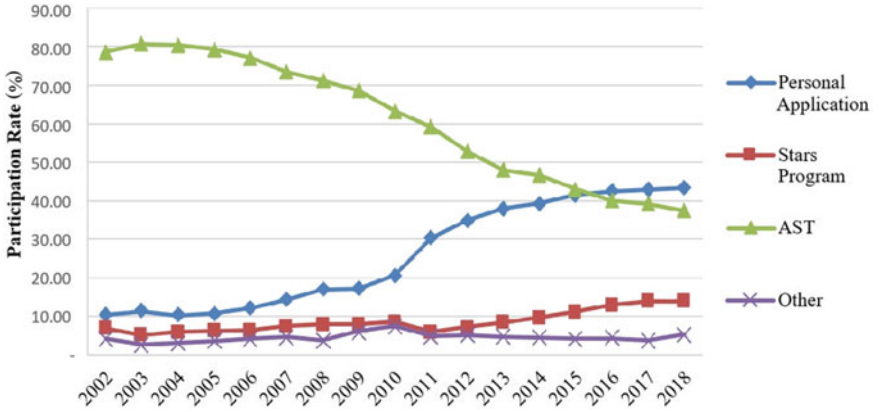

Fig. 9.8 MEP participation rate from 2002 to 2018 (*Note* The participation rate of each pathway equals the participants' number of each pathway divided by the total number of MEP participants of the year. The Stars Program only started from 2007. Before 2007, there were school's recommendations) (*Source* Authors adapted from MOE [2019])

Stars Program has remained steady over the years, and it may be highly influenced by other factors, such as policies, instead of the socioeconomic background of the students.

9.3.3 The Tuition and Miscellaneous Fees Exemption (TMFE) and Enrollment Rates by Type of Higher Education Institutions

Students from disadvantaged backgrounds are found to be more likely to enter private universities or colleges of technology. According to Lin's (2017) research on students who apply for the TFME within different types of HEIs, the percentage of students from disadvantaged backgrounds in the private universities or colleges of technology is twice higher than that of public universities (see Table 9.1). Moreover, when specifically comparing private technical colleges and the top 12 universities, the proportion of students applying for TFME in private technical colleges (24.02%) is triple, with only 7% applying for the 12 top universities.

Li, Ma, and Li (2018) also indicate the students' application for TFEM and scholarships is significantly influenced by the types of HEIs, including public universities, private universities, and universities and colleges of technology ($p < 0.001$). Through multiple comparisons, the result shows that students who study in private universities and colleges of technology are more likely to apply for TFEM or scholarships than students who study in general private universities (see Table 9.2). The research of Li et al. (2018) further indicates that even within private universities, students who study in a private university or college of technology are more likely to be students from

Table 9.1 Percentage of students applicants of TMFE in different types of HEIs

Types of HEI	(1) Number of fees exemption applicants	(2) Number of students who received scholarships for students from disadvantaged backgrounds	(A) Total number of students from disadvantaged background with financial support (A) = (1) + (2)	(B) Total number of students	(A) ÷ (B)*100 = %
Public University	18,506	8,604	27,110	305,479	8.87
Private University	26,390	17,457	43,847	375,532	11.68
Public Technical College	12,783	10,187	22,970	129,176	17.78
Private Technical College	71,490	55,762	127,252	529,825	24.02
Public University of Technology	31,289	18,791	50,080	434,655	11.52
Private University of Technology	97,880	73,219	171,099	905,357	18.90
Top 12 HEIs[a]	7,786	4,100	11,886	169,769	7.00
Total	129,169	92,010	221,179	1,340,012	16.51

Note [a]Top 12 HEIs includes National Taiwan University, National Tsing Hua University, National Cheng Kung University, National Central University, National Chiao Tung University, National Sun Yat-sen University, National Taiwan University of Science and Technology, China Medical University, National Yang Ming University, Chang Gung University, National Chung Hsing University, and National Taiwan Normal University according to the QS World University Ranking 2017

Source Lin (2017)

Table 9.2 Relation between types of institutions and student applicants of TMFE

TFS	Types of HEIs				Total number of students
	Public university	Public university of technology/college	Private university	Private university of technology/college	
No Applicants	5,125	2,116	8,929	6,204	22,374
Standardized residual	1.9	0.1	3.4**	−5.5**	
Applicants	306	138	521	505	1,479
Standardized residual	−1.9	−0.1	−3.4**	5.5**	
Total number of students	5,431	2,254	9,450	6,709	23,844

Note χ^2 (3, 23,844) = 31.110***, **$p < 0.01$, ***$p < 0.001$, Based on data from Taiwan Higher Education Database, with a sample of 24,977 students from 2005–2006 school years and 156 HEIs
Source Li et al. (2018)

low-income and middle-low-income families when compared to all other universities in general.

Luoh (2018), Shen and Lin (2018), and Chen and Chen (2009) argue that the public subsidy to the universities may lead to reversed income redistribution, and greater inequity may follow as the poor are paying more than the rich to receive higher education. This negative cycle of unequal access to public university echoes the hypothesis of EMI suggested by Lucas (2001), whereby inequality is in fact maintained regardless of the massification of higher education. Despite massification, the rich are still more likely to access better but cheaper resources than the students from lower-income families.

9.4 Higher Education Outcomes

Following the higher education massification in Taiwan, a bachelor's degree has gradually become the basic requirement to enter the labor market. According to the National Employm*ent Rate Report* by the Ministry of Labour (2018), over 50% from 2016 to 2018 of the employment rate involved graduates with bachelor's degrees or higher. Several studies also argue that Taiwan has now entered the era of "overeducation" (Lu, 2019). Higher education has thus become important to social mobility for students of lower socioeconomic status (Liu, 2019). The outcomes of higher education become essential when exploring equity and social mobility in higher education. This section sets out to explore academic achievement, employment rate, and salary relative to students of both lower and higher socioeconomic status upon graduation.

9.4.1 Academic Achievements

When examining the academic performance of students who enter HEIs through the different pathways of MEP, students who enter through the Stars Program tend to have higher academic performance than others (Liao, Chang, Wang, & Horng, 2013; Wang & Li, 2012; Yang, 2012; Yap, 2018). Interestingly, according to Yap (2018), the academic performance of students from the Stars Program is not influenced by their socioeconomic background, which may be explained by the fact that one of the access criteria is their performance in senior high schools. Thus, when these students enter HEIs, they may already have the potential to perform better than others due to their senior high school study experience, regardless of their socioeconomic background.

Concerning TMFE, its impact on academic achievements of students who receive it is positive (Hung & Chen, 2003; Liu, Tsai, & Li, 2016). Liu et al. (2016) suggest that students from lower socioeconomic backgrounds who receive higher education tend to be more hardworking and are most likely to be actively engaged in their academic work than their peers. Liu et al. (2016) argue that these students are highly motivated to complete their academic work and view higher education as an opportunity to support their family and improve their socioeconomic status once they finish their studies. Hung and Chen's (2003) research on a group of medical students also indicates that medical students from lower-income families who receive TMFE or scholarships are more hardworking than average medical students, and they tend to achieve higher academic performance.

However, several studies also found that due to the lack of financial support from their families, students from lower socioeconomic backgrounds are more likely to be distracted from their learning in order to make ends meet (Chou & Wang, 2012; Li et al., 2018; Lin, 2010). Li et al. (2018) suggest that students who study in private universities, especially private universities of technology, are more likely to struggle to pay tuition fees, apply for student loans or subsidies, and take on one or more part-time jobs. This situation of taking on several part-time jobs then limits the students' time for academic work. Moreover, most of the students who pay for their tuition fees need to spend their savings or make loans to finish their degrees from private universities. This situation leads to an even more challenging financial status for them when they graduate and creates an even more critical issue of inequity for students of lower socioeconomic status (Li et al., 2018).

9.4.2 Employment Rates and Salaries

The unemployment rate of students who graduate from universities has become higher than the average unemployment rate since 2005 (MOL, 2018). Mok (2016) argues that such a high unemployment rate among the young bachelor's degree holders might be due to the rapid expansion of higher education. The rising number of bachelor's degree holders overpasses the occupational vacancies within the labor

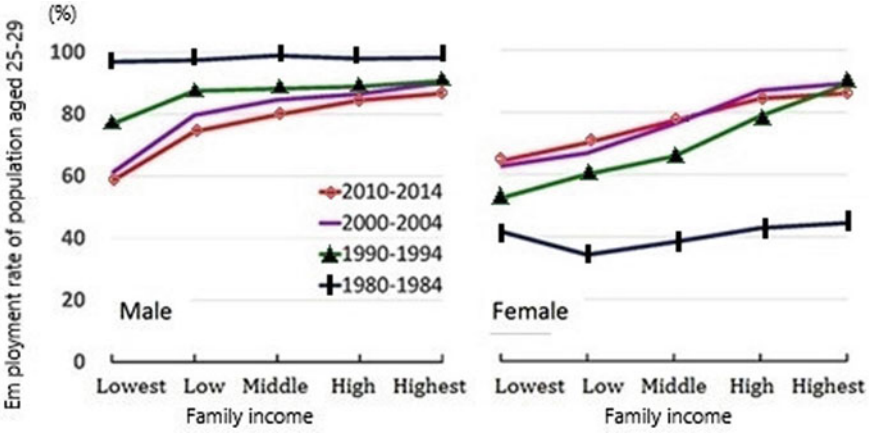

Fig. 9.9 Employment rate of the higher education graduates aged 25–29 according to gender and family income (*Source* Chiang and Hou [2018])

market. However, interestingly, according to Chiang and Hou (2018), by separating socioeconomic groups according to gender and comparing employment rates between men and women who received bachelor's degrees or higher, found out that women aged 25–29 perform better than men (see Fig. 9.9). Women were found to have slightly improved their opportunities in finding jobs over the past few years and even have similar opportunities in findings jobs as men (Chiang & Hou, 2018). This increase in employment rates has been a significant positive result of higher education massification for students from lower-income backgrounds.

However, the overall situation of the employment rate for students of lower socioeconomic status still needs to be improved. Chiang and Hou (2018) state that Taiwan is still facing critical challenges in the increasing gap between families of high and low socioeconomic status in terms of employment rate.

Kuan et al. (2019) indicate that the population who attended universities due to the higher education massification—the so-called compliers—is benefiting the most from the massification in terms of career development, salary, and income. However, other groups, such as the always-takers, who will enter universities no matter the influence of massification, and the never-takers, who will never enter higher education regardless of higher education massification, are not benefiting much.

Furthermore, through the different-in-difference (DID) analysis, Kuan et al. (2019) found that the higher education massification negatively but passively impacted the always-takers through the increasing competition with the compliers for better occupational prestige and salary. As for the never-takers, who are those with the lowest socioeconomic background, they do not benefit from the massification, nor are they significantly disadvantaged by the massification.

Concerning the salary after graduating from different types of universities, Lai (2012) suggests that students who graduated from highly reputative universities

(mainly, public universities), tend to have a higher salary than students who graduated from less reputative universities, such as private technical colleges. Nevertheless, after five years of employment, the gap between the employees may disappear, and the institution the person graduated from may become irrelevant (Lai, 2012). This is due to personal skills and character being able to replace the importance of one's educational background.

Students who graduate from public universities are more likely to enter postgraduate programs than students from private technical universities and colleges (Lin, 2010). Most of the students who keep on studying for a master or doctoral degree are most likely to obtain occupations with a higher salary than those who enter the job market with a bachelor's degree due to the saturation of bachelors in the job market (Lai, 2012; Lin, 2010). Moreover, those who enter postgraduate programs are more likely to belong to a higher socioeconomic status.

9.5 Conclusion

Going back to the question of "who enters public university?", this chapter concludes with the realization of how equity in higher education may somehow still be far from where it should be in Taiwan. The stratification between students from low and high socioeconomic backgrounds becomes even more severe when comparing the private universities of technology and elite universities. However, this chapter also shows some encouraging inputs, including how comparing to the time before MEP, students who enter university through the Stars Program are more likely to perform better than other students.

Inequity in higher education massification is not a new issue around the world, nor is it new in Taiwan. For equity to work, the policy not only needs to tackle the issue of access to higher education but also the quality of higher education. The Taiwanese government may need to rethink the structure of higher education and provide quality assurance to support the private universities of technology in becoming better education providers—even by taking legal action to ensure the quality of higher education by controlling the numbers of HEIs if needed. Students may also need to rethink the pathways of receiving post-secondary education: is entering university, which is mainly academic-based, necessary? Other possibilities beyond education, such as vocational training, may need to be reconsidered within educational policies to increase the competitiveness and employment rates among all students. It is possible to suggest that Taiwan is still far from fulfilling its mission of achieving equity in higher education in terms of socioeconomic imbalance. However, there are high hopes for the future.

This research is limited by factors that have not been taken into account when examining inequity in higher education, such as parents' educational background and the influence of ethnicity. Furthermore, groups of students with other disadvantages, such as students with disabilities, should be considered, and their challenges in receiving higher education should be discussed in future studies. These students may

have an entirely different experience of receiving and accessing higher education than the group of students from low socioeconomic backgrounds. This chapter, however, has laid the groundwork for future research into higher education massification and its link with privatization. Moreover, it has explored the issues of inequity under the influence of MEP and TMFE policies. This study may thus provide significant findings for future research to further understand the situation of inequality concerning both students from low socioeconomic backgrounds and the impact of privatization and massification on Taiwanese higher education.

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Chapter 10
Technological Innovation and Massive Open Online Courses (MOOCs) in Taiwan Higher Education

Yu-Ping Hsu

Abstract Massive open online courses (MOOCs)—an innovation with great potential to promote lifelong learning and expand participation in higher education—have been applied worldwide. Since 2012, the widespread interest in a variety of MOOCs has contributed to a platform that promotes higher education opportunities. In light of the importance of MOOCs, Taiwan's Department of Information and Technology Education, under the Ministry of Education (MOE), launched a series of MOOC projects to help higher education institutions (HEIs) develop digital teaching models and advance the quality of MOOCs. The spread of MOOCs in Taiwan has led to new pedagogical concepts and offered numerous advantages to HEIs. However, there are four main issues with the emergence of MOOCs, including costs, completion rates, student learning outcomes, and online degrees. Furthermore, how to ensure the quality of online learning, credits, and credentials poses challenges to MOOCs.

Keywords Massive Open Online Courses (MOOCs) · E-pedagogy · Technological innovation · Higher education

10.1 Introduction

As one way of learning, massive open online courses (MOOCs) have been part of the educational arena since 2012, when The New York Times published the article "Year of the MOOCs" (Papanno, 2012). MOOCs are often presented as a new form of opening access to quality higher education and creating global universities for students (Popenici, 2015), which also triggers in-depth expertise in pedagogy in higher education. With the increasing number of participants, MOOCs have obtained public attention as a form of online and open education that has the potential to influence the higher education system.

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Aware of the importance of MOOCs, Taiwan's Department of Information and Technology Education, under the Ministry of Education (MOE), has developed digital teaching models and advanced the quality of MOOCs since 2014. The MOE launched a series of MOOC projects for higher education institutions (HEIs), and, currently, more than 50 HEIs cooperate with various MOOC platforms and thousands of open-access courses from different disciplines.

10.1.1 Backgrounds

The term "massive open online courses (MOOCs)" was coined to describe the distributed peer learning model on which the "Connectivism and Connective Knowledge" course developed by Stephen Downes and George Siemens was based (Zhu et al., 2018). Digital learning involves formal or informal online, distance, and blended forms of learning. According to those features, MOOCs have been classified into two main categories based on their functions: networks of distributed online resources (cMOOCs) and well-structured learning pathway resources centralized on MOOC platforms (xMOOCs) (Downes, 2008; Zhu, Sari, & Lee, 2018).

The MOOC field has subsequently evolved rapidly. In 2014, approximately 1,000 MOOCs were available in several languages from universities in the USA as well as 800 from European institutions. Worldwide, the top five MOOC providers are Coursera, edX, XuetangX, Udacity, and FutureLearn. These MOOCs providers have been monetized financially in the education market. For instance, Coursera generated an estimated $140 million in revenues in 2018 according to Forbes, landing Coursera on Forbes' list of Next Billion-Dollar Startups (Feldman et al., 2018). In 2018, more than 900 universities around the world had announced or launched 11.4k MOOCs, attracting more than 101 million participants (Shah, 2018).

MOOCs were an internet revolution for universities facing financial pressures and limited budgets. Many scholars believe that MOOCs could solve the difficulties of limited access to higher education (Joksimović et al., 2018; Pappano, 2012; Zhu et al., 2018). Universities provide instant, free, online, and open-access courses, and interactive coursework via the internet to anyone interested in learning. They see MOOCs as an inexpensive and innovative way of delivering knowledge to various students while offering the potential for profit. MOOCs have been rapidly adopted by many universities and countries that offer MOOC-based degree courses, including Arizona State University, the University of Pennsylvania (an Ivy League institution), the University of California San Diego, and Imperial College London.

Furthermore, MOOCs have led to discussions about teaching and learning. Compared with Open Course Ware (OCW), developed by Massachusetts Institute of Technology (MIT), MOOCs build two-way interactions between users and advance teaching and learning skills by combining technological innovation with e-pedagogical strategies. Most opinions suggest that MOOCs provide new ways of teaching and learning, challenging traditional models of higher education. HEIs should use MOOCs effectively to "change teaching, learning and the pathway to

employment" (Friedland, 2013). Nevertheless, questions about MOOCs' pedagogy, new business models for higher education, and quality assurance have emerged, and critics argue that MOOCs are another hype around technology in education, simply playing a "marketing exercise" role (Conole, 2013, p. 2) in the knowledge economy society.

In Taiwan, MOOCs also face certain challenges, such as their quality, assessments, e-pedagogical strategies for the effective use of MOOCs, and high drop-out rates. As most MOOCs are typically non-credit, offer no certificates, and have no strict entry requirements, they are not all formally supervised by the MOE. Therefore, this chapter enters the MOOC debate from the perspectives of shifting pedagogy paradigms and adaptive learning. The following section will clarify the characteristics of MOOCs; current issues relative to MOOCs in Taiwan will then be explored.

10.1.2 Purpose of the Chapter

This chapter builds on earlier systematic researches on MOOCs (Joksimović et al., 2018; Zhu et al., 2018), and examines the trends and patterns of MOOCs from the perspectives of policy practices and quality assurance. The ladder of analytical abstraction is adapted as an analytical framework, transforming qualitative data by clustering, sorting, and linking information to illustrate MOOCs (Miles & Hubermans, 1994). As this study is exploratory and thematic in nature (Creswell, 2005), broad information is narrowed into themes to elicit a deeper structure of various dimensions. Verification of systematic themes are based on the researchers' critical reflection and shared understanding, which enhance validity and reliability and matrix analysis of themes by crosschecking. Academic articles and policy reports are reviewed inductively, and categories are formed by analyzing themes of MOOCs relating to policy practices and quality assurance. The concept of quality assurance has played a key role in motivating higher education institutions to introduce a digital dimension to formal tertiary education. Online education has been vital in enhancing digital literacy and internationalization of higher education through pedagogical and policy practices. Thus, the focus of the chapter is on how MOOCs affect higher education policies in Taiwan, and how MOOCs have been shaped by those policies and quality assurance initiatives in turn.

10.2 MOOCs in Taiwan

In Taiwan, MOOCs are known as mokeshi (磨課師), and they provide a platform for digital and online learning and resource sharing. MOOCs generally include a massive amount of various materials for interested learners and form new learning models in the age of e-learning.

10.2.1 Development of MOOCs and Related Policies

Given the importance of MOOCs, universities have started to join MOOC networks. For example, National Chiao Tung University (NCTU) established NCTU OCW in 2006, and National Taiwan University joined Coursera, offering 22 courses since 2013. At the same time, universities have cooperated and created an open education platform known as "ewant education network" (ewant育網), which was the first MOOCs network organized by universities voluntarily. Universities have also joined various MOOC platforms, such as ShareCourse, Open Edu, and Coursera.

The Taiwanese government also noticed the increased popularity of MOOCs. Since 2014, the Department of Information and Technology Education of the MOE has launched a series of projects related to MOOCs to help universities develop digital teaching models and advance the quality of MOOCs (Yang, Huang, & Huang, 2017). The MOE has promoted MOOCs at different educational levels, including compulsory education, post-secondary education, and higher education levels. At compulsory and post-secondary education levels, the MOE implemented the 2-year K-12 MOOCs Innovative Teaching Project in 2015. At the higher education level, the MOE launched the 4-year New Generation of Digital Learning Project, which is a MOOC subproject to assist colleges and universities in developing classical MOOCs from 2014 to 2017 (Fig. 10.1).

In 2018, the MOE initiated the Digital Learning Sprout Project in higher education and provided NT$37 million to universities to reduce the digital divide by promoting self-directed learning and digital learning, creating certificate systems, and ensuring the quality of MOOCs. These MOOC-related policies have contributed to the rapid development of MOOCs in Taiwan. The MOE integrated numerous platforms, such

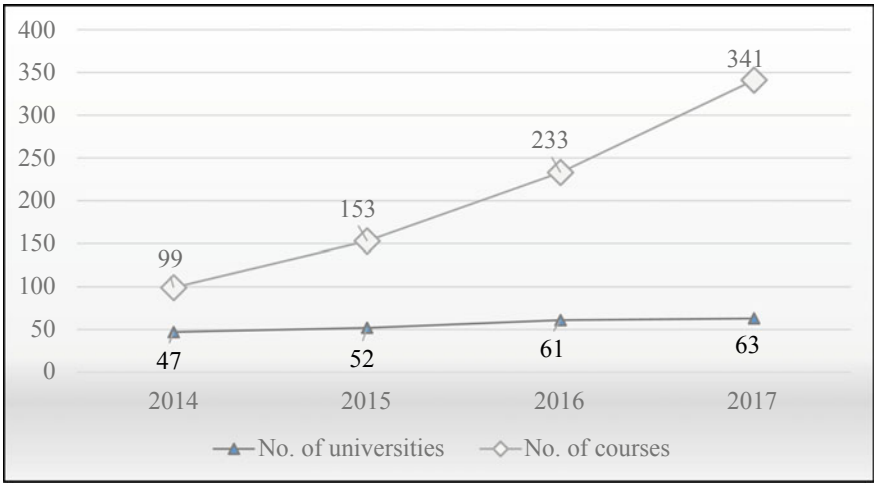

Fig. 10.1 Number of universities offering MOOCs and number of MOOCs (2014–2017) (*Source* Author)

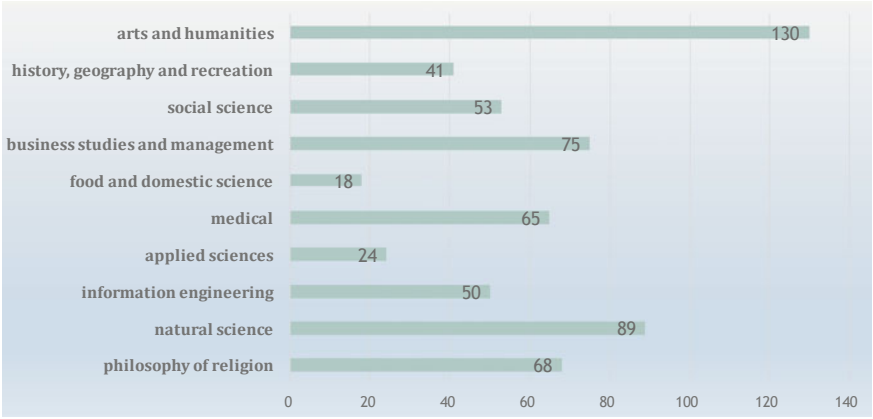

Fig. 10.2 Subjects of MOOCs in 2019 (*Source* Taiwan mooc website)

as Taiwan MOOC OERs, OpenEdu, and ewant, and created an official platform, Taiwanmooc (http://taiwanmooc.org/). Ten subjects are classified on Taiwanmooc, including art and humanities, social sciences, and natural sciences (Fig. 10.2). As of 2019, 70 universities had joined the MOE's MOOC projects, offering more than 700 courses online.

In addition to the MOE's official Taiwanmooc platform, universities have engaged in various types of cooperation to promote MOOCs. For instance, National Yilan University proposed a shared model of MOOCs to other universities in eastern Taiwan. This model includes five universities, which share their MOOCs and credits, providing students with a greater diversity of courses. Furthermore, 12 private universities established the Excellent Long-Established University Consortium of Taiwan (ELECT) to share multiple online courses. In 2019, the 12 participating private universities provided a total of 791 courses, focusing in particular on artificial intelligence and technology disciplines and interdisciplinary learning.

10.2.2 Features and Emerging E-Pedagogy of MOOCs

Online education is a significant emerging research field due to the dramatic development of technology such as computers, smartphones, and the internet. Digital learning and e-learning have been explored to overcome the difficulties of limited access to physical campuses. One major difference between MOOCs and online education is that MOOCs are a specific platform designed to offer open access for prospective students, whereas online education works as a pedagogical solution for enrolled students within universities (Popenici, 2015).

In 1999, the MIT initiative for open educational resources (OER) and OCW marked a revolution in online education and paved the way to MOOCs, which provide

free, open access to digital documents and video resources for learning and research. Then, in 2002, MIT expanded OCW to OpenCourseWare Consortium (OCWC). Currently, there are over 250 HEIs from 46 countries joining OCWC. In Taiwan, National Chiao Tung University established NCTU OCW in 2006 and joined OCWC in 2007. There are 215 online open courses with similar structures as traditional formal courses, including syllabi and videos.

Early OER and OCW demonstrated the potential to bring dispersed networks of participants together through various open sources and free web resources. Then, in 2008, Stephen Downes and George Siemens developed a model of open online courses based on peer learning in their course "Connectivism and Connective Knowledge" at the University of Manitoba, Canada. It was a free, online course that enrolled more than 2200 students (Chauhan, 2015). This course first used the term MOOC, which is characterized by being free, providing open access, and incorporating online features.

Compared to OER and OCW, MOOCs have much larger enrolments and learning resources; they also provide learners the freedom to form groups and communities to participate in courses without having to register at specific universities. Moreover, teachers and instructors design a series of short videos within courses ranging from a few weeks to a few months, and giving instant online feedback to learners from content management systems. Therefore, learners can control their own learning space and have the freedom to choose and select any online courses that meet their learning goals. Students do not have to pay tuition fees, and there are no criteria or pre-requisites for taking MOOCs. Compared to traditional classroom settings, MOOCs offer greater control and flexibility to learners. Learning is self-directed and self-regulated by learners' motivation and goal setting.

MOOCs can be classified into two categories: xMOOCs and cMOOCs. This categorization is based on the instructional model (Chauhan, 2015; Downes, 2008; Zhu et al., 2018). xMOOCs initially referred to the computing MOOCs launched by Stanford University in 2011, and then numerous universities joined and operated xMOOCs. The courses attracted more than 100,000 enrolees. Generally, xMOOCs adopt the instructor-led traditional classroom lecture model and include weekly short, three to 30 min of videos, and automatic assessments and quizzes for each topic. Teaching assistants (TAs) are necessary because of the large class sizes, and both TAs and instructors respond to students' queries in the forum. On the other hand, cMOOCs depend more on peer support, learner networks, and learning communities. They are based on the theory of connectivism, which asserts that knowledge can be generated, distributed, and expanded by networks to foster learner autonomy. Thus, cMOOCs use various tools for courses, such as wikis, blogs for hosting content, regular updates, live sessions, and posted announcements.

According to Ebben and Murphy (2014), when MOOCs were first being built, MOOC studies focused on the development of connectivism theory and technological experimentation and innovation. Researchers' focus then turned to the development of MOOC pedagogy and platforms, learning analytics, and assessments. With the rapid development of technology, some MOOCs have adopted the concept of the flipped classroom approach to engage and motivate learners. Several new

Table 10.1 Comparisons between traditional online learning and MOOCs

	Traditional online learning	MOOCs
Environment	Closure	Open
Access	Charged fees	Free/small fees
Participants	Limited	Massive/unlimited
Backgrounds of participants	Homogeneous Group	Multiple/unlimited
Teaching models	Simultaneous	Semi- or non-simultaneous
Curriculum	Fixed/from teachers	Flexible/based on participants' experiences and learning objectives
Feedback	Mainly from teachers	Open/from learning communities
Platforms	Management systems operated by individual provider	Internet/companies/HEIs (e.g., Coursera, edX, Udacity)

Revised from Hou, 2017

web resources for hosting learning materials and support have been used to deliver MOOCs, such as discussion forums, wikis, blogs, groups, online communities, and videos. These resources can be accessed anytime, anywhere, via the internet on PCs, mobile devices, and tablets (Hayes, 2015).

For instance, OpenEdu, founded and run by the Chinese Open Education Consortium, provides functions such as OERs, OCWC, and cMOOCs. OpenEdu encourages academics and institutions to make educational resources available for free for educators and learners to reuse, remix, and repurpose. Those released resources range from single documents and lectures provided by over 50 Taiwanese HEIs and the MOE. Currently, there are 454 open courses online, and the topics include philosophy of religion, natural science, computer science, food and home economics, social science, history and geography, humanities.

Recently, students' drop-out rates, retention, and cultural translations have become issues for MOOCs. Most studies agree that MOOCs embed information technology and provide interactive pedagogy to higher education. Information and communication technologies (ICT) help overcome the limitations of traditional teaching and learning methods, such as time, budget, and distance limits, and are effective tools for pedagogical innovation. As part of ICT, MOOCs represent useful and easy ways for learners to access interesting teaching materials tailored to fit their needs (Hou, 2017; Huang, 2017; Means, Bakia, & Murphy, 2014).

Through ICT and technology, the learning culture has been influenced by open online learning resources. Students can obtain various interesting learning materials via websites and platforms, such as Coursera, Ted, OCW, and the Junyi Academy Foundation. Following this trend, MOOCs have become a major technological innovation in education because of their characteristics.

There are some important differences between traditional online learning and MOOCs (Table 10.1). Generally, MOOCs are more flexible and have scalability, which allows them to include massive and unlimited participants.

MOOCs' two-way interactive and learner-centered learning has been utilized to promote the practice of the flipped classroom (Yang et al., 2017). The main features of the flipped classroom are that students gain the necessary knowledge before a formal class from the online courses provided by teachers, who guide students to actively and interactively clarify and apply that knowledge during class. This learning approach supports teachers in playing their most important role in guiding their students to deeper thinking and higher levels of application. A flipped class keeps students' learning at the center of teaching while allowing students to learn at their own pace.

MOOCs are a series of short online courses and tests produced by lecturers. Learners watch lecture videos and complete the tests. Once learners pass the tests, they can move on to the next unit of courses. This learning approach also applies the idea of mastery learning. In addition, learners can interact in MOOCs' discussion and feedback forums and visual labs, in line with the concept of cooperative learning. For example, the Junyi Academy Foundation, which originates from the Khan Academy, has created a platform for interactive learning based on the flipped classroom and the theory of master learning in Taiwan.

However, in addition to the implementation of MOOCs, some researchers have expressed concerns about current MOOCs representing and delivering Western pedagogy, teaching philosophy, methodological orientations, and academic traditions (Altbach, 2014). MOOCs have indeed highly attracted international enrolments, and original MOOC creators, such as Coursera and edX, are mostly from top universities (e.g., Stanford University, Harvard University, and the Massachusetts Institution of Technology) in the USA, the UK, and Australia (Zhu et al., 2018).

10.3 Four Main Issues Concerning MOOCs

MOOCs offer numerous advantages, such as providing platforms for online and free courses, which are open-access and low-cost learning resources for learners. MOOCs also lead to new pedagogical concepts, such as the flipped classroom, that challenge traditional classroom teaching. Furthermore, learners of MOOCs can utilize big data analytics to examine participants' learning processes and provide insights and feedback to participants. The spread of MOOCs in Taiwan has changed the roles of higher education, teachers, and students. The boundaries of university campuses have also been breached due to the unlimited reach of the internet. However, there are four main issues concerning MOOCs.

10.3.1 Costs

MOOCs are seen by universities as an effective way to solve their budget problems by cutting the costs associated with teaching (Gaebel, 2014). One of MOOCs' purposes is indeed to use ICT to help reduce the costs of traditional classes. Once a MOOC is recorded and produced, it can be repeatedly viewed and turned into personalized online courses for enrolled students. However, few studies have examined whether MOOCs truly provide cost-effective mechanisms for universities (Christensen et al., 2013; Zhu et al., 2018). Training academic staff on the use of new technologies and the preparation of facilities for recording videos are often more costly than universities expect. A comprehensive analysis of the sustainability and results of MOOCs is lacking.

According to the Center for Benefit-Cost Studies of Education at Columbia University, the cost of a MOOC ranges between USD$5,000–12,000, which does not include the costs for development, delivery, and maintenance. The high costs of MOOCs also affect their spread in Taiwanese universities. For instance, the Director of Higher Educational Resources for Openness, Wei-I Lee, indicated that the Taiwanese government provides funds for individual MOOC curricula, but not platforms such as ewant. He further pointed out that MOOCs in Taiwan need the long-term support of government policies because the MOOC is relatively small compared to that of global platforms such as Coursera and edX (Feng, 2019).

A gap exists between the investments on MOOCs and their implementation on the one hand, and the predictability of their results on the other hand. Scholars and professionals have thus called for research into both the investments and educational outcomes of MOOCs to evaluate costs, benefits, risks, quality, and long-term feasibility for lifelong learning. The need is felt to explore whether universities can afford to offer one or several MOOCs, considering the costs of development, delivery, and maintenance.

10.3.2 Completion Rates

Participants' completion rate of MOOCs shows a degree of self-directed learning. The drop-out rate is one indicator for evaluating the success of MOOCs. In Taiwan, for example, the completion rate of the four-year New Generation of Digital Learning Project—a MOOC subproject to assist colleges and universities in developing classical MOOCs—is about 12%. Furthermore, many studies indicate that the enrolments driven by the massive open online platforms are significantly smaller than formal enrolments of universities (Hill, 2013). The challenge for online learning is to create an environment to maintain students' interest and commitment to continuous learning. Some studies indicate that active participants, approximately 40% of all students, have higher MOOCs completion rates, and this suggests that students'

engagement and satisfaction with learning experiences are important factors for student retention in MOOCs and learning success (Chauhan, 2015; Hill, 2013).

Some Taiwanese scholars suggest that open education, especially MOOCs, is part of online learning and, thus, has to find ways to survive in the higher education quasi-market (Feng, 2019; Hou, 2017). One effective way is to include MOOCs in universities' official curricula. For example, the MOE could launch special projects and provide funds for general education that include MOOCs. Furthermore, the MOE could request that universities set key performance indicators, such as the number of MOOCs implemented or the percentage of students joining MOOCs.

10.3.3 Student Learning Outcomes

With the rapid spread of MOOCs, the number of MOOCs and associated MOOC studies has continued to expand dramatically. Some researchers have conducted systematic reviews of studies on MOOCs, from the first MOOC offered since 2008 as well as the synthesis of existing MOOC empirical studies (Joksimović et al., 2018; Zhu et al., 2018). Most evidence of learner behavior in MOOCs has been collected from computer science courses. Couse-level learning outcomes are the most commonly assessed in current MOOC research.

The widely used definition of MOOC-related learning outcomes is course completion. The notion of course completion is also interchangeable with course persistence as well as failure and success within the courses. Studies predicting learning persistence are a mainstream approach to the analysis of learning in MOOCs. In such studies, course persistence is defined as engagement with content, assessment, and activities (Joksimović et al., 2018).

Although many studies have collected data on student activities within MOOCs, it is hard to find any causal linkages between the observed metrics and student learning. One reason is that theoretically informed approaches to analyze MOOCs are lacking (Joksimović et al., 2018; Reich, 2015). Systematic reviews have revealed that learning in MOOCs is typically researched by analyzing discussion data or survey data within a single course, and only few studies have focused on more than two data resources at one time.

Zhu et al. (2018) claim that most MOOC-related studies use quantitative research methods and mixed methods to analyze various aspects of MOOCs. Surveys, platform databases, interviews, and discussion forums on MOOCs are the most frequently adopted data collection methods. Most studies on MOOCs focus on students to understand their learning outcomes, learning strategies, learner retention, and motivation. Other than studies focusing specifically on MOOCs, the second most frequent research topics are instructional design, instructor role, and the context and impact of MOOCs. Future MOOC research should build on the existing research frameworks, evaluated across different educational contexts, and provide a basis for comparing learning in MOOCs with other teaching methods.

10.3.4 Online Degrees

MOOC-based degrees have certain advantages. Compared to other online and on-campus degrees, have a lower cost, greater flexibility, and pay-as-you-go pricing. MOOC providers are aware of the need for MOOC-based degree programs whose content is free to anyone who wants to access it. Subsequently, in 2013, Georgia Tech offered the first online degree on Udacity—the Online Master of Science in Computer Science (OMSCS)—and, in 2015, the University of Illinois Urbana-Champaign offered the second online degree on Coursera—International Master of Business Administration iMBA (Pickard, 2019).

Before the implementation of online degrees, around 630 micro-credentials were launched in 2017. By the end of 2017, only approximately 15 online degrees via MOOCs existed (McIntyre, 2018). In 2019, MOOC providers such as Coursera, edX, FutureLearn, and XuetangX launched a number of new online degrees, and currently, more than 36 online degrees are available, with the UK-based MOOC platform FutureLearn offering the majority of them (i.e., 15 degree programs). Most institutions providing online degrees are from the USA, UK, and Australia, and the most common subjects for MOOC-based degrees are in the field of computer science.

In Taiwan, the MOE announced that universities have autonomy in deciding whether to admit MOOC credentials. Currently, universities can award a master's degree in online learning, but there are no regulations or laws relating to how to calculate MOOC credentials. Nevertheless, getting degrees and credentials are the main motivations for MOOC participants. Some universities in Taiwan have found ways to attract students to enroll in MOOCs. For instance, Taipei Medical University (TMU) has cooperated with Microsoft to establish its online learning platform. Microsoft provides the Microsoft Professional Program (MPP) in data science to TMU students. Once students finish 15 online courses and pass all exams, they are awarded credentials that are also automatically registered on the LinkedIn system.

Another example is from National Tsing Hua University (NTHU), which invited Beijing Tsing Hua University and other universities in Taiwan to cooperate and operate MOOCs on University System of Taiwan (UST) MOOCs. UST MOOCs has a cross-campus course selection mechanism. Once students finish a course and pass the exam, they are awarded a certificate.

As previously discussed, most open education platforms relating to MOOCs face the difficulties of low completion rates. Examples of collaboration could offer a possible positive benchmark for other universities still struggling to attract students and encourage them to finish MOOCs.

10.4 Further Challenges and Opportunities

With the growing trend of MOOCs and online education, universities' physical campuses are without obvious boundaries. Students can connect to the world and be sociable via clicks on technological devices. The shift from traditional learning to digital models has resulted in a significant internationalization of higher education (UUK, 2013). For instance, Coursera—a major California-based provider of online courses—has created an international system of learning hubs. An underlying assumption of MOOCs is that they can serve as an innovation for youth from developing countries who have no access to higher education (Patru & Balaji, 2016). However, numerous studies (Christensen et al., 2013; Perna et al., 2013; Porter, 2014) have revealed that most students in MOOCs are employed, highly educated, and mostly male from developed countries. Such results highlight another unexpected reality of MOOCs. In Taiwan, although MOOCs are seen as providing open access to anyone interested in higher education, most MOOC participants are university students. This phenomenon is similar in MOOCs worldwide: MOOCs attract different target groups that what is predicted, thereby challenging the assumptions about and the expectations of MOOCs.

Therefore, some scholars have suggested that the MOE implement policies that support the expansion of access to current MOOCs not only providing funds for individual curricula but also revising educational regulations or laws to implement online degrees for MOOCs (Huang, 2017; Yang et al., 2017). These scholars believe that such strategies could attract a greater diversity of participants, not only those from universities.

One main challenge to MOOCs is ensuring the quality of online learning. Most people choose the major MOOC platforms, such as Coursera, edX, and Udacity, not only because of their high reputation but also because of the quality of courses and micro-credentials they provide. Thus, accreditations are essential to online degree programs, including a variety of MOOCs. Accreditation is a process conducted by an outside authority, normally a third party, to ensure that universities and their degree programs meet specific standards of quality. Online, blended, and on-campus degree programs should all be accredited. Accreditations are also necessary to ensure the quality of MOOCs, especially for online degrees. In the USA, although it offers many benefits and, in many ways, validates programs for employers and other colleges or universities, accreditation is voluntary. Once an institution is accredited, accreditation extends to its online programs (McIntyre, 2018; Pickard, 2019). Programmatic accreditations can be delivered for both online and on-campus programs. For example, the American Council for Education (ACE) CREDIT scheme assesses courses for HEIs and makes full evaluation of the quality, assessment, and learning outcomes of courses. The scheme has a network of 2,000 HEIs that consider ACE CREDIT decisions for transfer to degree programs (UUK, 2013). However, not all MOOCs are accredited.

In Taiwan, a similar situation exists for MOOCs. Although all universities and curricula are supervised and accept accreditations to ensure the quality of higher

education, MOOCs have not been totally examined in the accreditation. Many online students, therefore, plan to advance or change their careers. Most companies and employers still verify that a job candidate's online degree comes from an accredited program and university. Moreover, transferring credits to and from degree programs is essential for online learners, and credits earned in accredited programs and universities are more likely to be accepted by other universities and institutions. Therefore, the MOE and universities must include MOOCs in official accreditations to ensure the quality and credits of MOOCs (Ho, 2014; Hou, 2017).

To this end, quality assurance and excellence in online education for students are crucial to universities. With quality assurance and accreditations, the quality of MOOCs and their credits would be recognized by other universities and institutions, further securing participants' learning rights.

Compared to smaller or local universities, the most prestigious and renowned universities have the potential to attract more enrolled students. In Taiwan, universities are struggling to recruit students because of low birth rates. MOOCs provide universities with another opportunity to attract and keep more participants in their online courses. Universities could make MOOCs a possible solution for reducing financial difficulties and recruiting a massive number of students by providing open access to online courses. This way, MOOCs might gradually become a business with the potential to generate many benefits for universities.

10.5 Conclusion

Digital education and online education have been practiced for years; however, MOOCs, which emerged in 2008, are relatively new to traditional online learning. In Taiwan, MOOCs have generated an educational technology revolution. Not only have numerous universities joined the effort to provide MOOCs, but the MOE has also launched related policies to encourage the implementation of MOOCs.

MOOCs are considered a possible solution for providing quality education to people who cannot enter higher education for a variety of reasons, such as poverty and disadvantaged groups. However, research data reveal that students who enroll in MOOCs are already highly educated and enrolled in universities in Taiwan. Although in Taiwan, the situation is not quite similar to Western countries, the main characteristics of MOOCs—namely, their massiveness and openness—are evident in Taiwan's MOOCs.

MOOCs have their advantages, such as providing new forms of education and e-pedagogy. Nevertheless, some issues and challenges have been raised by the implementation of MOOCs. The most well-known issue is participants' low completion rates in MOOCs. From a different perspective, these issues and challenges also provide universities and higher education with an opportunity to rethink their teaching and learning strategies. Universities should find ways to use new technologies to enhance pedagogical solutions to the needs and challenges of the twenty-first century.

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Chapter 11
Academics' Multi-Career Pathways and the Promotion System in Taiwan Higher Education

Sophia Shi-Huei Ho

Abstract Changes in social environments demonstrate that various structural disadvantages have led to increasing competition among higher education institutions (HEIs) and academics in Taiwan. In particular, connecting academics' effort and performance to their promotion has been considered as an approach to strengthen academics' willingness to cooperate with institutional development and as an opportunity for them to demonstrate their individual expertise. This paper illustrates the environment confronted by the Taiwan government and HEIs related to the development of policies regarding multi-career pathways and the promotion system for university teachers. It also offers reflections and suggestions on the implementation process of this new initiative. In order to strengthen the implementation of multi-career promotion system, government is advised to establish a database of qualified reviewers for teacher promotion evaluation. On top of this, there should have benchmarking standards for institutional reference. Moreover, the university's support system for teachers' professional development, such as resource input, funding subsidies, counselling, and research empowerment, must be linked with teacher promotion.

Keywords Academic pathways · Promotion systems · Teaching-practice research

11.1 Introduction

Higher education in Taiwan has been thriving since the 1990s, and the number of colleges and universities has rapidly been expanding. Although the multiplication of higher education institutions was well intended, it has generated an environment of low-quality university education and the fall in academia utility, which is becoming one of the crises in the development of higher education in Taiwan. Accompanying this phenomenon are the problems of diploma inflation and insufficient competitiveness (Chen & Chin, 2016), which means that high-end low-use and inconsistency

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between theory and application creates a situation which is severing increasingly. The requirements that companies set for applicants' academic qualifications are becoming increasingly higher, but the salaries do not correlate with the expectations, and companies even complain about applicants' competitiveness (Yang, 2013).

Taiwan's Control Yuan indicated in the Promoting Technical and Vocational Education Standards and Employability Report that the design of the curriculum of technical and vocational HEIs is inadequate and the number of internship hours is scarce, which results in graduates not meeting the industries' demands. Most of the teachers in technical or vocational HEIs are promoted based on the number of Social Sciences Citation Index (SSCI) or Science Citation Index (SCI) papers published, resulting in an "emphasis on research over practice," a lack of practical experience, and decreased industry–academia collaboration (Yin, Shen, Huang, & Ma, 2010). In other words, the technical and vocational education that originally aimed to train professional and technical personnel has been blinded by the environment of overemphasizing university rankings and research productivity; this shift has led part of the HEIs to focus on academic research. Instead of urging for industry–academia collaboration and development, this dynamic is creating unfavorable technical training and industrial advancement, which is causing the entire community of technical personnel to not match industrial expectations.

HEIs in advanced countries have always regarded innovative research and development as the key factor that drives a nation's economic development, social stability, and industrial advancement. HEIs promote their research and development achievements to the industry, which at the same time understands the needs of the industry, causing university development. The spirit of industry–academia collaboration not only sets a good example for higher education, but it also plays a role in promoting industrial development and university social responsibility.

However, Taiwan's industry and academia do not seem to work together, and academic development and practical skills do not seem to be closely integrated. According to the report of the Science & Technology Policy Research and Information Center (STPI) (2015), there are 12.8 research and development personnel per 1,000 people employed in Taiwan, which far exceeds the United States, Japan, and other countries, and the number of approved global patents has increased yearly. Nevertheless, the domination of the domestic industrial structure by small- and medium-sized enterprises fosters a lack of both independent research and development energy. In addition, universities' research funding ratio is less than 10%, which leads to low amounts of industry–academia collaboration programs and an extremely limited impact on the industry. Therefore, a high level of research and development potential is hidden inside universities' ivory tower and results are only published in the form of papers or remain relegated to the laboratories.

11.1.1 Status and Issues of Taiwan's Higher Education

According to data from the Department of Statistics of the MoE (2019), the number of colleges and universities in Taiwan increased from 130 in 1994, including 72 junior colleges, 35 colleges, and 23 universities, to 153 in 2018, including 12 junior colleges, 14 colleges, and the rest had been upgraded or transformed into general universities or universities of science and technology. The expansion of the number of HEIs has led to a relatively high admission rate of first years in the joint entrance exam for the past five years (2015–2019), from 95.58%, 97.11%, 96.92%, 90.88%, and 81.29%, respectively (MoE of Taiwan, 2019). The technical and vocational system constructed by junior and technical colleges has also gradually abandoned the purpose of technical skill development due to the upgrading and transformation of schools. Even so, the aims and educational goals of general universities, universities of science and technology, and technical colleges should be different. Taking junior colleges, technical colleges, and universities of science and technology as an example, "to train practical technical personnel" and to foster "industry-academia collaboration" should be the purposes of school administration. The Taiwan MoE's Technical Vocation Education Reengineering Plan (2013) asserted that the result of the academicization of technical and vocational education will lead to an uncertain positioning of science and technology universities and to gaps in academic use. Therefore, the deregulation of the technical and vocational education system is proposed to incorporate themes such as teacher promotion, curriculum flexibility, teacher preparation, professional development, and strategies for industrial collaborations established in an educational facility. Especially regarding teachers, it is also suggested by MoE (2013) that teachers of technical colleges and universities consider research and development as a factor in their promotion and evaluation. Even so, university teachers in Taiwan still use "academic research" and "special works" as the main content of their promotion. Therefore, the purpose of this article is to describe the consequences of how altering Taiwan's higher education has affected the single-track promotion path as well as to observe the impacts on university teachers' emphasis on research rather than on teaching, lack of practical skills, and insufficient potential for technology research and development.

Accordingly, Taiwan's Executive Yuan's Higher Education Macro Planning Committee provided advice that HEIs should be appropriately classified to facilitate the school's positioning and functional differentiation to maximize the university's social function and talent development (Executive Yuan, 2003). However, at that time, society's expectations and traditional concepts of HEIs still used "research performance" as the only positioning and development goal of the university, while ignoring the fact that the HEIs also had limitations regarding software and hardware resources, attributes, student levels, and development. In view of this to strengthen industry–academia collaboration and the teaching effectiveness of colleges and universities, the MoE has given resources to HEIs, has promoted performance-based funding projects, and has supported policies such as Rewarding University Teaching Excellence and Development of Exemplary Universities of Science and Technology among others.

The purposes of these projects are to guide HEIs to enact curriculum and instruction reforms, to encourage industrial innovation research, to improve teaching quality, to connect with workplace trends, and to implement the integration of learning and applied use. It is hoped that through the guidance of the policies, each university will develop distinctive qualities according to its functional positioning and administration, especially in the aspects of talent development and of technology research and development, so university education can be fully integrated and applied to the industry.

With such policy guidance and investment, HEIs have gradually established their own positioning and goals depending on their individual conditions and development potential. In recent years, many HEIs have moved toward the position of teaching universities; science and technology universities and colleges have also developed functional zones. The goal of industry–academia collaboration and technical human resource training is advancing. In 2013, Taiwan MoE proposed the Teacher Multi-Promotion System Test Run Project, hoping to encourage universities and colleges through financial subsidies to consider teachers' career development, to guide teachers' expertise to diversify, and to encourage teachers to invest in both teaching and technology application practice fields. Most importantly, HEIs begin to establish a multi-promotion system, which includes various promotion pathways and research styles, such as academic writing/works, teaching-practice research, and industry–university research report. The diversified development of the university has laid a solid foundation for the cultivation of unique talents and the integration of learning and use. Thus, the second objective of this article is to explain the goals, implementation strategies, and findings of Taiwan's higher education in the policy of promoting teacher professional division of different expertise types and multi-promotion.

11.1.2 Problems and Challenges of Establishing the Multi-Promotion System in Taiwan's Higher Education

Article 9 of Taiwan's Teacher Law and Article 14 of the Education Staff Appointment Regulations stipulate that teachers' eligibilities and appointments for HEIs should be subject to teacher qualification review; however, when the research performance is submitted for review, academic research works are still the main content. The law has been revised successively by the MoE in Taiwan since 1990, and this has made it possible for teachers of sports, arts, and applied sciences to be hired or promoted based on works, achievement certificates, or technical reports instead of specialized works, thus benefiting some HEIs and specialty programs to hire teachers with special expertise. However, since the academic review committee of the MoE announced the types of teachers considered by "authorized HEIs which independently evaluate their teachers" in 2014–2018, the number of cases submitted for

review (MoE, 2015) as shown in Fig. 11.1 and Fig. 11.2 indicates that most university teachers still tend to submit academic writing/works for review, especially regarding the promotions to professor or associate professor. Apart from being limited by traditional promotion evaluation conditions, the review criteria are disparate, and the existing comparative discrepancy between academic papers and practical application research; after a considerable time, these have indirectly caused problems to teaching-oriented or practice-oriented HEIs (Ho, 2016). Teachers from these universities still prioritize academic research to pursue their personal academic career while ignoring the development of teaching materials and methodology (Cheng, 2008) or technical implementation as well as the importance of industry–academia collaboration. Thus, the third purpose of this article is to offer suggestions for Taiwan's higher education policy planning and university administrative support by using the impact of invested university resources and teachers' academic perception on diverse promotion system. That is, by strengthening academic autonomy to correspond to global higher education development trends, HEIs establish a professional division of expertise and multiple promotion systems that are in line with Taiwan's HEIs' function and positioning.

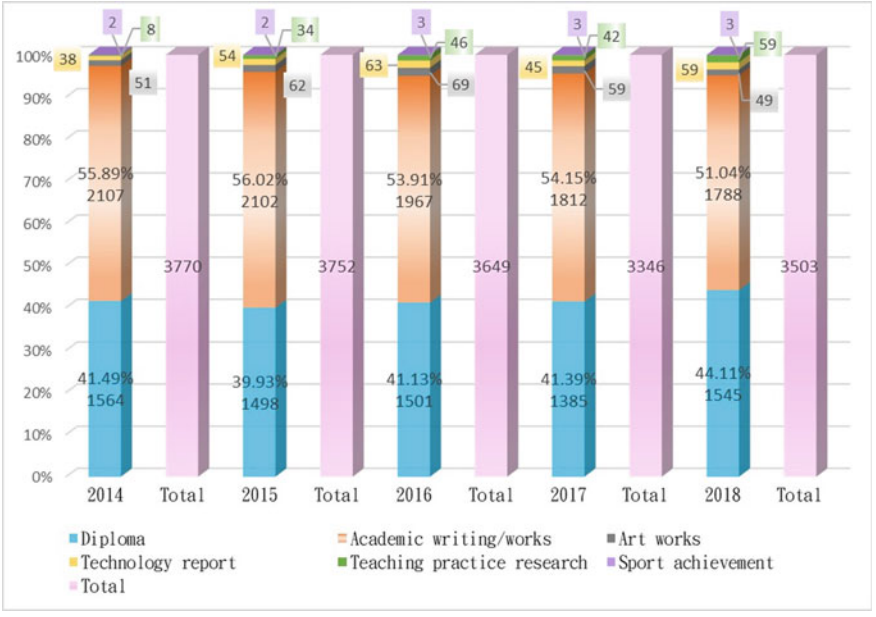

Fig. 11.1 The numbers and percentages of types of works submitted for review 2014–2018 (*Source* MoE in Taiwan, University teacher promotion submission notification system, Retrieved from: https://www.schprs.edu.tw/wSite/Control?function=IndexPage [2019])

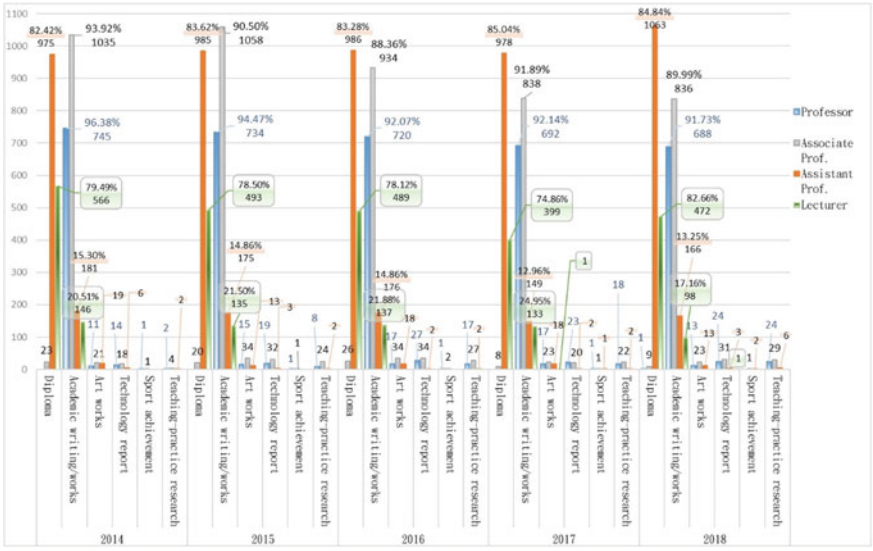

Fig. 11.2 The numbers and percentages of promoted academic rank and type of works 2014–2018 (*Source* MoE in Taiwan, University teacher promotion submission notification system, Retrieved from: https://www.schprs.edu.tw/wSite/Control?function=IndexPage [2019])

Fig. 11.3 SWOT analysis of multi-career pathways and a promotion system in Taiwan's HEIs (*Source* Author)

When Taiwan was planning to promote the system of professional division of expertise and multi-promotion among university teachers, after continuous evaluation and review, Taiwan had the advantages and opportunities to promote this policy

(as shown in Fig. 11.3). For instance, the classification of research-oriented and teaching-oriented universities has led different stakeholders to focus increasingly more on the public image and enrollment characteristics that educational quality and industry–university research and development bring. Nevertheless, the government still has urgent limitations and difficulties to surpass; for example, university teachers' preference for academic writing/works and their overemphasis on the importance of SCI or SSCI journal publications, paper citations, and their academic reputation results in prioritizing academic research over teaching-practice research or applied technology research for promotion system. The transition of Taiwan's higher education promotion system into one that is more flexible and independent will be determined by the adjustment of relevant laws and regulations and the guidance of government policies. Certainly, the subsidy of competitive planning funds and the opportunities to integrate with international higher education are also crucial factors in supporting the policies. These aspects will test the government's wisdom and decision-making.

11.2 The Purposes of Taiwan's MoE to Promote University-Authorized Independent Evaluation for Faculty Qualification and a Multi-Promotion System

To comply with academic autonomy of HEIs guaranteed by the Constitution and the University Law, the MoE promoted universities independently evaluate their teachers beginning in 1991. In advanced countries, HEIs are solely responsible for the review and promotion of faculty, and no government agency is responsible for the evaluation and issuance of the certificates for academics. With this benchmark, Taiwan's promotion of independent evaluation of university teacher qualifications is in line with the trend of higher education in the world. The MoE's purposes of promoting full authorization of colleges and universities to self-evaluate teachers' qualifications are modeled on the examples of advanced countries (Northeastern University, 2020; Stanford University, 2020; University of Bristol, 2020) and are as follows:

11.2.1 Implementation of University Autonomy to Enhance Each Institution's Distinctive Features

According to the Constitution and University Law, HEIs have academic freedom and jurisdiction over faculty qualifications and promotions as a part of the academic autonomy of the university. Although most HEIs have been authorized to conduct faculty evaluation and promotion independently, some universities and colleges are

still reviewed by the MoE; these review standards are the same, but HEIs are limited by the framework and thus fail to meet their own needs of self-development. If each HEI self-evaluates its own faculty and designs teacher qualification review systems and standards to meet its own institutional needs, the HEI will be more aligned to its own positioning to enhance its own characteristics. Factors ranging from faculty selection, employment, promotion, and even the professional development of teachers will be positively affected, which will ultimately increase the HEI's competitiveness.

11.2.2 Follow World Trends, Value University Teachers' Contributions to Teaching-Practice Research and Industry–Academia Collaborative Research

The appointment, qualification review, and promotion of teachers in universities in advanced countries are all under the responsibility of the universities themselves without the involvement of government agencies. With the United Kingdom and the United States as references, HEIs follow their own positioning to give direction to the development of their faculties. Furthermore, qualification reviews and teacher promotion indicators are determined by each faculty according to university characteristics and faculty needs. Teachers' professional development is closely linked with departments, colleges, and universities, to better enhance the university's own characteristics. Therefore, the MoE (2013a) hopes that each HEI will follow the world trend of higher education and will develop its own teacher review system and professional development channels so that the unique traits of each HEI are highlighted. Moreover, in order to enhance the quality of research and monitor the implementation of research project, institutional review board (IRB) was encouraged to set up at several universities. The main purpose of such moves is related to the protection of research participants.

11.2.3 The Implementation of the Teacher Diversity Promotion System Will Help HEIs Achieve Diverse Talent Cultivation and Create More Educational Value

At present, most of the works submitted for review by university teachers in Taiwan are mainly published as academic research. In the past, the central government formulated a set of fixed promotion systems and standards, which made it difficult for teachers' academic development to be combined with the university's positioning and thereby failed to enhance its distinguishing features. Consequently, to improve the HEI's overall performance, the MoE (2013a) has established legislation for a three-track promotion system including academic writing/works, teaching-practice research, and industry-university research for teachers that links the development

of university teachers' careers and the cultivation of school talent, improves the HEI's competitiveness in research and teaching (Boyd, Bergh, & Ketchen, 2010), and responds to the effects of the globalized higher education.

11.3 Promoting University-Authorized Independent Evaluation for Teacher Qualification and Multi-Promotion Systems in Taiwan

When Taiwan promoted the policy of professional division of expertise and multi-promotion, it referred to the definition of scholarship proposed by Boyer (1990). Most people refer to "research" when they think of scholarship; however, a university teacher's duties and tasks should include many others apart from research (Braxton & Del Favero, 2002; Fincher & Work, 2006). To more clearly reflect this, Boyer (1990) redefined "scholarship" in his book *Scholarship Reconsidered* and divided the concept into four aspects: the scholarship of discovery, the scholarship of integration, the scholarship of application, and the scholarship of teaching. The first two terms are more inclined toward the traditional perception of academia, while the latter two are more focused on applying knowledge to solve problems or assist with the development of universities. These two facets influence each other and can also be used interactively. Through the expanded definition of scholarship, Taiwan's higher education has gradually blurred the division between research and teaching and has carefully designed teacher responsibilities and the multiple promotion paths to balance the quality and effectiveness of teaching and research.

Regarding the classification of university teacher ranks in Taiwan, promulgated in 1997 by amending the Education Personnel Employment Law, Article 14 states that "Teachers of universities, independent colleges, and junior colleges are divided into professors, associate professors, assistant professors, and lecturer." In terms of teacher responsibilities, appointments, and faculty evaluation, Article 17 of the University Law, amended and promulgated in 2019, states that "University teachers … shall be engaged in teaching, research and service…," and Article 21 further states "Universities should set up a teacher performance evaluation system to evaluate the effectiveness of professors' teaching, research, tutoring, and services as an important reference for teacher promotion, renewal, long-term employment, suspension, non-renewal, and recognition" (University Law, 2019). Since then, Taiwan's HEIs have established similar standards and evaluations of teacher responsibilities as universities in advanced countries and now expect teachers to reflect the university's operating philosophy and educational goals. In other words, the policy changes have allowed Taiwan's higher education to have clear regulations in terms of job titles, duties, responsibilities, and teacher evaluations. Furthermore, each university has achieved different positioning and professional attributes, which ensures multiple academic career development paths and promotion systems for teachers.

Taiwan's government revised the promotion law in 1991, and university teachers were required to replace specialized works with technical reports, artistic works, and sports achievements to submit for review. In 2013, the MoE promoted a pilot program for the multi-promotion system for teachers; promotion systems were academia-oriented, technology-applied, and teaching-oriented. In 2016, to promote the planning of key HEIs, a project office was established to deepen the value of diversity and reverse the atmosphere that had emphasized academic research. In 2018, the government additionally promoted the competitive Teaching-Practice Research Project and the Higher Education Sprout Project to provide university teachers with teaching-practice research funding, to encourage them to conduct research to improve their teaching quality, and to achieve diverse talent cultivation to increase the value of university education.

Statistics from the MoE revealed that from 2014 to 2016, the ratio of university teachers who adopted technical reports, teaching-practice research, artistic works, or sports achievements to submit for their promotion review had a slight increase from 5.98% in 2014 to 2015. The increase from 8.33 to 11.28% in 2016 signifies that the multi-promotion policy and the allocation of teaching-practice research funding guided the development of universities and their teachers in applying professional division of expertise and multi-promotion systems (Taiwan MoE, 2017). Another important goal of the MoE in promoting the process is to reflect the global trend of higher education development in which the evaluation of university teacher qualifications is autonomously determined by each university.

Although this policy effect is still being evaluated, the vast majority agrees that teachers are the driving force and pillar of HEIs; the fulfilment of university affairs and programs are dependent on teachers' engagement with students. Ascending through the ranks is a necessary course for a teacher's academic career. As such, if the promotion system were to merge with the university's positioning, distinctive development, and the teacher's expertise, then the teacher's motivation to cooperate would relatively increase in regard to the promotion of university affairs, teaching and research tasks. However, at present, most teachers continue to choose to submit special works for evaluation; books and journal papers are more likely to pass the external review system or to be published by well-known journals, both at home and abroad, which leads to more recognition. Those who submit written and technical reports have concerns about being underestimated and having low academic value and a weak research ability as well as about whether evaluators maintain traditional standards of academic research. The future of Taiwan still has great room for improvement to guide policies, to surmount teacher perceptions, and to develop diverse scholarship. Otherwise it will be unfavorable for universities to develop diverse qualities. Nevertheless, combined with many competitive plans promoted by national policies, Taiwan looks forward to universities repositioning themselves and achieving sustainable development goals (Ho, 2014).

In fact, most universities in Taiwan encounter many issues and challenges when readjusting their promotion standards or adding different promotion paths and conditions. The possible reasons are as follows (Ho, 2015, 2016):

(1.) Existing teacher promotion systems that have been in operation for many years and are mostly controlled by senior teachers, and personal interests and rights render an overall adjustment difficulty to make.
(2.) The university's support environment for teachers' path of promotion is insufficient. Relevant incentives or support measures are lacking, which make university teachers unable to obtain resources to conduct research, to engage in industry–academia collaborations, or to improve their teaching practice.
(3.) Some universities have not cooperated with the MoE to revise the establishment of multiple-promotion methods, which has made teachers unable to apply.
(4.) Differing definitions of "scholarship" from teachers in colleges and professional disciplines lead to multiple interpretations of the same activity or research output.
(5.) Traditional disciplines still require teachers to focus on academic research, and changing the promotion conditions may threaten the rights of some teachers. Therefore, these universities should start by reviewing the teaching quality and renumeration mechanism of existing teachers, instead of rushing to plan the promotion path of teaching-practice research.
(6.) Although the advocacy of the multi-promotion policy has been implemented for some time, there are still not enough qualified evaluators available to assist universities. Universities that take teaching-practice research as their promotion path find that even if teachers are willing to invest in it for promotion, they will worry about the absence of evaluation when submitting for review.

In short, the global higher education environment is constantly changing. Since teachers are the main force to promote and execute the development of university affairs and they play a key role in the cultivation of high-level talents, combining teachers' responsibilities and promotion paths with the university's positioning and a professional division of expertise system will support a breakthrough in the development of higher education in Taiwan.

Promotion is one of the aims of university teachers' efforts, and it is also a necessary approach for individuals to demonstrate their professional ability and achieve career advancement. Since Taiwan has been promoting and guiding various competitive performance-based projects in recent years, universities have gradually established their own positioning and educational goals by adapting to particular conditions and development potential. In other words, based on each university's function and position as well as their institutional management, the university's promotion path for teachers offers three track options: "academic research" that emphasizes the influence that academic innovation and basic research may bring; "teaching-practice research" that highlights curriculum innovation, textbook development, teaching and learning effectiveness; and "applied technology research" that focuses on technology research and development, applied research, and industrial value competitiveness. These three track classifications meet social expectations, industry needs, and international competition. Furthermore, the professional division of expertise and promotion channels will also affect the qualifications, responsibilities, and research paths of teacher employment. How the government provides

funding subsidies through legislation and pilot projects is crucial to require universities to propose relative supporting measures and systems (such as teacher professional development) to guarantee the success of Taiwan's multiple promotion systems.

11.4 Objectives and Planning of University Teachers' Diversity Promotion Policy in Taiwan

To guide universities to integrate teacher employment with teachers' career development, and university distinction development to ensure the quality of teachers, as well as to prioritize related research in teaching and technology application practices, in 2013 the MoE began to promote the Teachers' Diversity Promotion Policy Trial Plan through funding allocations by encouraging universities to include teacher career development plans, guiding division of expertise, and increasing teachers' investment in teaching-practice research and applied technology research. These practices laid a solid foundation for the integration of talent cultivation and academic practice to develop university distinction and enhance competitiveness (Taiwan MoE, 2013b). The promotion objectives, implementation strategies, and supporting mechanisms of the policy are described below:

(1) **Objectives of multi-promotion pathways**

A. Establishing a multi-promotion system is to promote the growth of professional competence of varied university teachers (Ho, 2016; Taiwan MoE, 2013a). For example, teaching-based educators whose research focus can be linked to student learning outcomes, curriculum innovation, assessment tool design, and teaching method improvement. The findings and contributions of teaching-practice research can be used as the basis of promotion. Furthermore, each type of promotion system should have its core values to inform different distinctions for promotion ranks, promotion qualifications, evaluation passing criteria, and evaluation contents; otherwise, teachers will only be reviewed based on their previous academic research.
B. Universities should re-examine their internal resources, department courses, student needs, and future employability. Following this assessment, universities should appropriately adjust the overall positioning and development of the university and use the review system to guide or hire teachers who meet the development needs to serve various positions, to improve administration of teacher workforce, to increase flexibility, and to foster diverse development (Ho, 2015, 2016).
C. University teacher evaluation should be merged with multi-promotion pathways to completely plan the system of teachers' academic career development and expertise growth to ensure that teachers continue to advance and adapt to future professional abilities as needed (Ho, 2016; Taiwan MoE, 2013a).

(2) **Implementation strategy**
As mentioned earlier, one of the purposes of the MoE's establishment of a multi-level teacher promotion system is to fully authorize universities to evaluate teacher qualifications independently so that universities can be more autonomous and flexible in employment and can in turn develop distinctive features. However, university autonomy is an organic concept and universities must value the rights and obligations of quality assurance and self-evaluation, because only through a university-wide discussion and consensus can an independent and high-quality teacher review mechanism be built. To achieve these goals, when the policy was promoted in 2013, the MoE selected 57 universities (including 35 general universities and 22 science and technology universities) to participate in the trial establishment of a multi-level promotion system, which included evaluation content, passing criteria, and scores. Using this benchmark of developing a complete value system, universities can focus on an inclusive set of research orientations to address teachers with different areas of expertise and to link them with an appropriate and fair academic career.

(3) **Supporting measures**

A. Encourage universities to combine teacher evaluation and promotion systems. The purpose of teacher evaluation is to provide teachers with a self-improvement tool to promote their professional growth. Universities may periodically combine teacher evaluation with teacher promotion systems to ensure the quality of their teaching and research, and encourage them to continuously deepen their professional capabilities (Ho, 2016).
B. Arrange flexible reward alternatives, such as extra salary, to stimulate teachers to choose new paths of promotion. Pilot universities can use the MoE's flexible salary reform program to differentiate teachers' salaries and to encourage them to choose a new system of promotion (Taiwan MoE, 2015).

In brief, teacher promotion evaluation involves a peer review of the quality of the teacher's academic performance. This process should be an important indicator of university and academic autonomy. The history of higher education in Taiwan is not extensive, and internal expectations still have considerable desire for an authoritative teacher review. If the MoE were to encourage the acceptance of new review values, it must first legislate and promote the establishment of a multi-promotion system. With the results of these pilot programs, the expansion of authorized universities will be more likely. Empowering universities to independently evaluate teacher qualifications will make them more flexible in employment, will facilitate the division of teachers based on expertise, and will unite them with the university's development orientation. This policy is indeed one of the great achievements of Taiwan's higher education development in recent years.

11.5 Reflection and Implications

In universities, the single-track promotion system no longer satisfies university development and the professional classification of teachers. By establishing distinct academic career development paths and review standards, universities can alter the present situation of some teachers' unsuitable areas of expertise while being promoted for academic works that lack a practical application to teaching improvement, industry–academia collaboration, or technology research and development. With the aim of being a part of the world trend and achieving the cultivation of diverse talents, multi-academic development paths and promotion systems for teachers are crucial topics for universities regarding university governance. After taking into reference the British and American system of professional division of expertise and multi-promotion of university teachers, Taiwan launched a multi-promotion policy for teachers in 2013 (Ho, 2014). It is a major reform that combines universities' internal controls and performance responsibilities and entails a complete teacher professional development and support system for Taiwan's higher education. The purpose is to enable universities to have more flexibility and autonomy in positioning growth, governance mechanisms, teacher appointments, and the professional division of expertise. There are still many reflections and suggestions that can be applied to the implementation process, described below, that can serve as a reference for countries' MoE or higher educational authority as well as HEIs.

First, Taiwan's universities have mentioned their concerns for and the impacts of an independent evaluation of teachers and a multi-promotion system to the MoE. They have reported that reviewer databases are incomplete and that review assignments are difficult to implement; especially in fields where teaching-practice research is a new promotion path. Some universities have yet to clarify and plan the promotion threshold, review items, and content standards. MoE is advised to provide benchmarking standards for institutional reference. Second, the university's support system for teachers' professional development, such as resource input, funding subsidies, counselling, and research empowerment, must be linked with teacher promotion. In the long run, this pairing will enhance university distinctiveness, student learning effectiveness, and teachers' investment in research. Apart from this, universities must establish a system of division of teachers based on profession so that teacher promotion may vary to allow teachers to deliver teaching and research based on their expertise.

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Chapter 12
Academic Profession in Taiwan: Whose Doctorate Graduates Hold a Stronger Network Among Academics?

Li-chuan Chiang

Abstract To fill the literature gap on academic profession in Taiwan, the study aims to reveal whose doctorate graduates hold a stronger network among academics in Taiwan. The sample includes 29,469 individuals from 157 higher education institutions. The main findings include: (1) The dominant faculty hiring practice pattern is that the majority of the Taiwanese HEIs (111 institutions; 71%) have more home-trained than overseas-trained faculty. (2) The limited range of host countries shows clear. Taiwan-trained faculty hold the strongest network, and US-trained faculty hold the second. Faculty trained from the UK, Canada, Australia, and Japan, represent an extremely minor proportion. (3) Among the top ten host institutions, there are nine institutions from Taiwan but only one from the US. The only US institution in the top ten is the University of California. (4) The first institution in other host countries is, respectively, the University of London UK, the University of Queensland Australia, the University of Toronto Canada, the University of Tokyo Japan, Ludwig-Maximilians-Universität München Germany, and the Université Paris I Panthéon-Sorbonne France. The implications for those overseas host countries and institutions, and for the younger generation to make a decision about where to pursue their doctoral education at home or overseas were discussed and proposed.

Keywords Academic profession · Home-trained faculty · Overseas-trained faculty · Taiwan

12.1 Introduction

Academics flow toward the best higher education institutions in the best countries, from the developing countries to developed ones, and from the periphery to the center of academia. This trend raises concerns about the risks of brain drain and its negative implications not only for the competitiveness of nations (e.g. Leporia, Seeberb, & Bonaccorsic, 2015) but also of higher education institutions (HEIs).

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Within this context, faculty hiring process and patterns as well as the influencing factors of hiring choices are some of the main subjects in the study of changing academic profession (e.g. Altbach, Reisberg, & Pacheco, 2012).

Among the factors, doctorate training background and the network associated with their graduating university are recognized as critical structure factors not only in faculty hiring, promotion, and grant seeking (Horta, Sato, & Yonezawa, 2011), but also in explaining faculty perceptions, behaviors, performance toward their scholarship (Shin, Jung, & Lee, 2016). Doctorate training represents the faculty's academic socialization process in which they learn language, knowledge, skills, and norms to be a member of the academic community (Holley, 2015). Along the same lines, the academic network obtained from the doctorate training experience overseas is assumed to be different from that at home, with an influence in faculty hiring practices (e.g. Shin et al., 2016). The preference to hire faculty with a doctorate degree from prestigious overseas universities has long been observed in East Asia (Shin et al., 2016). Thus, it is interesting to know the size and pattern of the academic network that might lead to understanding the presence of homogeneity or diversity as well as of academic inbreeding.

Following the common pattern, faculty hiring practices in Taiwan have been formally outlined in national legislation and institutional regulation. For example, a doctorate degree has been a requirement for almost all academic appointments, faculty vacancies are publicly advertised in the national press and open to all candidates, and HEIs maintain considerable autonomy in determining hiring choices. Despite a trend toward making the hiring practices more institutionalized and transparent, it is assumed that individuals are still often hired through personal networks and filled by internal candidates (Altbach et al., 2012). However, this seems to be uncommon in Taiwan. Regarding academic inbreeding in terms of university hiring its own doctorate graduates, Chiang (2017, 2020) reports a considerably low rate of academic inbreeding found nationally. Among 28,839 full-time faculty with a doctorate, the rate of academic inbreeding is only 4%. It slightly increases to 6% if excluding those faculty who were hired in HEIs without doctorate programs. These figures not only indicate a weak academic network in faculty hiring practices in Taiwan, but also partly explain why pursuing doctoral education at home has lost its attractiveness for younger generations.

Under the government policy to build the capacity of HEIs to advance their status in the knowledge community, the doctoral education system in Taiwan has demonstrated significant development in terms of both size and quality for the last two decades. Due to the insufficient well-established local doctoral education programs, the government has also offered national scholarship programs to encourage students to pursue doctorate training overseas (mainly in the US and European countries). The increasing proportion of faculty with doctorates is explicitly revealed in the qualification profiles of the faculty.

While the growth of doctoral programs produces a large number of doctorate graduates, available faculty positions in the academic job market are limited. As illustrated in Fig. 12.1, the cumulative total of doctorate graduates in 2018 was 65,048, which is 5.2 times greater than that of 1991. During the same period, the

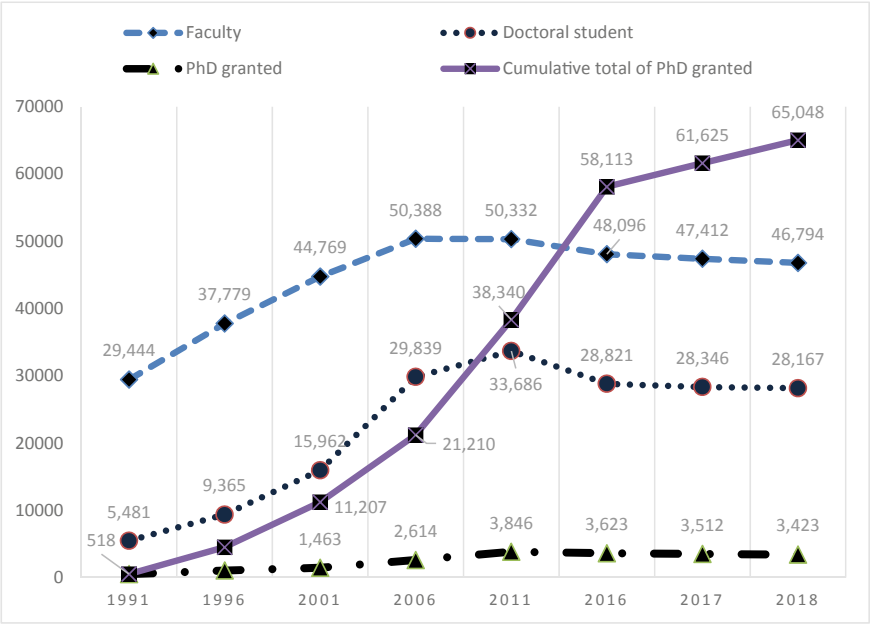

Fig. 12.1 The change in number of faculty, doctoral students, and graduates from 1991 to 2018 in Taiwan (*Source* Education Statistic [1990–2019], Ministry of Education, Taiwan)

number of faculty only grew 0.59 times as faculty positions increased by 17,350 places. This also means that only 27 out of 100 doctorate graduates might have opportunity to enter into academic job market without taking the overseas returnees into account. A mismatch between the supply and demand for doctoral graduates creates a tension. The nation's capacity and strategy to refresh, build, and regenerate an aging workforce needs urgent consideration, especially during a period of low attendance for doctoral programs both local and abroad. Before any action is planned, the diversity or homogeneity in terms of the doctoral qualification profiles among academics in Taiwan should be examined.

As scholars (e.g. Lu & McInerney, 2016) observe, network structures shape labor market outcomes. Beyond academic inbreeding, other academic networks based on faculty's origin of doctorate education in Taiwan have never researched. Thus, the study aims to understand whose doctorate graduates holds a stronger network among academics in Taiwan in terms of size of the faculty related to the source of their doctorate qualifications. This study refers the sources of doctorate training background to the faculty's doctoral training countries and institutions, either at home or overseas.

This paper is organized into four sections. Section 12.2 reviews academic networks in faculty hiring, and faculty's doctorate training patterns to identify the literature gap. Section 12.3 describes the method about the data source and analysis. Section 12.4

presents the main findings from the data. Finally, the study discusses the challenges facing current doctoral education and faculty hiring practice in Taiwan and concludes with policy recommendations.

12.2 Literature Review

12.2.1 Academic Networks in Faculty Hiring

Push-pull factors, brain drain, academic dependency between the center and the periphery, and the positional competition theory are commonly used to explain the flow and mobility of doctorate graduates as faculty members. The center–periphery concept implies that central institutions function as international knowledge production systems, while peripheral higher institution systems simply copy developments and act as knowledge-users through the network by which returnees who had trained in the center play an important role (e.g. Altbach, 1981). If returnees from studying abroad do not exhibit greater academic productivity, then the positional competition perspective is powerfully supported to explain that foreign degrees are highly regarded as a status symbol. This is explicitly revealed in East Asian higher education systems where hired a high proportion of foreign degree holders as faculty (Shin, Jung, Postiglione, & Azman, 2014). With the globalization of knowledge, the boundary between the center and the periphery becomes obscure over time. Brain drain and brain gain thus evolve into brain circulation.

Lu and McInerney (2016) argue that network structures shape labor market outcomes. For understanding whose doctorate graduate network is stronger among academics, this study utilizes the concepts of network power by Castells (2009) to analyze the academic network that might have power and empower decision-making in faculty hiring practices. While Castells (2009) questions where power lies in the global network society, he identifies four distinct forms of power in the networks (pp. 42–47). These are (1) networking power; (2) network power; (3) networked power; and (4) network-making power. Networking power refers to the exercise of inclusion and exclusion by the actors and organizations included in the networks over those who are not included. Network power, the imposition of the rules of inclusion over its members, forms and strengthens the networked power. Network-making power refers to the emotion that plays a role to influence decision-making as "people tend to select information in ways that favor the decision they are inclined to make" (Castells, 2009, p. 145).

Those who hold a stronger position in the network hold more power than those without. In a comparative study on paying the professoriate, Altbach et al. (2012) found that even when faculty vacancies are publicly announced and where formal procedures exist for hiring new staff, positions are often filled internally and faculty are hired through personal networks. This is true in many countries, such as Colombia,

Armenia, Russia, and Japan (Altbach et al., 2012). In Korea, overseas doctorate graduates, mainly from the US, become the dominant group of knowledge transmitters in the Korean academic community "due to their strong global culture capital, international network and language proficiency in English, which domestic doctorates do not often possess" (Jung, 2018, p. 209). As Shin et al. (2016) observe, the homogeneity of Korean academics reinforces "*hakmak*", academic networks based on their origin of undergraduate education in the top three research universities, Seoul National University, Yonsei University, and Korea University. Even though the government makes efforts to ensure the hiring process is transparent, the culture of faulty hiring that favors those in the network has not changed much (Shin et al., 2016). In China, Lu and McInerney (2016) examine which network structure better predicts positive academic job market outcomes between either doctorate returnees affording structural holes or home-trained doctorate graduates that feature network closure by taking advantage of tight "*guanxi*". Their empirical results reveal that returnees are able to exploit the structural hole position between local actors and those abroad to benefit their first promotion, but network closure benefits home-trained doctorate graduates to gain not only their first promotion but also subsequent promotions. The network closure facilitates trust, familiarity, and identity among members of a group and leads to better labor market outcomes compared to structural holes in the Chinese setting where "*guanxi*" networks persist (Lu & McInerney, 2016).

The question of whether or not doctorate graduates with a center network outperform those trained at home remains interesting to be addressed. In existing studies, both positive and neutral differences in academic performance, have been identified. Shin et al. (2014), for example, examine whether academics with advanced degrees from foreign universities are more research productive than their home-trained counterparts in Korea, Hong Kong, and Malaysia where have relatively large proportions of foreign degree holders among their faculty. Based on the data drawn from the survey of the Changing Academic Profession in 2007–2008, they found that foreign degree holders are not more research productive than their colleagues with domestic degrees. As Jung (2018) argues, though the faculty with overseas training experience might not actually contribute to research productivity and future performance, the overseas doctorates with mobility experience have more opportunities for knowledge exchange and strong international scientific networks.

Further elaboration on "network power" is made by Välimaa, Papatsiba, and Hoffman (2016) to identify it as a "soft power" with the capacity "to influence people, enmeshed in protocols and standards in order to avoid exclusion" and "have the power to accept or reject new members" into the network (p. 33). McLaughlin (2005), for example, contrasted the development of the networks of radical sociology of the 1960s in the US and in Canada. In the US, the networks of radical sociology were held in structures with pressures, incentives, and competitive dynamics to push young scholars to help transform mainstream sociology, but in Canada, they were dispersed into leading smaller interdisciplinary networks to consolidate "control instead of stimulating innovation and intellectual ambition" (McLaughlin, 2005, p. 21). Different academic networks have their own strengths as well as weaknesses. Thus, the issues of academic network if originated from similar doctorate training

background when faculty hire is formed to stimulate innovative and intellectual ideas or to consolidate control, attract attention and concern for the quality and health of the academia.

12.2.2 Faculty's Doctorate Training Patterns

The nature and scope of the overseas training have long been an important factor in faculty staffing in universities, particularly for those countries where doctorate education was in its early development stage. In Australia, for example, a series of studies focused on it. Tien (1960) found that 33% of his 479 respondents were foreign-born by examining staffing at the Universities of Sydney and Melbourne during the 1950s. Encel (1962) concluded that 34% of approximately 1,200 appointments made across Australia during 1957–1960, were from overseas. Interest in the extent of overseas staffing in universities continued into the 1970s when Cropley and Heimingway (1973) suggested an Australia-wide figure or over 30% and Saha and Klovdahl (1979) claimed an overall figure of 40%. Newman (1985) also found a similar staffing pattern in the department of education in Australia universities.

Assumptions regarding high proportion of faculty who receive overseas doctorates are quite often made among East Asian countries. For example, Altbach (1989) argues that a large number of Asian academics are educated abroad, mainly in the US and the UK. Jonkers and Tijssen (2008) also identify that the impact of foreign training in Asia is considerable, forging continuing international links, networks of colleagues, and research and scholarship opportunities. The preference for foreign-trained doctorates in Ease Asian societies and the belief that they have more advanced knowledge and greater research productivity than home-trained ones are found as cultural and social prejudices in academia, though it is unclear whether foreign-trained doctorate graduates are, in fact, more competitive than home-trained ones.

In South Korea, among 140,000 doctorate graduates, 22% received their degrees overseas and 56.8% of them received their degree from the US (Jin et al., 2006; cited in Lee & Kim 2010). A strong preference for hiring faculties and scientists who have earned their doctorates in the US is highlighted by Lee and Kim (2010) who take the Department of Education at Seoul National University as an example, where 19 out of 21 faculty members received their doctoral degrees in the US and this pattern is consistent throughout the Seoul National University. Further study by Jung (2018) reveals that among 48,447 overseas doctorates, according to the 2012 data, 60.4% were from the US, 8.6% from Japan, 6.4% from the UK, and 2.6% from France, accounting for almost 90% of them, and the major research universities are more likely to hire overseas-trained doctorates than home-trained ones. Again, such a pattern has remained stable, though the doctoral education system in Korea has demonstrated significant development for last four decades in terms of both size and quality.

In Hong Kong, there is also a large number of overseas appointees among academics. About 90% of all doctorates held by Hong Kong faculty were granted

overseas, primarily in Australia, Canada, the UK, or the US (Postiglione, 1995). The faculty staffing pattern is changing as there are more doctorates earned in the US than in the UK or elsewhere. One issue Hong Kong higher education confronts is the problem of balancing the localization of administration and of academic leadership, the nationalization of the university mission, and an internationalization of university curriculum (Postiglione, 1995). Heavily recruiting talented academics is recognized as the key success factor of Hong Kong University of Science and Technology (HKUST) where all faculty members have doctorates, and 80% of them received doctorates from or were employed at one of the top 24 universities in the world (Postiglione, 2011).

Following the systemic development and internationalization of higher education, the volume of studies of higher education by East Asian scholars has been increasing with a strong collaborative orientation toward US universities in Hong Kong, and Japan, Taiwan and Korea (Jung & Horta, 2015). One of the main reasons to explain this fact is that many of their faculty undertake advanced doctorate training in US and maintain strong links with their alma maters or with colleagues from US universities (Lee & Kim, 2010).

Interestingly, not only in Asian countries, but also in western countries, the belief was that overseas-trained doctorates are more privileged to be hired as faculty than home-trained ones in the academic job market. In Canada, for example, the debate on this issue remains today. During the 1960s and 1970s, due to the lack of local PhD programs and the demand of expansion of student enrollment, universities needed to hire foreign-trained doctorates as faculty but this led to the Canadianization movement concerning about the low number of courses with Canadian contents and unfairness for Canadian doctorates in the faculty hiring practices. Wilkinson, Bramadat, Dolynchuk, and Aubin (2013), however, challenge the myth surrounding the belief that foreign-trained sociologists still dominate academics in Canadian universities by examining the number and origin of degrees for recently hired sociology faculty in Canada in 2012. They found that two-thirds (67%) of assistant professors received their doctorate training in Canada. Canadian-trained PhDs are appointed more than not, but with some exceptions, particularly after the amendment of the "hire Canadians first" legislation in 2002. The new rule allows the academic hiring committees to consider foreign academics in the round one for interview and means that foreign candidates have a better chance of being selected for the position (Wilkinson et al., 2013). Hiring committees are required to submit a form to justify why the selected foreign candidate has the qualifications necessary to fulfill the job requirements and why the Canadians on the shortlist were not qualified (Wilkinson et al., 2013).

In Taiwan, the preference to hiring overseas-trained doctorate graduates as faculty over their home-trained counterparts has been assumed but there is a lack of any study or evidence to support it. To fill the literature gap on academic profession in Taiwan, Chiang (2017) examines 28,839 faculty members, representing 81% of the full-time faculty members with PhD degrees, to understand the state-of-the-art characteristics of faculty members in terms of home/overseas PhD holders, graduates of overseas prestigious universities, and academic inbreeding. Her study argues that the situation of hiring overseas-trained doctorate as faculty over home-trained counterparts is

partly supported in the public universities. It also found that 24% of the faculty were graduates from top 100 prestigious universities on the Times Higher Education World University Rankings, and 4% of them were academic inbred. Chiang (2020) further examines the current academic inbreeding in the universities which offer doctorate programs not only in terms of the university's hiring of one's own graduates but also the faculty members with a doctorate from the same university. Her study found that 6% of the faculty members at universities all over Taiwan were academic inbred but the rate of academic inbreeding ranges widely from 0 to 32%. Among 1998 departments examined, the number of departments with faculty graduating from different universities is 393, representing 20% of the sample, and only one department has faculty graduating from the same university, indicating academic inbreeding in terms of hiring faculty who graduated from the same university is not common. Again, the academic network in faculty hiring practice shows relatively weak in Taiwan. However, the questions of which host country and institutions hold the most influence in terms of the size and source of doctorate graduates among academics in Taiwan remain to be addressed.

12.3 Method

12.3.1 Source of Data

For understanding whose doctorate graduates hold a stronger network among academics in Taiwan, the data regarding the host countries and host institutions by which the faculty received their doctoral degrees should be collected. While the existing studies often present a small-scale study or survey of faculty in the particular disciplines and institutions, Chiang (2017, 2020) attempts to expand them to include all full-time doctorate faculty members in the whole higher education system. Chiang's studies collected 35,735 faculty members with doctorates by visiting individual faculty CV profile on the websites of all 157 higher education institutions in Taiwan during the academic year of 2011–2012 to form her dataset. This study continues to use her dataset to further address the research questions across three dimensions as shown in Table 12.1.

After excluding those without doctorate award background, there were total 29,469 individuals, representing 82% of entire full-time faculty with doctoral degree, included as the sample for analysis. According to Table 12.2, among the 14,755 home-trained doctorate graduates, there were 5,733 (19%) and 9,022 (31%) hired as faculty, respectively, in the public and private HEIs. Among the 14,714 overseas-trained doctorate graduates, there were 8,618 (29%) and 6,096 (21%) hired as faculty, respectively, in the public and private HEIs.

Table 12.1 Research questions across three dimensions

	Dimensions	Research questions
1.	Taiwan HEIs' staffing pattern	1. Which is the dominant pattern in all HEIs that have more home-trained than overseas-trained faculty, or vice versa? 2. What are the top 10 public HEIs and 10 private ones that have more overseas-trained than home-trained faculty?
2.	Doctorate host countries	1. Which network, if comparing the size of faculty from different doctorate host countries, is stronger? 2. What is the number of faculty holding doctoral degree awarded by overseas host countries?
3.	Doctorate host institutions	1. Which network, if comparing the size of faculty from different doctorate graduating institutions, is stronger? 2. What are the top 10 host institutions? 3. What are the top three host institutions in each overseas host country?

Source author

Table 12.2 The study sample

	HEIs	Faculty	Home-trained		Overseas-trained	
			Number	%	Number	%
Public	52	14,351	5,733	19	8,618	29
Private	105	15,118	9,022	31	6,096	21
Total	157	29,469	14,755	50	14,714	50

Source author

12.3.2 Method of Treating Data

In this study, a network with stronger influence refers to the size of doctorate graduates hired as faculty in Taiwan. The number and percentage of faculty members whose doctorates came from which of sources, either home or overseas, have been coded and analyzed. The dominant staffing pattern among HEIs in Taiwan refers to institutions that have over half of faculty who were home-trained or overseas-trained. The data about host countries, Taiwan, the US, the UK, Canada, Australia, Germany, France, and Japan, was individually coded. However, the data about host institutions was dealt by hand-count since it is difficult to give a code for more than thousands of host institutions from all over the world.

12.3.3 Limitation of Data

Only full-time faculty members in all ranks with doctorate employed in the academic year of 2011–2012 are represented. Though the data nearly represents the entire

faculty of all higher education institutions in Taiwan, we recognize the data is constantly changing. Therefore, it should be noted that this data is a snapshot of data collected in 2011–2012.

12.4 The Dominant Pattern: The Majority of the HEIs That Have More Home-Trained Than Overseas-Trained Faculty

According to Figs. 12.2 and 12.3, the grey part (for home-trained faculty) occupies a larger area than the dark part. This indicates that HEIs with home-trained

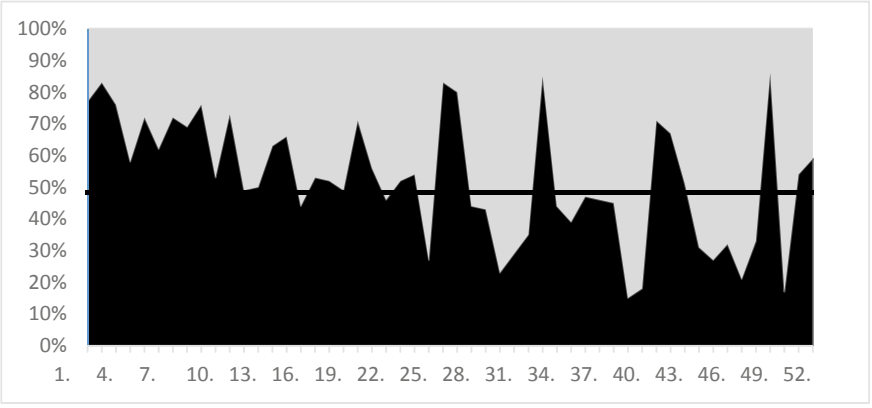

Fig. 12.2 Faculty doctorate profile in 52 public HEIs. *Note* Grey for home-trained faculty. Dark for overseas-trained faculty

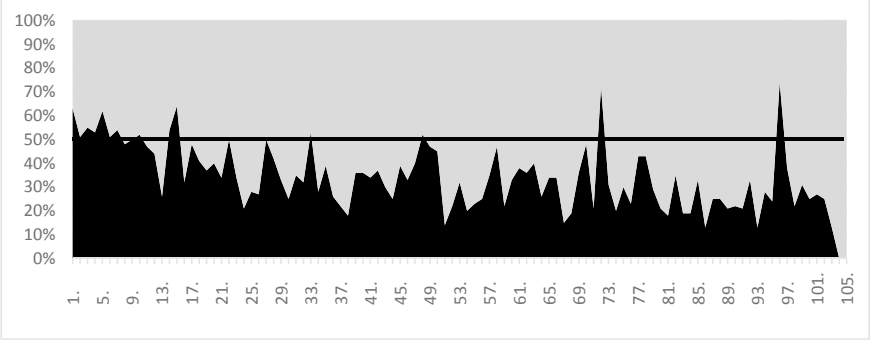

Fig. 12.3 Faculty doctorate profile in 105 private HEIs. *Note* Grey for home-trained faculty. Dark for overseas-trained faculty

over overseas-trained faculty represent the dominant pattern. Among 157 HEIs, the majority of HEIs (111 institutions; 71%) have more home-trained than overseas-trained faculty. Only 46 higher education institutions (29%), 29 public and 17 private institutions, have more overseas-trained than home-trained faculty. Among the public HEIs, the highest percentage of overseas-trained faculty is 85% and the lowest is 15%. Among the private HEIs, the highest percentage is 74% and the lowest is 0%.

Due to the variation between individual institutions and the need to exclude some institutions with a sample size less than 100, the study ranks the top ten of both public and private institutions (Table 12.3) that have over half of the faculty with overseas doctoral degree. Among the top ten public institutions, the National Tsing Hua University (83%) has the highest percentage, followed by the National Chengchi University (77%), the National Taiwan University (76%), the National Sun Yat-sen University (76%), and others. The National Taiwan University of Science and Technology is the only one public technology university on the list. Among the top ten private institutions, the Wenzao Ursuline University of Languages (72%) has the highest percentage, followed by the Shih Hsin University (64%), the Tunghai University (63%), the Tamkang University (62%), and others. In them, there are five private universities that had Catholic or Christian foundation background.

Table 12.3 Top ten institutions with over half of the faculty holding an overseas doctorate degree

Public HEIs			Private HEIs		
Rank	Institution	% of faculty	Rak	Institution	% of faculty
1.	National Tsing Hua University	83	1.	*Wenzao Ursuline University of Languages	72
2.	National Cheng chi University	77	2.	Shih Hsin University	64
3.	National Taiwan University	76	3.	*Tunghai University	63
4.	National Sun Yat-sen University	76	4.	Tamkang University	62
5.	National Chung Cheng University	73	5.	*Soochow University	55
6.	National Cheng Kung University	72	6.	I-SHOU University	54
7.	National Chiao Tung University	72	7.	Feng Chia University	54
8.	National Taiwan University of Science and Technology	71	8.	*Chang Jung Christian University	53
9.	National Central University	69	9.	*Chung Yuan Christian University	53
10.	National Taipei University	66	10.	Yuan Ze University	52

Note *means institutions with Catholic or Christian foundation background

12.5 Taiwan and the US Having Stronger Network Among Host Countries

Table 12.4 indicates the host countries where faculty received their doctoral degree. Obviously, Taiwan and the US are the two main host countries. There are 14,755 from Taiwan, and 10,864 from the US, accounting for 87% of the whole sample. Aside from the US, doctorate graduates from other overseas countries represent a small proportion of the sample. They are, 1,368 (5%) from the UK, 957 (3%) from Japan, and 548 (2%) from Germany. Among them, the faculty who graduated from the English-speaking countries holds the dominant network, if compared to those from European and Asian countries. There are 12,552 faculty members, 43% of the whole sample or 85% of the overseas-trained faculty, receiving their doctorate training from English-speaking countries. There are only 1,060 faculty members (4% of the whole sample or 7% of the overseas-trained faculty) receiving their doctorate training from Asian countries and 860 (3% of the whole sample or 6% of the overseas-trained faculty) from the European countries. Compared to other countries in their own regions, Japan in Asia and Germany in Europe are the top one countries to have the highest number of doctorate graduates hired as faculty in Taiwan. The overall dominant pattern among overseas host countries/regions is further illustrated in Fig. 12.4.

Table 12.4 Host countries of doctorate degree held by the faculty

Host country	Total number	% of the sample	% of the overseas-trained faculty
Taiwan	14,755	50	–
English-speaking countries	**12,552**	**43**	**85**
US	10,864	37	74
UK	1,368	5	9
Australia	215	1	1
Canada	105	0	0
Asian countries	**1,060**	**4**	**7**
Japan	957	3	7
Hong Kong	54	0	0
Philippines	38	0	0
Singapore	11	0	0
European countries	**860**	**3**	**6**
Germany	548	2	4
France	244	1	2
Belgium	36	0	0
Netherlands	19	0	0
Sweden	13	0	0

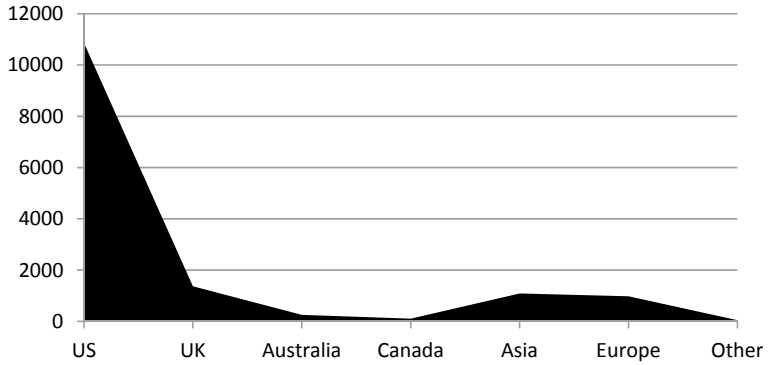

Fig. 12.4 Dominant pattern among overseas host countries/regions

12.6 Host Institutions with the Stronger Network

In terms of doctorate alumni size, the top ten host institutions are listed in Table 12.5. They are 9 institutions from Taiwan and one from the US. There are over one-third of the faculty members (11,320; 38%) trained from them. Among them, the number varies. It is very clear that the doctorate graduates from the National Taiwan University as faculty outnumbers the second one, the National Cheng Kung University, and the third one, the National Chiao Tung University. Of the whole sample, one out of five faculty members in Taiwan graduated from these three institutions. Among them, only one institution from the US is the University of California, ranked as seventh place.

Table 12.5 Top ten host institutions

Rank	Host institution	Graduates (% of the sample)	Rank	Host institution	Graduates (% of the sample)
1	National Taiwan University	3,048 (10%)	6	National Taiwan Normal University	856 (3%)
2	National Cheng Kung University	1,526 (5%)	7	University of California (US)	794 (3%)
3	National Chiao Tung University	1,223 (4%)	8	National Central University	676 (2%)
4	National Chengchi University	940 (3%)	9	National Sun Yat-sen University	676 (2%)
5	National Tsing Hua University	926 (3%)	10	National Taiwan University of Science and Technology	655 (2%)

A further analysis of the top three host institutions per overseas countries is presented in Table 12.6. The top three institutions from the US are the University of California, University of Texas, and University of Illinois. The top three institutions from the UK are the University of London, the University of Cambridge, and the University of Manchester. The top three institutions from Australia are the University of Queensland, the Queensland University of Technology, and the University of New South Wales. The top three institutions from Canada are the University of Toronto, the McGill University, and the University of British Columbia. The top three institutions from Japan are the University of Tokyo, the Osaka University, and the Kyushu University. The top three institutions from Germany are the Ludwig-Maximilians-Universität München, the Eberhard Karls Universität Tübingen, and the Ruprecht-Karls-Universität Heidelberg. The top three institutions from France are the Université Paris I Panthéon-Sorbonne, the Université Paris Diderot- Paris VII,

Table 12.6 Top three host institutions per overseas country

Country	1st place	2nd place	3rd place
US (Total: 10,864)	University of California[1]	University of Texas[1]	University of Illinois[1]
	794 (7%)	475 (4%)	379 (3%)
UK (Total: 1,368)	University of London	University of Cambridge	University of Manchester
	154 (11%)	94 (7%)	79 (6%)
Australia (Total: 215)	University of Queensland	Queensland University of Technology	University of New South Wales
	24 (11%)	20 (9%)	19 (9%)
Canada (Total: 105)	University of Toronto	McGill University	University of British Columbia
	18 (17%)	13 (12%)	12 (11%)
Japan (Total: 957)	University of Tokyo	Osaka University	Kyushu University
	157 (16%)	50 (5%)	49 (5%)
Germany (Total: 548)	Ludwig-Maximilians-Universität München	Eberhard Karls Universität Tübingen	Ruprecht-Karls-Universität Heidelberg
	76 (14%)	34 (6%)	31 (6%)
France (Total: 244)	Université Paris I Panthéon-Sorbonne	Université Paris Diderot - Paris VII	Université Paris-Sorbonne (Paris IV)
	25 (10%)	19 (8%)	15 (6%)

Note Within the systems, the universities with the highest number of doctorate alumni as faculty in Taiwan, respectively, are the University of California, Berkeley with 216 alumni, the University of Texas at Austin with 299 alumni, and the University of Illinois at Urbana-Champaign with 187 alumni

and the Université Paris-Sorbonne (Paris IV). The sum of the percentages of doctorate graduates from the top three institutions per country reveals the presence of concentration. The concentration varies, from high to low, Canada (40%), Australia (29%), Japan (26%) and Germany (26%), UK (24%), and France (24%). However, faculty members with American doctorate degrees awarded by the top three institutions represent only 14%.

12.7 Discussion

A policy aiming at avoiding nepotism in faculty hiring (e.g. Collins, 1998) and recruiting faculty with diversified doctorate training backgrounds to enhance teaching, research, and service is required for the well-being of higher education institutions. It is interesting to use Taiwan as a case study to re-examine the presence of the so-called Asian-pattern in faculty hiring practice, especially since Taiwan has increased its capacity to provide doctoral education at home since the 1990s. Based on the study results, the so-called Asian-pattern still remains. As South Korea (e.g. Jung, 2018; Shin et al. 2014), the dominant pattern of America-trained doctorate graduates over graduates from other overseas countries, the limited range of doctorate host country, and the major research universities more likely to hire overseas-trained doctorates than home-trained ones, still remain stable in academia in Taiwan. However, this study challenges the myth surrounding the belief that overseas-trained doctorate graduates still dominate academics in Taiwan. The findings demonstrated that home-trained doctorates represent half of academics, and one out of five graduated from the top three home institutions.

Beyond the studies on the academic inbreeding by the author (Chiang, 2017, 2020), this study, again, found that the academic network of faculty based on their origin country and institution of their doctorate education shows relatively weak in the faculty hiring practice in Taiwan. Even though doctorates from the National Taiwan University holding the strongest network among faculty in Taiwan, it represents only 10% of the whole sample. The institutionalization of the formal procedures, from public advertisement through to three-tier selection committee, might partly explain the weak academic network of faculty based on their origin country and institution of doctorate education in faculty hiring process in Taiwan. This formalization has minimized the power to be operated by the stronger academic networks to favor particular new hiring. Thus, this study argues that the stronger size of the network does not directly mean the influential power the network assumes when the faculty hiring practices are meritocratic-oriented and transparent. As Välimaa et al. (2016) suggest, network power plays as a "soft power" with the capacity "to influence people, enmeshed in protocols and standards in order to avoid exclusion" and "have the power to accept or reject new members" into the network (p. 33). However, emphasizing either the academic network or meritocracy might not be a healthy one for academic development since academic network still plays as a critical channel

for collaborative research, information sharing, and academic career development (Shin et al., 2016).

The empirical study (Leporia et al., 2015) reminds that improving the general conditions of the academic system is more important than attracting overseas returnees for internationalization per se, and suggests that the balance between opening and favoring national candidates, as well as the measures to promote international mobility, need to be carefully tailored to the situation in each country and individual HEIs. In Taiwan, the debate regarding whether the current higher education system is producing too many doctorates continues as the faculty positions are limited. One can debate whether all this is a good thing or a bad thing. However, my point here is that the current doctoral education system must provide a new and innovative approach to develop advanced knowledge and skills suitable for careers beyond being an academic (e.g. Baschung, 2016; Bogle, 2017) to further strengthen home-trained doctorate graduates.

12.8 Conclusion and Implication

This is the first study to explicitly reveal which host countries' and host institutions' doctorate graduates hold a stronger network among academics in Taiwan. Among 157 higher education institutions, the majority of them (111 institutions; 71%) have more home-trained than overseas-trained faculty. Among the host countries, Taiwan and the US are the two main host countries. It indicates the limited range of host countries. Among the top ten host institutions, there are nine institutions from Taiwan but only one from the US. The only US institution in the top ten is the University of California. The findings also indicates the US-trained faculty over other host overseas countries, the faculty trained by the English-speaking countries-trained over those from Asian and European countries, and the faculty trained by the National Taiwan University over other host institutions. This research also allows overseas host countries to know more about the number of their doctorate graduates who work as faculty in Taiwan, and fosters the younger generation to make decision about where to pursue their doctorate, either at home or overseas. This study is not claimed to be exhaustive or definitive but rather to further disclose the reality about the academic networks based on faculty's origin of doctorate education in Taiwan. Thus, the implications for faculty hiring practice and further studies are proposed as follows.

For faculty hiring practice, first, diversity in doctorate training background should be taken into account in faculty hiring practices to balance the current over-reliance on home-trained and US-trained doctorate graduates. Second, a well-developed, but not weak, academic network with institutionalized meritocracy is a key to the competitiveness of universities in the long run to minimize the negative impacts on academic development and open up the academic networks to other scholars. Third, the further debate about the quality and health of organization reflected in the composition of faculty in Taiwan needs to be fuelled up, instead of remaining silent about who holds stronger network power and what changes take place over time. A homogeneous

university which does not critically examine itself will soon become outdated and irrelevant. We must maintain the periodical review and lively debates on the issue of who the faculty members are and what academic training backgrounds they are associated with. This will bring impacts on the well-being of universities.

For further study, first, obtaining the objective and complete data of the faculty profile is required as a solid base and reference before any discussion and critique can be made about the changes in academic profession. Second, other methods, such as in-depth interviews with home-trained and overseas-trained faculty, can be adopted to understand how their doctorate training networks have impacts on their perceptions, behaviors, and performance toward their scholarship. Third, comparative studies with other Asian countries are also interesting, as many of them have encountered with the similar trends on reliance on the US-trained doctorate graduates. Finally, keeping record of the number of home-trained doctorates working in universities abroad to assess the impact of Taiwan's doctorate training programs would be beneficial.

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Chapter 13
The Development of Institutional Research and Its Implications for University Governance in Taiwan

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Abstract In Taiwan, a series of higher education policies centered on institutional research started in 2015. The driving force behind this policy change was the collective concern that the international competitiveness of Taiwan's higher education was declining. Policymakers expect that, through this change, the application of institutional research improves the low efficiency of the current university governance system. University leadership and management would thus be able to operate in a professional manner with the support of institutional research units, thereby leading to the advancement of higher education quality. This chapter investigates the constraints in university governance faced by university leadership in Taiwan and describes the evolution of institutional research and its function in Taiwanese universities. The policy initiatives centered on institutional research are investigated in line with the theory of policy instruments to examine the completeness of the strategic plan. This chapter also addresses the emerging challenges and suggestions for ongoing reform in university governance. By using Taiwan as the case study, this chapter sheds light on the synergy between institutional research and university governance.

Keywords Institutional research · University governance · Higher education

13.1 Introduction

University governance is the process of decision-making within a higher education institution. With proper university governance, a higher education institution can set its policies and objectives and develop mechanisms to achieve them (Oxford,

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2006). The quality of higher education in both teaching and research relies, to a large extent, on the quality of university governance. Therefore, the design of university governance is at the core of higher education reforms (Mok, 2010).

However, the reform of university governance is not an easy task. University governance structure is rooted in its historical and cultural context. Traditionally, universities resembled organized anarchies, which made their outcomes and performance immeasurable (Cohen & March, 1974). At present, the challenges facing universities are even more severe. The emergence of non-higher education institutions shows their capacity to replace some functions that used to be monopolized by universities. Furthermore, when higher education institutions are not responsive to their needs, traditional resource providers look for alternatives that can efficiently provide for both quality teaching and research (Bull, 2012). In general, today's environment is forcing universities to quickly and wisely respond to the external demands that, to a certain degree, were neglected before.

Currently, the higher education system in Taiwan is not only threatened by the decline of student resources but also by the governance model under which it operates. The faculty governance model inherited from continental universities still dominates the management of universities in Taiwan. Frequent criticisms directed at the extensive reliance on a faculty governance model often point out to the fact that academic staff frequently lack governance skills or interest (Trakman, 2008). University governance is indeed far from being bureaucratic or even collegial because it involves negotiation, bargaining, and political influences, along with the chaos and uncertainty (Baldridge, 1971).

On the other hand, the accountability system in Taiwan is also experiencing a dramatic change. In 2012, the Taiwanese Ministry of Education (MOE) launched a new quality assurance policy entitled "self-accreditation." The new policy shifts quality assurance at the academic program level from external review mechanisms to an internal framework based on strategic direction and institutionally specific features (Hou et al., 2018). However, although the new policy grants universities more autonomy to decide how their quality should be checked, the infrastructure in the higher education system that should support such self-quality control activity is not solid.

The concept of institutional research (IR) is not new to Taiwan's higher education system, but it was only in 2015 that the MOE took a national-scale action. Although it might not be entirely clear yet, IR in Taiwan could, to a certain degree, fix low-efficient university governance practices while making the higher education accountability system more in line with the public's needs. Before taking action to reform the university governance model, Taiwan higher education could use IR to support the decision-making process, which is currently dominated by the faculty model.

Taiwan serves as a unique case for the incremental reform of university governance because, instead of initiating a reform of university governance directly, Taiwan is using IR as leverage to facilitate structural change in higher education in a

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comparatively mild way. In this process, productive communication based on reliable data plays a pivotal role in both internal decision-making and external information exchange. With this in mind, this chapter begins with a historical review of university governance, followed by the evolution of IR. The policy initiatives centered on IR are investigated in line with the theory of policy instruments to examine the completeness of the strategic plan. This chapter also addresses the emerging challenges and suggestions for ongoing reform in university governance.

13.2 Remodeling University Governance

13.2.1 Loosely Coupled University Governance

The history of the Taiwanese path toward greater autonomy of universities over the past twenty years can be seen as an enduring task in fighting for academic freedom and institutional autonomy while resisting the invasion of political influences and market forces (Chan, Yang, & Liu, 2018). The reform of the University Act in 1994 determined today's university governance structure in Taiwan. While some of the public universities in East Asia are shifting to the corporate or trustees governance model, Taiwan still operates its public universities under the faculty governance model. Faculty governance is a form of collegial governance in which universities are predominantly governed by their academic staff instead of shared governance by other stakeholders (Dill & Helm, 1988; Evans, 1999; Pfnister, 1970; Trakman, 2008; Williams et al., 1987).

The granting of expansive governance powers to the university senates is how Taiwan's current public university system operates. The current governing body of the National Taiwan University, for instance, is the university senate, consisting of over 200 academic staff members and students that are responsible for the governance of the university (National Taiwan University, 2020). Frequent criticism directed at current faculty governance concentrates on two threads.

First, the academic staffs are experts in their own professional fields but often lack governance skills or interest (Trakman, 2008). Governing the university within such complex management and financial systems requires that university leaders and administrators put a lot of effort and are committed to the cause. However, the high turnover rate of senior administrators such as the president, vice president, deans, and department heads makes the cultivation of experienced leadership for academic administration impossible. It is almost impossible to expect the realization of a long-term strategic plan, which is crucial for today's university to compete globally (Dooris, Kelley, & Trainer, 2004).

Second, departmentalism inevitably dominates the decision-making process concerning internal resources allocation such as the faculty quota, the size of the academic program, the amount of funding . All of these topics are used as the chips

during the bargaining process to satisfy the individual department's interests while the collective institutional interest could be sacrificed. As a result, no one could be held accountable for the success or failure of university governance.

13.2.2 Compromised Institutional Autonomy

Institutional autonomy was conferred to Taiwan's public universities in the late 1990s. However, influenced by the emergence of scandals, the MOE is undergoing a crisis of confidence in university governance and constraining institutional autonomy through varied administrative interventions. Among those constraints, two aspects have greatest impact on the university's sustainability: the formulation of tuition fees and the opening or termination of academic programs.

For the formulation of the tuition fees, the administrative regulations grant universities the autonomy to adjust tuition fees based on their financial status, financial aid policy, and educational outcomes (MOE, 2020a). Both public and private universities are required to submit a proposal with supplementary documents covering the institutional performance on those three aspects. This proposal would take effect only when the MOE approves it. Even if the proposal is granted, a university can only increase tuition fees by 1.5% each academic year (MOE, 2020a).

Although the increase in tuition amount is quite limited, it is extremely rare to see a successful case of application due to political constraints. Taking the National Taipei University of Technology as an example, the tuition fees per semester in true value in 2018 was 840 US dollars—almost the same as ten years earlier (National Taipei University of Technology, 2020), despite the consumer price index had increased by 8.26% (Directorate General of Budget, Accounting, and Statistics, 2020). The concern for the potential impact of increasing tuition fees on economically disadvantaged students is the reason why tuition fees were frozen. However, there is no report identifying which groups would be particularly affected and to what extent. The lack of evidence-based study prevents the debate from taking a proactive approach.

Another issue that compromises institutional autonomy as a result of administrative intervention is the opening and terminating of academic programs. An academic program is the fundamental unit of institutional operation both in teaching and research. Flexibility in opening and terminating academic programs can enhance a university's responsiveness to human resource demands in the labor market. Nevertheless, neither public nor private universities have this privilege.

Under the current student quota system, the opening of new academic programs first requires the reallocation of students. As mentioned, the internal resources allocation involves a series of negotiations among faculty representatives of each department to reach a consensus. However, without clear guidance and under departmental protectionism, achieving this consensus based on the faculty governance model is very difficult. Ironically, a university's decision cannot guarantee the opening of an academic program before submitting it as a proposal, as it is followed by a series of time-consuming administrative reviews conducted by the MOE (MOE, 2020b).

Furthermore, frequent rejections raise the question about the objectivity and fairness of the review results.

Frozen tuition fees directly hurt the financial sustainability of universities and subject them to government appropriation. The imbalanced financial structure forces universities to comply with governmental intervention and makes them less responsive to market forces. On the other hand, the inefficiency of the decision-making process relevant to the opening and terminating of academic programs further worsens universities' capacity to respond to society concerning talent cultivation. The MOE is fully aware of such systematic problem. But after a series of policy initiatives setbacks, including the corporatization of public universities in 2004 (Tseng & Chen, 2005) and the National University Governance and Autonomy pilot program in 2011 (Chen, 2015), there have been no policy attempts to reform the current governance model.

13.2.3 Self-Regulatory Accountability System

The accountability of higher education in Taiwan is implemented through quality assurance activities and institutional data reporting. Institutional accreditation and the publication of its results began in the early twenty-first century (Hou, 2011), relied on academic peer review, and required that an institution satisfied minimum capacity and infrastructural standards. After one decade of implementation, frequent criticisms were directed at its tedious administrative burden and the complex evaluation criteria utilized (Ho, 2012). The extremely high passing rates in evaluation reviews raised public concern about assessment quality (Hou et al., 2018). Evaluation reports full of technical terms also prevented the public from digesting them and gathering the information they needed for college choice.

By 2012, in response to the congressmen's request, the MOE shifted the academic program evaluation from mandatory evaluation to the current dual-track quality assurance system comprising of accreditation and self-accreditation (Hou et al., 2018). Self-accreditation aims to encourage universities to establish their internal quality assurance mechanisms instead of relying on periodical reviews conducted by external quality assurance agencies. Although universities won back their institutional autonomy from the external quality assurance agencies, they have little knowledge or experience on how to conduct internal quality assurance scientifically and reliably.

Furthermore, the MOE established a national data reporting system—the "Higher Education Database"—in 2010; it reports data in the aggregated form of descriptive statistics and is designed to support the MOE in making policies and allocating resources. The database provides both consumers and policymakers with an accessible way to measure the relative effectiveness of different universities (MOE, 2020c). Furthermore, information disclosure facilitates benchmarking among institutions and holds universities' leaderships accountable for their governance.

The database also provides quantitative information on activities relevant to university accreditation. The university accreditation conducted by HEEACT (Higher Education Evaluation and Accreditation Council of Taiwan) requires that accredited universities provide reliable administrative data to prove their progress (Higher Education Evaluation and Accreditation Council of Taiwan, 2019). Additionally, the application of administrative data has been expanded to reach wider stakeholders. For instance, the local press media frequently use the publicly reported data to create their own university ranking metrics (Global Views Monthly, 2018). The application based on the reporting of this data has facilitated the institutional competition and increased the pressure on university governance. Administrative data have thus evolved into a pivot that can facilitate communication between the government, accreditation entities, universities, and society.

However, as its importance increased, the national data reporting system started to expose a systematic problem—the quality of data. Several anecdotes reveal that there are almost no internal data-checking mechanisms to ensure the correctness of data submitted by Taiwanese universities (MOE, 2016). This phenomenon is due to the combination of several aspects, such as the university governance model, the design of the national data reporting system, and the practice of quality assurance.

Specifically, the current faculty governance model makes decision-making mostly reliant on negotiation rather than on data-driven evidence. The lack of critical debate on data in the decision-making process hinders the development of business intelligence established by a series of data analysis activities. Since data do not play an important role in the decision-making process, stakeholders rarely care about their quality.

Second, the national data reporting system is designed in an aggregated format. Although each data column has its definition, this format limits the possibility for other wider applications. Before the advocacy of IR offices, there were no data warehouses, within universities, nor other specific units to store, manage, and analyze the administrative data. The majority of universities saw the submission of administrative data in an aggregate format as a burden instead of an opportunity to look into their own operation. The lack of professionalism in managing administrative data inevitably resulted in the poor quality of both institutional data and collective national data.

Third, the institutional accreditation system underestimates the importance of internal quality assurance that comes with reliable data management and application. Previously, the quality assurance agencies were not fully aware of the importance of an IR office. Besides, the selection of on-site reviewers was focused on those with sound academic backgrounds or with university administration experience. There was no IR background for on-site reviewers joining the evaluation process. This led to a scenario where there was no one questioning the correctness of data even though all the suggestions and review comments were based on them.

13.3 Institutional Research as a Policy Instrument

13.3.1 A Policy Window for Change

Kingdon (1995) points out that public policy essentially is the result of the convergence of three streams: the problem stream, the policy stream, and the political stream. When the three streams come together, the policy proposal would see the opportunity to turn itself as real policy. This opportunity is called a policy window. In Taiwan's case, as mentioned in the previous section, the inefficiency of university governance is the long-standing problem stream. Institutional research is the policy stream which had been advocated but did not turn into a policy action until 2015 when the Taiwan Ministry of Education began funding the establishment of institutional research offices and initiated a series of practices on forging the culture of evidence-based making in university governance. From both inside and outside the higher education environment, three political streams contributed to the formation of a policy window in 2015. The detail of these three political streams is discussed as following.

First, Taiwan's World-class University Project was scheduled to be renewed by 2018. The funding provided by this almost decade-long project was so significant that its content mostly determined how universities should operate. After the project ended, policymakers had to reconsider how to manage the higher education system in the next decade. Once again, the reform on the quality of university governance was put on the policy agenda. Since the corporatization of university is still a controversial issue, the advancement of university governance through the improvement of internal quality assurance through IR became a mild and rational alternative.

Second, in 2012, after almost one decade of the implementation of institutional accreditation, the Taiwanese MOE amended the University Evaluation Regulation so that it no longer required the academic programs of universities to be evaluated or accredited through external quality assurance activities. This dramatic change remarked the setbacks of the quality assurance policy, but it left a hot issue—how to guarantee the quality of education without mandatory external evaluation. IR, which is the central criterion for university accreditation in the United States, was seen as a new direction for quality assurance.

Third, during the 2010s, evidence-based decision-making heralded by the big data era was affecting the governmental section as well as reshaping the culture regarding how public policies should be implemented. The formation of this new culture also affected educational organizations. Generally speaking, higher education policies are centered on education resource allocation. Therefore, both the MOE and universities needed a sound quality data reporting system to make decisions based on substantial evidence. IR, which was created to manage and analyze the administrative data, thus got its legitimacy. Subsequently, the introduction of IR into higher education quickly collected support outside the policymakers' circle.

13.3.2 The Implementation of Institutional Research

Since there was no such culture of data-driven decision-making in university governance before, Taiwan's MOE intentionally promoted this kind of policy through a variety of instruments. The theory of policy instruments (McDonnell & Elmore, 1987) helps investigate the completeness of this strategic plan. Table 13.1 shows four types of policy instruments used to facilitate change in public affairs: inducements, capacity-building, mandates, and system-changing.

Inducements (2015–2018): The first policy instrument used by the MOE was inducements. The MOE delivered a message that the efficiency of university management would determine the odds of the university to obtain block-funding in the next renewal decision process. To help improvement in this regard, the MOE provided a startup fund for universities to compete if they were willing to set up their IR office for university governance (MOE, 2015).

Under the funding scheme, the MOE asked that the IR office at the funded university should demonstrate their contributions to improve students' learning outcomes. In the second phase of the funding scheme, the IR office at the funded university was asked to show its efforts in connection with enrollment management (MOE, 2015). This particular arrangement was aimed at reshaping the experience-based decision-making culture and urged all the decision-makers to change their opinions for evidence-based ones.

Both topics—students' learning outcome and enrollment management—directly cut into the core of university governance. In fact, they are also key issues in terms of internal quality assurance. Furthermore, the institutional performances in these two aspects are always within the interests of the national data reporting system. Through the implementation of this relatively soft policy instrument, not only the funded universities realized the importance of IR, but also those non-funded universities were affected by the new trend.

Table 13.1 Policy instruments

Type of instrument	Assumptions	IR Policy
Inducements	Valued good would not be produced with desired frequency in the absence of additional money	The startup funding project for IR office (2015–2018)
Capacity-building	Knowledge, skill, and competence required to produce future value	The establishment of Taiwan Association for Institutional Research (2016–); IR professionals training program (2019–)
Mandates	Actions would not occur with desired frequency or consistency without rule	The criteria for grant application for Higher Education Sprout Project (2018–2023)
System-changing	Changing the distribution of authority changes what is produced	The advancement of national data reporting system (2017–2019)

Capacity-building (2016–): Although there is a significant agreement concerning the importance of IR in Taiwan's higher education system, the shortage of qualified IR professionals and the lack of professional services are compromising the public's expectations and confidence toward IR. In this regard, through the advocacy of leaders in government and universities, the Taiwan Association for Institutional Research (TAIR) was established in 2016 (Taiwan Association for Institutional Research, 2020). Its mission is to facilitate experience exchange among its members as well as to provide capacity-building training programs for IR practitioners (Taiwan Association for Institutional Research, 2020). It is noteworthy that the leadership of TAIR overlaps with the one of HEEACT. This particular arrangement has forged a strong connection between the institutional research community and the quality assurance agency.

The increasing demand for IR practitioners also attracted the attention of universities. In the 2019 academic year, three universities, including the National Taipei University of Education, the National Taichung University of Education, and the National Chiao Tung University, offered a faculty position for scholars with expertise in IR. In addition, universities started offering IR courses at college and graduate school levels. Overall, the capacity-building activities for IR professionals are in transition from the informal and scattered meetings coordinated by the professional association to the formal and structured pre-service education model.

Mandates (2018–2023): The consistency of a policy is very crucial for the promotion of a new idea. IR policy makes no exception. The Higher Education Sprout Project—the most significant amount of funding project after the World-class University Project—reflects the policy priority of the MOE concerning higher education. In this project, having a high-quality IR office is one of the required criteria, which determines the amount of funding that universities can receive (MOE, 2018). Because the amount of funding offered by the Higher Education Sprout Project to universities accounts for a significant portion of institutional financial income, no university is willing to give up this money. As a result, the requirement embedded in this project has a coercive force and leaves universities with no choice but to comply. Although the requirement is not prescribed by law, in reality, every Taiwanese university sets up its IR office to fit the MOE's expectations.

System-changing (2017–2019): System-changing involves a paradigm shift to redefine the standard of behavior to reward. To reach this goal, the MOE, in 2017, began to take action in redesigning the national data reporting system. The new one collects administrative data at the individual level. The pre-defined columns are grouped in several dimensions ranging from students' enrollment information, students' courses taken records, students' extracurricular activities, the faculty's portfolio, and basic institutional information. Unlike the previous data reporting system that collected the aggregated data submitted by each university, the new data reporting system directly asks each university to provide the raw data in line with the pre-defined columns.

Furthermore, the MOE is promoting data exchange to speed up the process of system-changing primarily because the new data reporting system does more than covering the individual data of students enrolled in higher education: under the

agreement with the Ministry of Labor, the data warehouse created by the MOE can link higher education students' records to their employment records in the job market. Integrated with the senior high school students' portfolio data warehouse (The K-12 Education Administration, 2020), the completed data warehouse should be able to cover individual records ranging from the senior high school level and the university up to the job market.

13.3.3 The Convergence of Policy Streams in Higher Education Policy

To summarize the context of a series of higher education policies relevant to IR, it is possible to visualize the evolution of the multiple policy streams before and after the initiative of IR policy in Fig. 13.1. Each line indicates a policy stream while particular events on a given year are marked.

Looking at the past three decades of the evolution of this policy, two noteworthy observations can be expressed. First, in accordance with the scarcity of students, the past three decades could be divided into three phases marked by different colors. Before 2010, Taiwan's higher education system just finished its golden period. Warning reports about the decline of students and its future effects did not raise full attention. At the time, each higher education policy stream mainly focused on solving their own problems. During the 2010–2016 period, since the appearance of systematic issues coupled with the actual decline of student numbers, Taiwan's higher education system could no longer afford the low efficiency derived from poor governance. The growth of IR in Taiwan in such a short period, to a certain degree, reflects the collective anxiety about the sustainability of higher education.

Second, when facing these new challenges, the policymakers also changed their mindset and framed higher education policies under a more holistic viewpoint. Before IR policy began in 2015, only very loose connections existed among those key components in the higher education system that were originally supposed to work in coordination with each other. For instance, the quality assurance agency should refer to the institutional data when conducting the accreditation; however, quality institutional data to support their activities were unavailable. The scenario was similar to the one the MOE had to decide whom to award a certain amount of block-funding. The crisis of confidence in the submitted institutional data blocked the possibility of collaborative work. As a result, decisions on educational allocations were not based on robust evidence universities' contributions, and they almost always caused unnecessary chaos.

Starting from 2015 and encouraged by the implementation of the Higher Education Sprout Project in 2018, the policymakers in the MOE intentionally created a synergic collaboration among those components. The establishment of IR offices not only supported university governance but also allowed quality data to be provided by

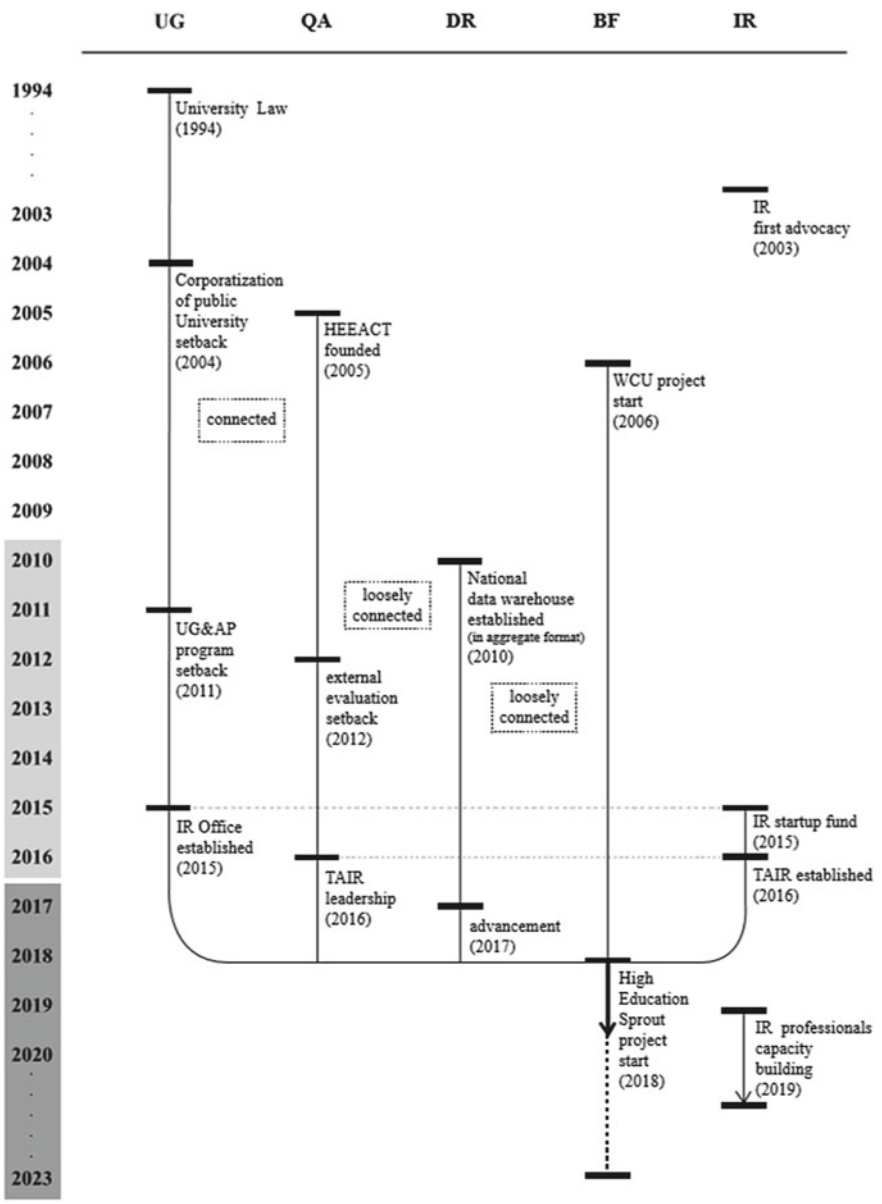

Fig. 13.1 The convergence of policy streams in higher education policy (*Note* UG stands for University Governance; QA stands for Quality Assurance; DR stands for Data Reporting; BF stands for Block Funding Project; IR stands for Institutional Research)

the national data reporting system. With reliable information on institutional performance, the quality of decisions concerning institutional accreditation, as well as the allocation of governmental appropriations, could finally be guaranteed.

13.3.4 The Impact on University Governance

In the past five years, the implementation of IR has impacted the governance of each university differently. Following the national survey conducted by TAIR, 80% of universities and colleges have their IR offices or special units in charge of IR tasks (Fu, Lee, & Chou, 2018). The extent of IR's involvement in university governance varies. The majority of IR offices reported that their tasks include students' learning outcomes assessment, retention analysis, students' learning experience surveys, enrollment management, and alumni's employment performance assessment (Fu et al., 2018). The spirit of IR is appealing to a very fundamental concept, which is that reliable and quality data can facilitate a productive internal conversation and efficient external communication. Here, this chapter highlights certain aspects within university cases as examples.

Enrollment management: Since the decline of student resources is currently the primary concern of Taiwanese universities, IR professionals make a lot of efforts in the field of enrollment management. Lunghwa University of Science and Technology is a vocationally oriented university in which potential student resources for its academic program are highly connected with the current number of students in vocational high schools. Therefore, its IR office referred to the national educational statistics and set up a guideline for the adjustment of program size (Lunghwa University of Science and Technology, 2020). Similarly, even for the research-type university, the association between the entry channel and the following academic performance is the interest of university leadership. Studying their institutional data ranging from 2002 to 2015, the National ChengChi University concluded that their new students were selected because their high school's recommendation performed better compared to their peers from other entry channels (Lee et al., 2018).

Teaching and learning: IR's services also engage with the long-term strategic plan. The National ChengChi University decided to reduce the faculty's teaching load through the reorganization of course structure (Yu et al., 2018). In the process of policy formation, some of the misunderstandings at the university leadership level were timely corrected when IR professionals presented the holistic data report. The timely correction of these misunderstandings helped the leadership to propose a more actionable plan that could effectively eliminate the concerns from the faculty groups.

In another case, the National Kaohsiung University studied the impact of the implementation of a stricter academic dismissal policy on students' learning by using its institutional data ranging from 2003 to 2012. The university found that, following the new policy, students who had failed 50% or more credit hours increased their study time and class attendance, suggesting that the policy was achieving its goal

of encouraging student effort (Keng, 2016). These findings provide the university leadership with substantial evidence regarding the impact of this policy.

Student learning experience: Chung Yuan University examined the pattern of the courses taken by students to find out how many were offered by their affiliated program or by other programs. Their results show that the students in the business and humanity colleges took more courses outside their own affiliated program than students from the science and engineering colleges. These findings suggest that program leaders should consider designing a provisional course map to be changed if needed (Wang & Chang, 2018). Focusing on students' learning outcomes, the National Sun Yat Sen University developed an assessment tool—the Collegiate Learning Outcome Assessment—a survey to collect data relative to student learning experience, learning strategy and motivation, and employment performance. Since 2013, all undergraduate students are required to participate in this survey each year up until three years after their graduation. The information gathered not only provides students' individual learning trajectory but also informs the university leadership about the performance of each academic program (Shih, Lin, & Lin, 2018).

13.3.5 Suggestions for the Ongoing Reform

Although IR has started to involve decision-making processes in many aspects, it does not mean that the long-standing problem facing university governance could be solved at once. IR is just an instrument to support university governance. Similarly, although IR professionals bring noteworthy issues into the spotlight, university leaders must still set up a strategic plan or policy agenda for organizational change as they are the ones who ultimately should make the final decisions. Those issues are far from the control of IR professionals. Successful reform of university governance calls for further efforts on behalf of the Taiwanese higher education system.

First, with the involvement of representatives from varied groups in the governing entity, university governance itself can balance the power distribution between the government, the university, and the market (Chan et al., 2018). The demands from external forces can be transferred as a certain pressure to facilitate internal change. Therefore, this system can keep the university being responsive to external society changes. Since the university has to adopt the necessary action, the importance of IR will only be highlighted again and again. Taiwanese universities—especially the prestigious ones—still witness a disconnection between external pressure and university leadership. Moreover, the MOE keeps intervening in universities' operation through various occasional administrative regulations. The intervention from the MOE impacts the accountability system and provides the university leadership with an excuse not to take responsibility for certain decisions.

Second, the application of a value-added approach to education resource allocation should be implemented. At present, Taiwan's higher education system is aware of the importance of the transparency of institutional data, which could bring in market forces to keep the university responsive to society. However, the disclosure

of institutional data in aggregate format would only provide a snippet of facts and sometimes could cause greater misunderstandings. If these misunderstandings were connected with the resource allocation decision, they would misguide the direction of higher education.

Modifying the national data reporting system could remedy this problem through the provision of holistic data at the individual level for more in-depth investigation. Taking social mobility as an example, if the mission of education is to facilitate upward social mobility, the contribution of higher education to the value added to each student could be easily and scientifically calculated by using longitudinal tracking data (Chetty et al., 2017). The application of such reflective accountability on the allocation of higher education resource could force as well as encourage university leadership to take the mission of higher education seriously. Only under this condition, IR could make a real impact and contribute to its affiliation.

13.4 Conclusion

A productive communication platform connecting different campus units could be paramount to effective governance. The presence of this platform helps a loosely coupled organization's members to acknowledge the situation that their institutions are facing in a timely manner. True to its original mission, IR in Taiwan universities is facilitating internal communication and external coordination through the provision of quality data. However, a successful university governance model requires more than relying on the quality of the decision-making process. It also requires that university leadership is granted with fair autonomy balanced with being held accountable for their decisions and actions. Taiwan's case in the development of institutional research over past years reveals the importance of IR in university governance as well as its limitations. Taiwan's experience would be a good lesson for those countries who are in the process of remodeling their university governance system.

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Chapter 14
Challenges and Prospects for Taiwan's Higher Education

Jong-Tsun Huang and Yuan-Man Hsu

Abstract The present article deals with the growth profile and accompanying problems in Taiwan's higher education over the past two decades. Some thorny issues are identified, such as the continuingly decreasing fertility rate, the consequent shortage of students for enrollment, and the relatively low average annual expenditure of each tertiary education student by international comparison. Furthermore, Taiwan's higher education community has to compete bitterly for international recognition with very limited funding resources. In response to these challenges, Taiwan's higher education manages to react with some effective measures, such as the balancing between quality research and quality education, the implementation of quality assurance system, the search for effective ways to nurture and recruit young talents and high-profile human capital, and the monitoring of academic progress. Finally, in the prospect of a brighter future, the universities are trying to convince the government to draft an umbrella of policies to help Taiwan's higher education react adequately. The consensus asks for a thoughtful mission setting and international benchmarking from the university and the nation and urges to launch the Higher Education Macro Planning (HEMP) and a road map for the universities.

Keywords Taiwan's higher education · Decreasing fertility rate · Balancing between research and education · Quality assurance system · The Higher Education Macro Planning (HEMP)

14.1 Introduction

Over the past 20 years, the capacity of Taiwan's higher education has rapidly expanded in the number of both institutions and students. Taiwan's higher education

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has been further decentralized, which has significantly reduced the degree of state control typical of the 1990s. The present blossoming period of societal and political liberation started following the lifting of martial law in 1987; universities began to seek their autonomy almost in every aspect, including the expansion of tertiary education. We will briefly describe the hard-core challenges, the reaction and coping strategies, and the future prospect.

14.1.1 Problems and Challenges

There are two distinct features in Taiwan's higher education. The first is its high net enrollment rate, which is over 70% for the age group of 18–21 years old. The number of universities and colleges is around 141, and the size of the student body is roughly 1.2 million relative to a population of 23 million. The second feature concerns the distribution of the annual expenditure on higher education. The total annual expenditure for all-level education has spanned from 5.1 to 5.5% of the gross domestic production (GDP) in recent years. The yearly investment in higher education has held stable at 1.5–2.0% of the GDP over the years, which equally divides for both public and private sectors. The sector of private universities and colleges accounts for a rough estimate of 65% of the total capacity in Taiwan's higher education (MOE, 2019). The problem then lies not in its total amount of expenditure but rather in the distribution of budget allocations. The limited annual investment in higher education is shared by a disproportionally large number of higher education institutions, which inevitably leads to a severe dilution effect.

At first glance, the data profile seems to be fully comparable with the Organization for Economic Cooperation and Development (OECD) average. However, this is not really the case. An increasing number of higher education institutions and corresponding high net enrollment rates were vividly witnessed in a short period of time of about three years after 1998. The number of universities and colleges rose from 67 in 1996 to 141 in 2019. A large-scale educational reform emerged on April 10, 1994 had motivated the trend while igniting an urgent societal demand that intended to popularize and expand the volume of tertiary education. Unfortunately, the year 1998 marked the beginning of a decreasing trend in fertility rates: 1.75 in 1997, 1.55 in 1999, and 1.04 in 2019. Newborns are eligible for college enrollment after 18 years. The net enrollment rate rapidly rose from 35.43% in 1999 to 71% in 2018 due to the combined effect of the increasing number of higher education institutions and the decreasing fertility rate. A shortage of university applicants has been unbiasedly forecasted starting from 2016 by looking back to check the population data. It is predicted that a decline of up to 35% in university student enrollment will go on steadily for at least 12 years. This forecast claims that the number of Taiwan's higher education institutions should be correspondingly reduced by 35% to achieve an equilibrium in the following 12 years.

Alternatively, 50 universities or colleges should be moved out from the original list of 141 institutions. That would surely be a complicated issue for Taiwan society to

resolve. The situation has not improved yet. The World Bank data show that Taiwan's birth rate was the world's third-lowest in 2017 and second-lowest in 2019. However, this is not an isolated case in Asia. For example, similar balancing problems between high net enrollment rates and low fertility rates occurred in Hong Kong, South Korea, Singapore, and Japan. European Union countries also have encountered such difficulties (World Bank, 2019). In response to low fertility rates and the subsequently expected cohort shortage of students, some Asian countries, such as Japan and South Korea, have adopted the strategy to merge their higher education institutions to maintain the required level of university quality. Further critical issues have not arisen merely from the local and national causes; they have emerged from the intense competition on the international higher education platform. We will thus extend this discussion through international comparison to show how Taiwan has reacted over the past two decades. The challenges have been enormous, and the prospect depends on the way we explore and identify the solution in the face of them.

14.1.2 National Indicators of Taiwan's Higher Education

In 2019, Taiwan's per capita GDP was around $25,229, and the per capita GDP adjusted by purchasing power parity (PPP) was roughly $55,244. The International Monetary Fund (IMF) forecast for 2024 is $33,786 and $68,209, respectively. Taiwan is predominantly a free-market economy with very few exceptions, such as a strict regulation of the raising of higher education tuition fees. The ratio of tuition fee to per capita GDP is roughly 7% for public schools and 13.7% for private. In terms of comparison, the two ratios are, respectively, 13.6 and 18.52% in Japan, 21.54% and 38.55% in South Korea, and 10.53% for both public and private schools in Australia. The case of Taiwan reflects some kind of state control on educational affairs in an otherwise open society. The public taxation is, as usual, not sufficient to compensate for the difference in these almost fixed low tuition fees. The total taxation accounts for 12.3% GDP, which is significantly lower than 18.3% in Japan, 18.0% in South Korea, and 27.3% in Australia.

The 1.46% GDP tertiary education expenditure in 2015 seems comparable to 1.4% in Japan, 1.8% in South Korea, 2.0% in Australia, and 1.5% for the OECD average. The average annual expenditure of each tertiary education student is a modest $5,964, with an extraordinary high 71.2% net enrollment rate in 2016. In terms of comparison, the statistics are $17,883 and 85.4% for Japan, $9,323 and 73.3% for South Korea, and $18,337 and 76.6% for Australia (OECD, 2019; MOE, 2019). The relatively low level of annual expenditure in Taiwan partly arises from the lower nominal GDP per capita. However, the annual expenditure of each college student in Taiwan, even after PPP adjustment, still falls behind the above-mentioned countries.

The combination of these alarming statistics indicates that Taiwan's higher education system competes for both limited educational resources in general and a severe dilution of higher education resources in particular. The domestic pressure is further

exacerbated by the intense external pressure of international competition and university rankings. The above-mentioned budgetary and fertility difficulties might only be mitigated by a "less is more" philosophy. The philosophy would entail adopting the market rule to scale down the capacity of tertiary education to a desirable level. The annual support for the universities would thus improve under the current budget constraints. However, the concept of "educational market" is not a popular notion in Taiwan—not to mention its practice. Taiwan is already a market economy, but with an exception in the routine operation of educational affairs and medical care. A socialist philosophy is still prevailing in these two domains. The problem lies in a lack of socialist action to support the necessary educational expenditure through an increase in the national taxation rate to provide internationally comparable subsidies to Taiwanese higher education.

14.2 Taiwan's Higher Education in the Past Two Decades

14.2.1 Balancing Quality Research and Quality Education

Over the past two decades, Taiwan has adopted a thoughtful strategy to boost quality research first and quality education next and achieve a balance between the two. The relative projects for research and teaching were subsidized separately in the early 2000s. Quality assurance (QA) practice was then enforced under the requirements of the University Act revised in 2005. Recently, the opening of institutional research (IR) offices and the corresponding establishment of IR warehouses have become a popular practice among universities. The popular and successful implementation of IR in Taiwan might have naturally emerged from a long practice of boost projects and quality assurance routines. The boost projects, QA, and IR are all connected. The following list of events provides a brief history of the higher education boost projects and the related QA and IR implementations:

(1) In 1999, the Ministry of Education (MOE) launched an "In Pursuit of Academic Excellence" boost project to subsidize the granted university research programs. The National Science Council then created funding for distinguished university research centers. The boosting was executed on a project basis, followed by support for center-based applications. The approach was similar to the 973 projects in China or the Center of Excellence (COE) program in Japan.
(2) In 2002, MOE took a different approach to identify seven research universities and granted them with university-wide block funding. The program was similar to the identification of excellent universities in the so-called "211" and "985" projects in China and to the European League of 12 (now 23) Research Universities (LERU). In 2003, Shanghai Jiao Tong University released the first World University Ranking Report, also known as the Academic Ranking of World Universities (ARWU).

(3) In 2004, a big project—"The Promotion of World-class University and Top-notch Research Center"—was planned by MOE and approved by the Cabinet to be included in the national special budget package. In the next year, 12 universities were each awarded a university-wide five-year block funding, with a total of $1.7 billion. The second five-year project was re-opened for a competition to succeed in the first stage of five-year subsidies. The approach is similar to the support of top universities in China's 985 project and South Korea's BK21.
(4) In 2005, a university-wide institutional review was conducted for the first time, mainly on the accreditation of university governance and good practice. In the same year, the Teaching Excellence Project was launched to adjust the educational tilt towards research; more than 30 general and comprehensive universities were awarded. Another set of more than 30 technical and professional universities were also subsidized afterward.
(5) In the years 2006–2009, over 2,445 units of departments and graduate institutes were reviewed and accredited (Wang, 2011).
(6) In 2016, TAIR (Taiwan Association for Institutional Research) was formed, and the experimental project for promoting the practice of institutional research (IR) was launched. The universities were subsidized for implementing the IR offices to facilitate the practice of evidence-based decisions. The percentage of established IR offices among universities was around 52% before 2018 and has reached over 95% at present.
(7) In 2018, the Project of Deep Cultivation of Higher Education and Nurturing of the Young Talents (or, Higher Education Sprout Project) replaced the two-stage eleven-year World-class University Project, which was a continuation of the previous support on the search for academic excellence and teaching quality. Its replacement led to focusing on the selection and subsidy of four instead of twelve universities to compete for international recognition. The project has implemented two significant changes: it has enhanced support for the increasing number of research centers, and it has encouraged the practice of university social responsibility (USR) programs to fulfill university obligations.

The chronicled list reveals a few relevant aspects: Taiwan, at first, implemented a project to develop world-class universities, followed by a teaching excellence project to balance the undesirable tilting toward an unhealthy obsession in research. Quality assurance measures were then monitored among universities, mostly in the form of institutional and program reviews. It is now common to consult the IR office before making university decisions or submitting subsidy applications to MOE for approval. The order of the implementations represents a series of connected coping strategies that go from the boosting of research, teaching, and education to the concern for the effectiveness of university governance, thus reflecting the priorities encountered by universities over the past two decades. The first was the intense pressure from international competitions in pursuing research volume and academic recognition. Then, conscious anxiety gradually developed because of a direct and extensive threat from the potential shortage of students enrolling in the following decade. Universities began to bitterly realize that domestic difficulties were going to be greater than

expected. It then became natural to go back to the core values of education—namely, the learning outcome and employability of the students—so that universities could attract a decreasing number of applicants. Universities thus learned how to focus on student learning outcomes and strengthen their governance capabilities; hence, implementing teaching and educational quality and setting up IR offices became the trend.

14.2.2 The Impact of Quality Assurance System on Taiwan's Higher Education

Even before the volume of higher education began to expand in an unexpectedly rapid way 20 years ago, the increasing demand for keeping a delicate balance between quantity and quality had always been on the core list of government agenda. In addition to encouraging institutions to conduct assessments on their own, the Ministry of Education chartered a few professional associations in the 1980s to assist with academic program-based evaluations and accreditations.

In the 1990s, the government was urged to implement a wide-ranging and more comprehensive system of institutional evaluations. In 1994, a revised version of the University Act stated that the government was entitled and required to conduct institutional accreditation to assure the quality of higher education. The fifth article of the University Act urged the Ministry of Education (MOE) to perform the university assessment and accreditation periodically and to disseminate the evaluation report to the public. The evaluation profiles could thus be utilized as a reference for allocating governmental subsidies and adjustment of specific university quota of student enrollment. The Act was further revised in December 2005. The Ministry of Education was obliged to set up evaluation committees or to support professional accrediting agencies to conduct institutional accreditations periodically. The results could be related to a general policy setting for allocating subsidies to the universities or adjusting the accompanying development plans, although not as specific as previously stated in the 1994 version of the Act. Earlier in the same year, the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) was timely launched to predict the objectives to be met by MOE in the new University Act. However, the HEEACT is not the single certified accreditor in Taiwan (Hou, 2011).

Up to the present, there are a few professional local accreditors in Taiwan, including HEEACT, Taiwan Assessment and Evaluation Association (TWAEA), Taiwan Medical Accreditation Council (TMAC), the Institute of Engineering Education Taiwan (IEET), and the Accreditation of Chinese Collegiate Schools of Business (ACCSB). They are all non-governmental and not-for-profit organizations. TWAEA was founded in 2003 and mainly undertook the program accreditation of Taiwan's professional and technical universities. In the same year, a plan for the set-up of HEEACT was designed and realized in 2005 through a joint effort of the Ministry of Education and the universities. TMAC was the earliest professional accreditor in

Taiwan; it was created in 1999 to assess all the 13 medical schools in Taiwan. TMAC was later restructured to join the HEEACT in 2006; nonetheless, it maintains an independent status for medical accreditation. Founded in 2003, IEET is committed to the accreditation of engineering and technology education programs in Taiwan. ACCSB was developed by the Chinese Management Association (CMA) in 2005 and founded in 2010 to accredit management education and ensure the quality of business education.

As to international accreditors, two well-accepted agencies have successfully conducted program reviews in Taiwan. The Association to Advance Collegiate Schools of Business (AACSB) International is a US accreditor recognized in its first ten-year round by the Council for Higher Education Accreditation (CHEA) and the US Department of Education (USDE). The Council on Education for Public Health Accreditation (CEPH) is a member of the Association of Specialized and Professional Accreditors (ASPA). CEPH has also been officially recognized by Taiwan's Ministry of Education and is welcomed by most Asian universities.

In response to the growing globalization of higher education over the past decade, some Asian countries began to invite international accreditations and certifications, especially from the US, to provide cross-border quality assurance services for domestic universities and local professional accreditation institutions (Ewell, 2008; Hopper, 2007). Some of Taiwan's qualification assurance agencies (QAAs) have also applied for such international certifications. IEET is itself an accredited member of both Washington Accord Signatory and Sydney Accord Signatory, two of the main QAA accords for international engineering alliance. TMAC was certified by the expert panel of the World Federation for Medical Education (WFME) in 2019 to comply with the regulation set by the Educational Commission for Foreign Medical Graduates (ECFMG) in the US, and it will be effective after 2023. The regulation requires professional accreditation from the WFME certified medical school accreditation agencies for other countries outside the US to ensure the acceptance of internship or residency training of foreign medical graduates in the US. In the same vein, HEEACT is currently under review by the International Network for Quality Assurance Agencies in Higher Education (INQAAHE) based on its Guidelines for Good Practices (GGPs).

Taiwan's higher education has significantly learned from the extensive experience of such pluralistic QA enhancement processes. Those who failed the required accreditations may suffer from a sensible loss in subsidies or quota of student enrollment. The exceptional efforts of some average or under-privileged universities have been well recognized through the accreditation process, and it was then to an extent possible to upgrade their reputation to prevent a reduction of student enrollment under the exacerbating pressure of low fertility rate. Finally, the capability of the research-type universities has also unexpectedly benefited from the accreditation process despite the fact that, initially, it was not considered facilitative.

14.3 Societal Concerns in Taiwanese Higher Education

14.3.1 Nurturing Young Talents

For a country like Taiwan, there is no such thing as free lunch. Taiwan is a hazard-prone country due to its island position in the Pacific Ocean and its young and unstable geology. It is a beautiful country yet inflicted with frequent attacks of natural disasters like typhoons and earthquakes and with limited natural resources to supply the societal demands. Therefore, adequate nurturing of young talents has long been considered prioritarian in the list of national development projects so that high-quality human resources can be secured to serve the country. The most recent effort for this purpose was made in the national meeting held by the Cabinet in 2009, followed by supporting meetings and reports held by the Ministry of Education in 2010 and by Academia Sinica in 2011, respectively.

Two essential aspects of the nurturing issue have already been identified. The first is a debate on effective ways to nurture and recruit young talents. Table 14.1 summarizes the three contrasting views on separate demands. Each view is like a spotlight that searches the whole dark land and finds the target cluster that needs to be taken care of. Although the initial debate focused on finding a single cracking-the-code viewpoint to solve the thorny issue as a whole, eventually, the different counterparts agreed that it could only be solved through the integration of a complementary and exhaustive combination of the three contrasting views.

The second aspect is concerned with the enactment of a special law to bypass the accumulated administrative burden of inappropriate regulations and facilitate a creative application of effective policy instruments. The rationale behind the suggested special law is not new as it closely resembles the ones that have been effectively practiced and modified over the past seven decades for the promotion of

Table 14.1 Three contrasting views for nurturing and recruiting young talents in Taiwan

Viewpoint	Strategics and actions	Counterparts of interest
1. Recruitment of upper 1% from around the world is a must	Attractive incentive packages for recruitment and retainment; Promotion of studying abroad	R&D institutions; International and competitive emphasis
2. Economic and societal development over the past decades were created by the indigenous hard- workings under effective management	Expansion of educational expenditure; Supportive national and educational policies	Educational and industrial sectors; Historical judgement and societal memories
3. The talents are already there. Various active forms of interacting platform need to be implemented	Loosen-np of regulations; On-job and life-long education; Merit-based payoff	Entrepreneurial; Science industry parks; Future-oriented

Source Authors

economic development in Taiwan. Specifically, the Taiwanese government developed a policy umbrella by enacting three successive special laws to provide incentive packages and to exclude the unproductive or inappropriate application of legal regulations. The first special law was enacted in 1960 and was effective until 1990. It included an incentive package for investment in economic development. The second—on industrial development—followed in 1990 to promote the growth of strategic industries, the launch of industrial science parks, and the deployment of major national engineering projects, and it was effective until 2010. A third special law replaced the second one and will remain effective until 2030; it provides incentives for promoting industrial innovation.

Regrettably, further progress has been rather limited. A suggested special law for nurturing and recruiting high-profile human capital is still pending for Congress' approval. Taiwan witnesses a unique combination of a capitalist market economy and a socialist philosophy of education; unfortunately, the Taiwanese society is reluctant to raise the level of tuition fees or taxation rates to cope with the expanding public expenditure in education. An old-fashioned, narrow notion of educational fairness and social justice still prevails in the form of a collective attitude that has been unfriendly to any exception to the rule for quite a long time. As a consequence, those who were educated under this belief consider such exceptions as a severe violation of fairness and justice, which may partly explain why three special laws could successfully be enforced in the promotion of economic development but not on the nurturing of young talents.

Further relevant aspects to the issue of nurturing young talents include the fact that university education should comprise three parts, namely, core competencies, professional expertise, and general education. It is interesting to note that general education is still thought to be one of the most effective tools to cultivate future leadership and cross-boundary creativity. Effective implementation of general education platforms can best facilitate the learning of the dialogue between the humanities and the sciences, unfolding of the future life, thus fostering good citizenship, leadership, entrepreneurship, curiosity, and creativity. Learners can acquire critical thinking skills and wisdom, ways of knowing and doing, and life-long learning attitudes and skills. Successful general education practice could optimally serve both as a first entry into a university and as the initial encounter with the latter's true spirit.

14.3.2 Monitoring the Progress to International Recognition

As previously mentioned, Shanghai Jiao Tong University released the first ARWU in 2003. The project "The Promotion of World-class University and Top-notch Research Center" was then planned by MOE and approved by the Cabinet of Taiwan as a flagship project to be included in the national special budget package in 2004. The temporal proximity between these two events was accidental. The Taiwanese project was proposed independently before the release of the first world ranking report, but it was expected to help increase the number of the top 500 universities and rank

higher among the top 500 universities. The ratings of Taiwan's research capacity fluctuated within the range of 17th to 22nd worldwide in the years from 1999 to 2019. The rating methodology of research performance in quality is complicated and different from that in quantity. We will not go into detail for this computation. Figures 14.1 and 14.2 show an approximated comparative status of both the quantity and quality of research articles among different countries over the past two decades.

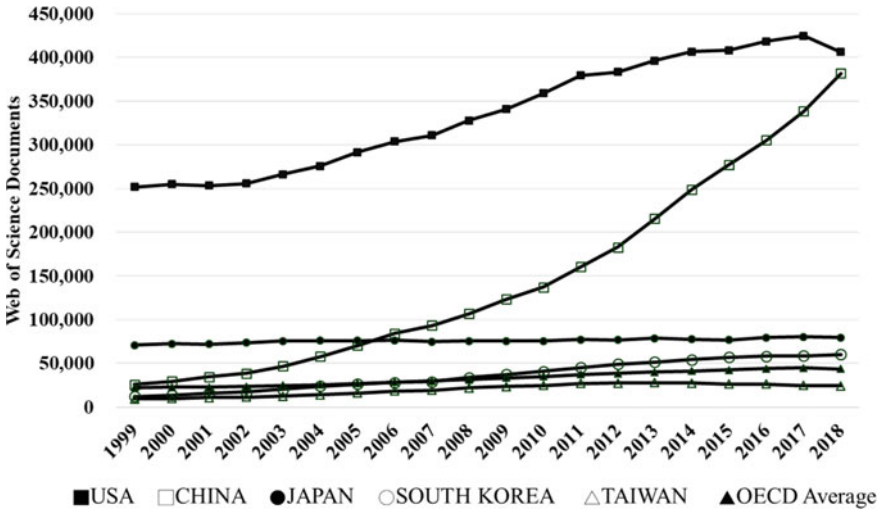

Fig. 14.1 Distribution of article quantity in 1999–2018 (*Source* Clarivate Analytics, 2020)

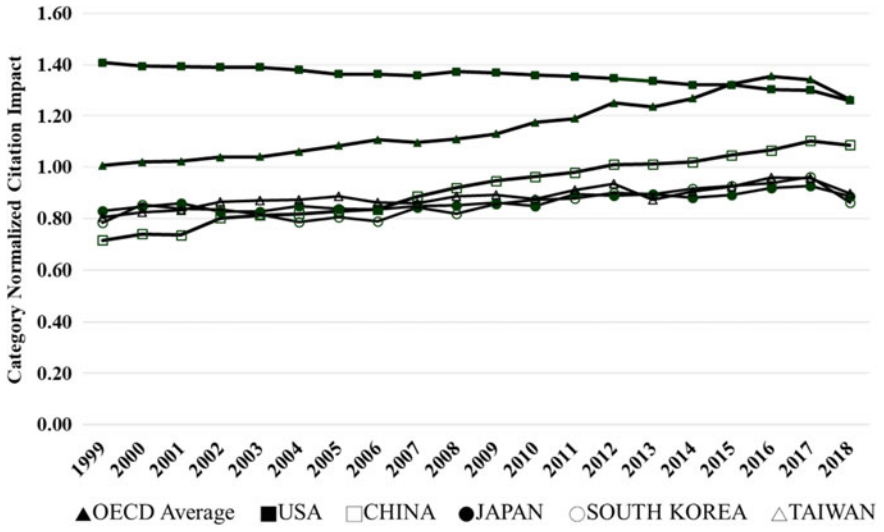

Fig. 14.2 Distribution of article quality in 1999–2018 (*Source* Clarivate Analytics, 2020)

High societal expectations were understandable, given that the first Shanghai ranking report focused almost entirely on the evaluation of university research performance. Both the government and society indeed consider universities as the primary entities for international research competitiveness. Now that a big project has been granted to the top local universities, it is then legitimate to expect it to pay back with an increased number of top 500 universities in the world.

The world ranking reports of Times Higher Education (THE) and Quacquarelli Symonds (QS), among others, came quickly afterward, each with a different methodology. We will not go into the detailed differentiation of these ranking systems; it suffices to say that both of them and their results are available on the web. It is estimated that ranking systems may exceed an amazing number of 20 to manifest a pluralistic demand for international recognition worldwide. Many countries are troubled in an ambivalent mental state for the world university rankings. The Ministry of Education of Taiwan does not like to be driven into this predicament by watching the yearly rise and fall of the world's top 500 rankings from the different systems. Most of the universities complain that ranking obsession hampers the regular operation of university governance and disturbs the stable growth of educational quality. However, Taiwanese society watches carefully and criticizes severely if the number of top-ranking universities drops. Such difficulties cannot be easily reconciled among different interest groups in Taiwan, and the ambivalence of approach-avoidance conflict still remains.

At first, five universities of Taiwan were listed in the top 500 category. National Taiwan University—the largest comprehensive and research University in Taiwan—was even rated as the best among universities in Chinese societies. The following boost project on world-class universities helped maintain it among the top 500, even if the project was considered modest in terms of subsidies and a five-year lag behind in the intense international competition. Figures 14.3, 14.4, and 14.5 show the rising

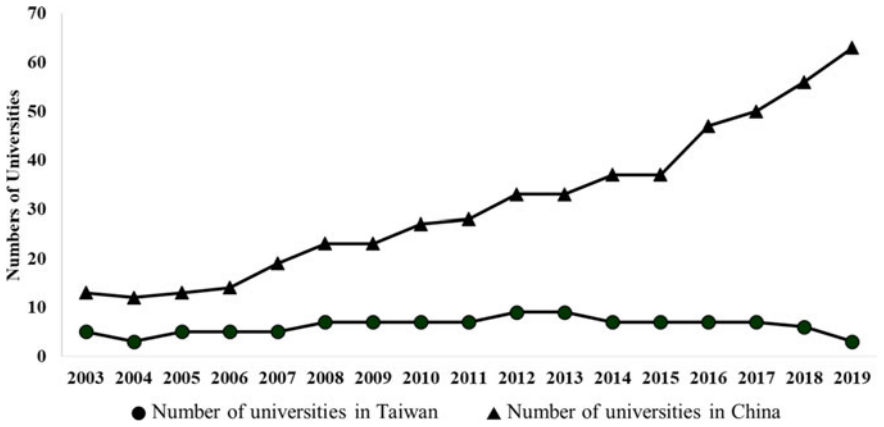

Fig. 14.3 World university top 500 rankings (ARWU) (*Source* ShanghaiRanking Consultancy, 2020. http://www.shanghairanking.com/ARWU2019.htm)

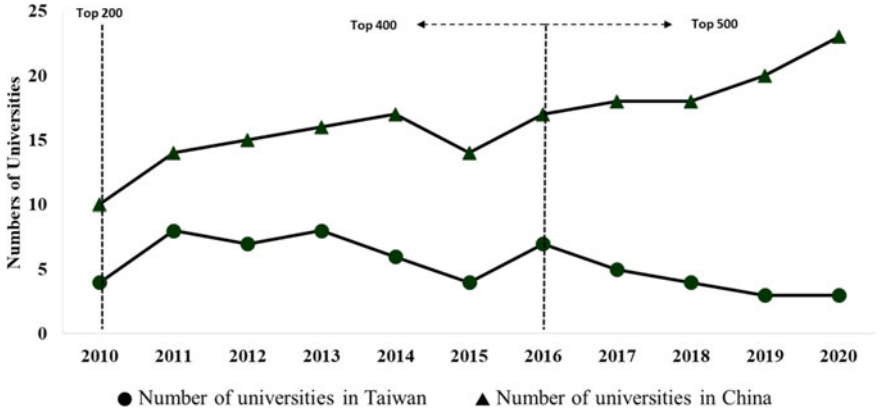

Fig. 14.4 World university top 500 rankings (THE) (*Source* Times Higher Education, 2020. https://www.timeshighereducation.com/world-university-rankings)

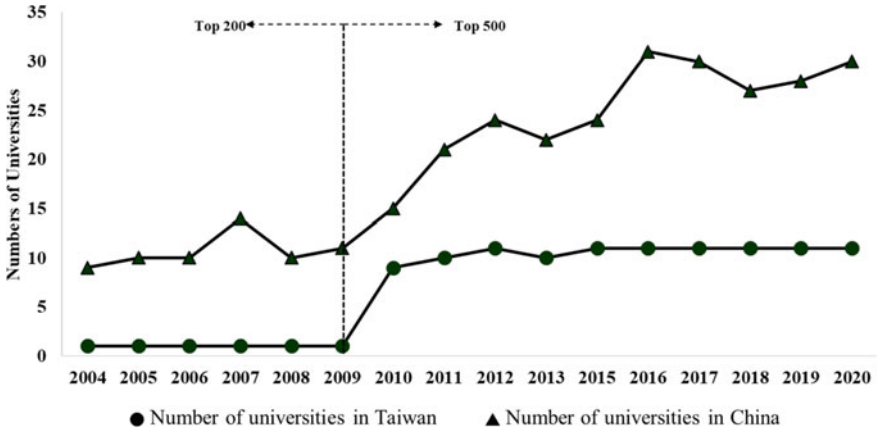

Fig. 14.5 World university top 500 rankings (QS) (*Source* QS Quacquarelli Symonds, 2020. https://www.topuniversities.com/qs-world-university-rankings)

and fall of Taiwan universities within the top 500 list from 2003 until 2020. We took mainland China and Hong Kong together (under the name China) as reference contrast areas to assess this trend. Although the comparison is not appropriate due to the disproportionate difference in scale between the two referents, it cannot escape the attention of Taiwan society. For the Shanghai rating in Fig. 14.3, the number of universities being included on the top 500 list was 5 for Taiwan and 13 for China in 2003, but the difference widened a lot in 16 years: the rating was 3 for Taiwan and 63 for China in 2019.

The changing profile of ranking data cannot be simply attributed to a decline of Taiwan's higher education; on the contrary, the trend was stable over the years. The

evolving stark contrast could be a consequence of the enormous economic booming in China over the past two decades. A similar argument applies to the unbearable decline of higher education excellence in Germany and Austria and a gradual but significant rise-up in the US after the Second World War. Figures 14.4 and 14.5 show the comparison in different time frames by a different methodology conducted, respectively, by THE and QS. The contrast is still obvious for the same two comparison groups, but the gap is not as widening as the ARWU showed.

It is often difficult to judge if a ranking system is valid in representing a university's credentials and prospects and unfolding all the universities on the ranking scale. The other concern besides the validity issue is consistency across the world university ranking systems. The best "bad" example comes from the drastic ranking changes within the London School of Economics and Political Science (LSE). Shanghai ARWU conducted the first-ever world ranking for LSE in 2003: it was 487th. ARWU revised the ranking criteria by deleting the category of Nature and Science publications for a humanity and social science university like LSE. The 2004 ranking of LSE jumped to 273rd.

In response, a THE supplement (THE1) launched its first world university ranking in 2004 by combining it with an additional worldwide reputation survey on educational and research quality. THE1 then released a ranking of 11th for LSE. Through this operation, a difference was first made with $487 - 273 = 214$ by ARWU and then with $273 - 11 = 262$ between two different ranking systems; therefore, the final difference for this double jump was an incredible $487 - 11 = 476$. THE1 was later changed to THE2 after 2011. A generic rubric THE is designated to cover both rating systems of THE1 and THE2. See Fig. 14.6 for reference.

To make the comparison more meaningful, we also report the additional ranking data of Imperial College London, University College London, and King's College London for reference. They all belong to the University of London. Ranking profiles are shown to compare 2004 and 2019 data. See Fig. 14.7 for 2004 and Fig. 14.8 for 2019.

By taking LSE ranking as a lesson, we should learn not to judge the university by a single ranking system. It will be a better practice, if necessary, to cross-check between different rating systems so that a more reliable pattern could hopefully emerge.

Overall, the past eleven-year two-stage boost project for Taiwan's higher education, as stated above, has proven helpful in assisting the universities to remain in the status quo, if not to improve. However, the project has been blamed for its selection criteria as they create an unfavorable tilting toward the M-shaped distribution among universities. The project allegedly exacerbates the disparity between general comprehensive and technical universities, between the hard sciences and technology and the humanities and social sciences, and between national and private universities. Like two sides of the same coin, there are advantages for research universities and disadvantages for other universities that were not classified as research-type. It is therefore proposed that research universities be left alone with full support to help compete on the international platform. At the same time, a smaller scale of the special budget should be separately funded to subsidize the disadvantaged parts with different supporting packages so that the disparities can hopefully be corrected. The

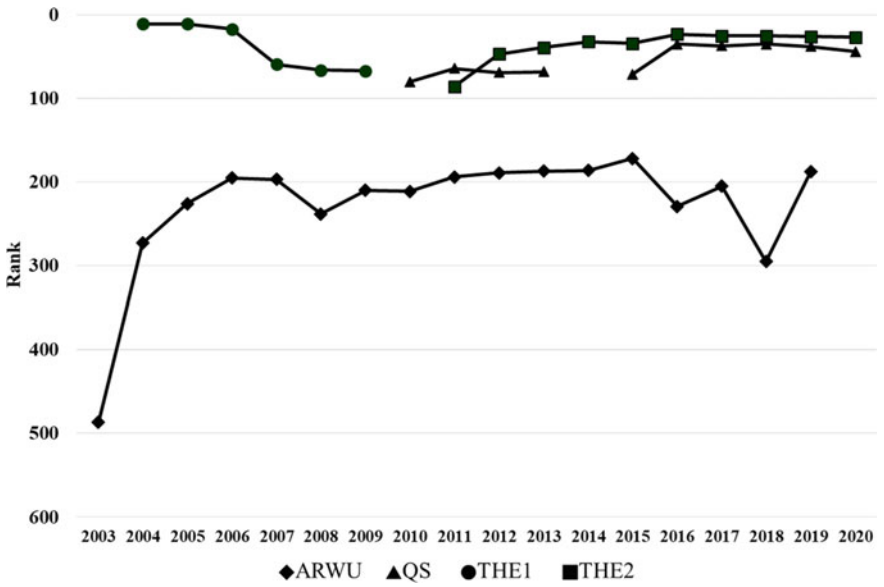

Fig. 14.6 Changing ranking profile of LSE (*Source* ARWU, QS, and THE)

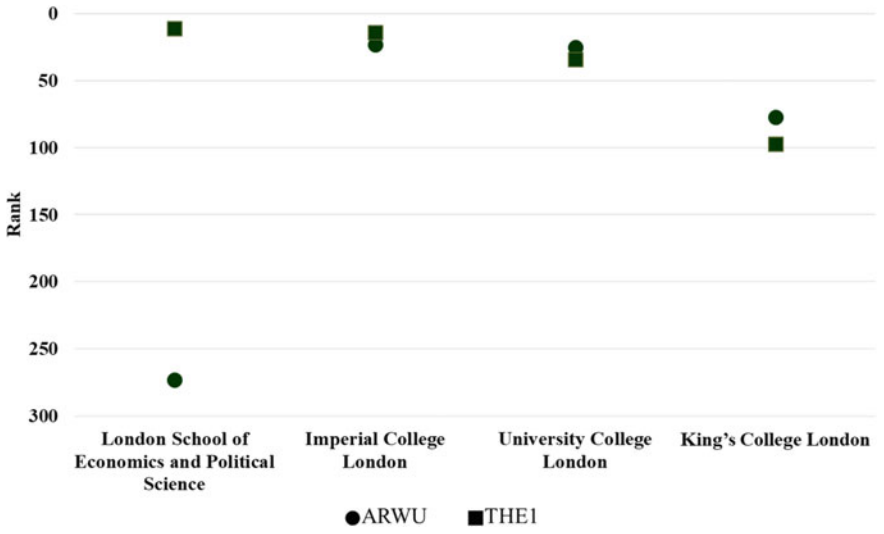

Fig. 14.7 A comparison of the University of London ranking profile in 2004 (*Source* ARWU and THE)

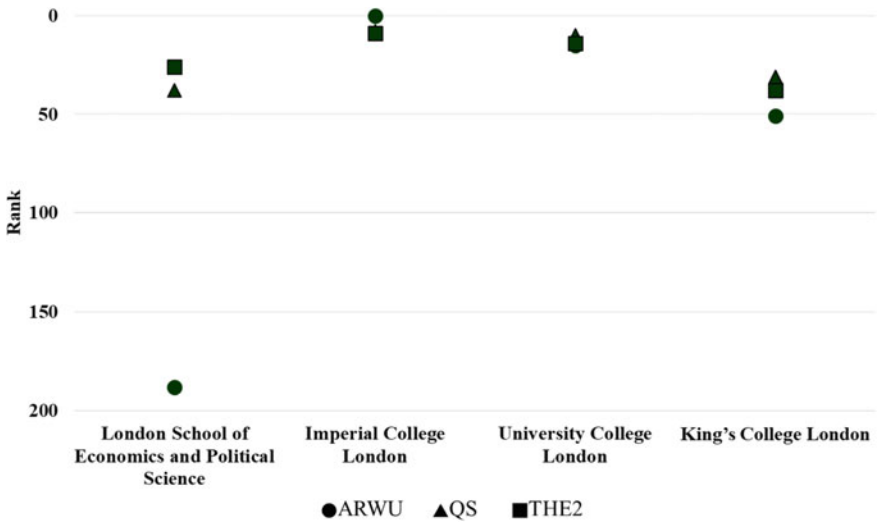

Fig. 14.8 A comparison of the University of London ranking profile in 2019 (*Source* ARWU, QS, and THE)

supporting projects should be designed in different ways to resolve the disparities that would inevitably emerge from the previous single-purpose incentive system. It is a challenging job to achieve balance in taking equivalent care of equally valid purpose, and we are still waiting for the resolution.

14.4 Challenges and Prospects

We have identified targeted problems that are still difficult to be tackled within Taiwan's higher education, such as the ongoing decreasing fertility rate and the consequent shortage of students for enrollment. In addition to this survival issue, Taiwan's higher education also needs to compete for international recognition. The policy setting and the budget allocation must be carefully designed to cover the issues of striving for current survival and seeking excellence for the future. We also demonstrated how Taiwan has reacted over the past two decades and discussed two major societal concerns in the higher education community. The most important part of the whole issue is how we can find the right way to look at the future to envisage acceptable prospects. We will now briefly discuss the need for a mission setting and international benchmarking for the university and the nation. We will then offer a suggestion on how to prepare a national master plan for higher education and a road map for the universities.

14.4.1 The Need for Mission Setting and International Benchmarking for the University and the Nation

In the beginning phase of the world-class university promotion project, the awarded universities—in particular, the "big four" Taiwanese universities—were urged to identify their international benchmarking. For the National Taiwan University (NTU), the first identified benchmark was the University of Melbourne, which then changed to the University of Illinois at Champagne-Urbana (UIUC). At present, NTU takes the University of Kyoto and the University of California at Los Angeles (UCLA) as future benchmarks. For the National Cheng Kung University—the second largest university in Taiwan—the University of Nagoya was chosen as the first benchmark, then moved to the University of Kyoto. For the National Tsinghua University, the first international benchmarking was the University of California at Irvine (UC Irvine), then the University of Kyoto. For the National Chiao Tung University, the choice has not changed over the years: it is Carnegie-Mellon University.

The same logic could also be applied to urge the nation to identify its foreign counterparts as the international benchmarking. The benchmark countries can be identified on a country-to-country matching basis for the purpose of setting an international competition framework in higher education. On the country level, South Korea is the most immediate and strong competitor almost in every respect, and the Netherlands is an excellent comparator with similar land area and population size. Japan could be set as an international marking in the future because of the historically close ties in higher education between the two countries. However, since an international benchmark-setting between the two countries may be very complicated in the matching of cross-national strengths and weaknesses, no such claim has ever been proposed.

The following example of University X is intended to demonstrate how the missioned targets can be worked out through a series of laborious efforts.

14.4.2 The Missioned Targets of University X

After a review of the institutional strengths, weaknesses, opportunities, and threats (SWOT), University X began to set a mission of becoming a world-class university in the long run. Before reaching the final destination, the university established a series of adjustments, including an approachable academic ladder to climb. Seven years were estimated to climb up to the top 500 universities. The strategies and action plans were well taken, and the university governance was enhanced by efficient internal control. The PDCA (plan, do, check, and act) process is shown in Fig. 14.9. A single emphasis on research can hardly foster a world-class university, therefore, the additional supporting educational projects were also conducted to enhance teaching quality and the nurturing of talents. A four-year program—"Revisiting Dr. Albert Schweitzer's Trail"—was launched under the support of MOE's Teaching Excellence

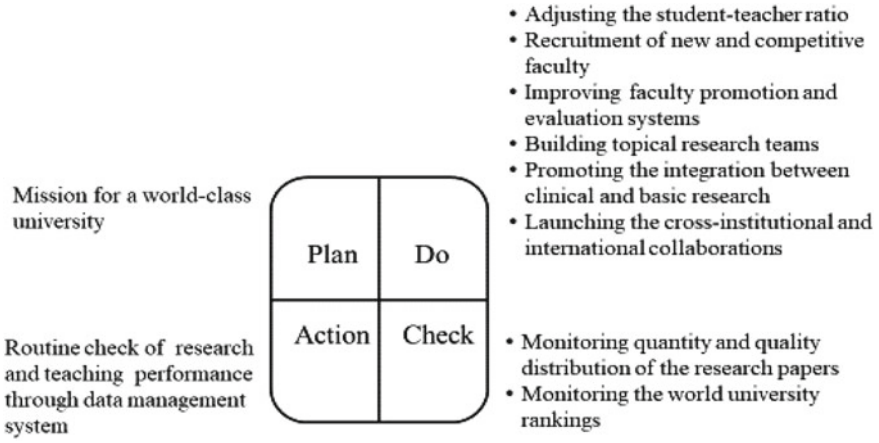

Fig. 14.9 Strategic and action plans adopted by University X (*Source* Authors)

Project. The program was the first of its kind in Asia to provide an opportunity to learn the life and spirit of Dr. Albert Schweitzer in his life-long commitment in West Africa. Dr. Albert Schweitzer (1875–1965), a 1952 Nobel Peace Prize laureate, was a dedicated theologian and humanitarian physician. He founded and devoted much of his life in the Albert Schweitzer Hospital at Lambaréné in Gabon, West Africa. He has long been remembered in Taiwan's medical community as a symbolic conscience in the commitment of all his life toward the betterment of all kinds of lives. The students applied and were trained to join the program and learned how to follow the remarkable humanistic trail in all their later and inspired careers. The nurturing process of this kind was valued as an integral part of a world-class university.

The progress was remarkable, as Figs. 14.10 and 14.11 show. Most of the missioned targets were accomplished in 12 years. Such success is not rare. Similar mission-settings can be found in many other cases. In 1996, the University of Maryland formally adopted a plan named "Charting a Path to Excellence: The Strategic Plan for the University of Maryland at College Park." The plan stated its vision that the University of Maryland at College Park would become one of the nation's

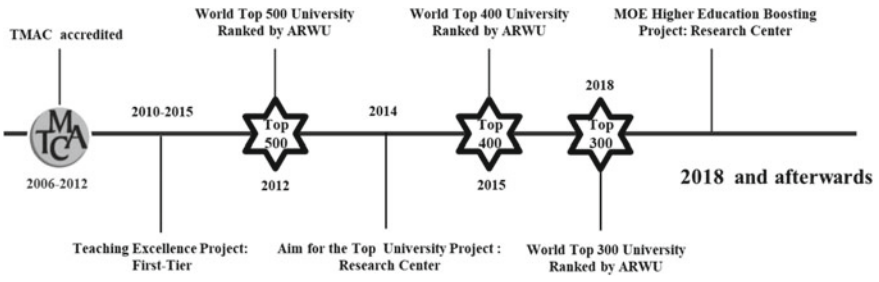

Fig. 14.10 The accomplishment of University X's mission targets (*Source* Authors)

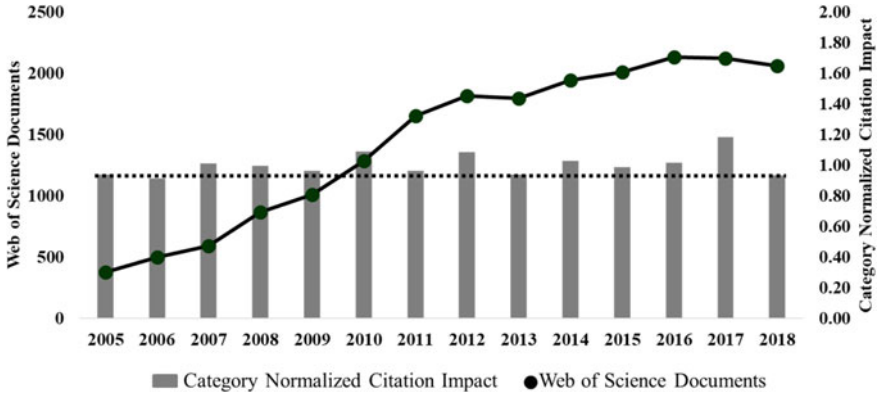

Fig. 14.11 The quantity and quality measures of the articles published by University X in 2005–2018 (*Source* Authors)

preeminent public research universities—an institution recognized both nationally and internationally for excellence in research and instruction. Ten years passed, and the aim has been achieved. How did an agricultural school rapidly transform into a world-class top-performing research university with an amazing ranking on the top 50? A special issue section and also the cover story of Deep Impact appeared on *Science* (October 14, 2005) to recognize a credit sharing by the National Aeronautics and Space Administration (NASA), the NASA Jet Propulsion Laboratory (JPL), and the University of Maryland at College Park before the University's 150th anniversary. The world was watching while the Flyby spacecraft released the Impactor to bombard the comet Tempel1 deeply on July 4, 2005. The Deep Impact Project was not only a ring of fire in the space but also a world event on the earth. Many observatories around the world and in space observed this unprecedented collision of Deep Impact with comet Tempel1.

By taking the University of Maryland at College Park as a successful predecessor, University X, after twelve years of hard work, demonstrated that ten years could also be a manageable number for Taiwan universities.

14.4.3 Launching the Higher Education Macro Planning (HEMP) and a Road Map for Universities

The success of the research-type universities does not represent the whole prospect of Taiwan's higher education. The successful experience of a single boost project or a small cluster of outstanding universities must be extended to solve the thorny issues in the whole spectrum, which means that a successful umbrella of policies has to be designed and put into action. More aggressive national educational and nurturing

plans should be launched, like the National Competition Policy in Australia (1995) and the American Competitiveness Initiative in the US (2006).

Taiwan will call a "National Meeting for the Promotion of Science and Technology" in 2020. This grand event is held every four years, we may take this opportunity to examine whether the expenditure of national research and development (R&D) will have reached the promised level (>3% GDP) and to see if the ratio of the basic science budget to the total R&D expenditure will have exceeded 15%. We could also examine if the development of the humanities and social sciences will have been effectively incorporated into the process of promoting national science and technology. These three major indicators have been urged to be accomplished by the Cabinet, as stated in the "Fundamental Act for Science and Technology" in 1999 (ROC Government, 1999). The accomplishment of these three indicators will greatly facilitate Taiwan's higher education.

For a small but competitive country like Taiwan, the universities as a whole could serve the country as a strong backbone in both academic and industrial developments. For this reason, universities are trying to convince the Cabinet that a "Higher Education Macro Planning (HEMP)" and a "Road Map for the Universities" should be drafted timely. It is not only an echo to the coming "National Meeting for the Promotion of Science and Technology," but also an update to remind the country of an inescapable international competition. In the face of pressure, we need courage. Ernest Hemingway once said, "courage is grace under pressure"; we need the courage to change so that grace will still remain even under intense pressure.

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