(In Shin, Jung Cheol, Postiglione, Gerard A., Huang, Futao (Eds.).Mass Higher Education Development in East Asia. Strategy, Quality, and Challenges.Singapore: Springer)

Chapter 14
Who benefits from Taiwan's Mass Higher Education?

Chuing Prudence Chou

<Abstract>
Like many countries in the world, the objectives of expanding higher education in Taiwan are proposed to enhance the capacity of professional human resources for national development and personal fulfillment. Nevertheless, the unexpected results from the expansion of higher education since the mid-1990s in fact have created concerns over the issue of educational opportunity and quality. Such problems include the increasingly uneven allocation of resources and tuition discrepancy between public and private universities. The growing concentration of resources for elite groups and a few leading public universities, at the expense of social equity, have facilitated a class reproduction in higher education. While more and more students gain access to higher education, their institutional teaching quality and learning environment still falls behind that of their elite counterparts. This chapter questions why Taiwan's focus on the expansion of university enrollments has not benefited minority groups and students with disadvantaged social background.

Key words: university expansion, educational opportunity, public resources, tuition, social class, gender, and ethnic minority, Taiwan

19.1 Introduction

Since the late 1980s, governments in many countries have gone through a process of political democratization and economic transformation while responding to the worldwide trend of neo-liberalism and globalization. Consequently, higher educational institutes (HEIs) have restructured and reorganized their systems, with an attempt to increase institutional autonomy, responsibility, and efficiency. Through governmental

policies of deregulation and liberalization, each institution is expected to become more competitive and accountable (Giroux 2002). Taiwan followed this worldwide trend and reinforced an overall market mechanism within the higher education system which contains all aspects of transformation, not only in the changing profile of instruction and learning, but also in the pace of a major increase in the volume of HEIs and students.

Over the past two decades, Taiwan's higher education has experienced an unprecedented growth with the number of public universities and colleges growing from 15 to 51(MOE 2010a). A total of 120 HEIs have been established or restructured into universities and colleges from 1986 to 2010, bringing the total number of HEIs to 163. The transition from elite higher education to mass higher education for all in Taiwan seems to replicate the world trend of university expansion (Tang 2003; Yang 2001; Trow 2006).

Specifically, the university enrollment rate increased from 60.45% in 1998 to 97.1 % in 2008 and dropped to 88 % (the net rate is 69.9 %) in 2012 (MOE 2013a; 2014a). In the other words, on average the higher education gross enrollment rate in Taiwan over five years is more than 85 % (MOE 2013a). This increase indicates that Taiwan's higher education system has entered the stage of mass higher education (Tang 2003; Trow 2006). It should be noted however that this expansion of higher education is mainly a result of the increase of private institutions in Taiwan since the mid-1990s.

As a consequence of this education expansion, resources for HEIs have become scarce and constrained. Before the expansion, HEIs did not need to compete for external funding and student enrollment because educational efficiency and accountability was not the priority of the government which provided funding on a regular basis (Gai 2004). Since the early 1990s, higher education in Taiwan has experienced tremendous

expansion. As the number of HEIs has risen, about one million Taiwanese students were enrolled in more than 160 universities during the academic year 2009–2010 (Chou and Ching 2012). In order to reduce the financial burden on the government, the Ministry of Education (MOE) started to initiate policies to support all public HEIs in Taiwan with only 80 % of the total budget, while leaving the remaining 20 % to the financial resources of individual institutions. The proportion of government funding continues to shrink for most public HEIs. Many leading universities, such as Taiwan University, have gone through budget cuts of 50 % or more. In addition, the Educational Funding System was introduced to ensure the best use of government funding. All revenue and expenditures are now monitored by the Board of Educational Budget Allocation, established in 2001 (Tang 2005). Universities are under regular review and evaluation for budget allocation based on accountability and efficiency.

According to studies, mass higher education has created mixed results in terms of educational equality and opportunity (Shin and Teichler, 2014; Shin 2013; Yang 2001). Statistically, students of all ethnic backgrounds and social classes have more access to universities according to their personal capacity and academic performance. But the education resources made available to students and the tuition they pay tell a different story (Chen and Chen 2009). Nations around the world face the same challenge after entering the stage of mass higher education, namely, how does a nation maintain educational quality while preserving equal educational opportunity for all?

Research shows that most higher education expansion derives from the increase of non-elite HEIs, especially from private sectors in most countries (Kim and Lee 2006). As a result, a growing stratification and class reproduction has become apparent in higher education following the expansion. According to Astin and Oseguera (2004),

factors such as socio-economic status (SES), gender, and ethnicity continue to affect educational opportunities in an era of global expansion in higher education. The resource gap between top/benchmark universities and other regular HEIs accelerates regardless of a much greater access available to higher education for the general public (Cheng and Jacob 2012; Astin and Oseguera 2004; Clancy and Goastellec 2007). This widespread phenomenon is very evident in China, Japan, South Korea, the United States, and Israel (Wu 2008) and Taiwan is no exception.

According to the latest White Paper for Expertise Cultivation (MOE 2013a), Taiwan society has entered an era of aging and declining birthrate following the higher education expansion in the mid-1990s. New issues of higher education have surfaced, such as:

1. A less friendly environment for learning and instruction due to the market-driven educational policies and the environment;
2. A significant gap between research and industry because of the paper-driven academic reward system;
3. Increasingly uneven distribution of educational resources; and
4. Continuing class reproduction and stratification resulting from unequal education opportunities (MOE 2013a; Chou and Wang 2012).

Whether or not these four major issues are contributing factors or the results of higher education expansion deserves further exploration, but all of these issues have led to a delayed and aging labor force in Taiwan, which will eventually increase the social welfare burden on the younger generation at the expense of social mobility.

The discussion below is an attempt to examine issues after mass higher education in Taiwan, including how mass higher education has reinforced or increased unequal educational opportunities regarding public resources, social class, gender, and ethnic minorities. In so doing, the author attempts to answer the question about who has really benefited from mass higher education in Taiwan.

19.2 Public Resources

As indicated earlier, the expansion of higher education has had tremendous impact on the allocation of educational resources in Taiwan. Previously, resources were allocated equally without incorporating the mechanisms of competition and assessment. Yet while the population of students in higher education increased rapidly, public funding cannot keep up with the capacity of growth. In addition, under the earlier neo-liberal economic ideology, it was expected that the private sector would invest more in education to share the governmental financial burden in order to remain as competitive as their public counterparts. Thus, over the past decade, the overall funding for education in Taiwan has increased, but government investment is declining, threatening the quality of higher education and its operation (MOE 2012; Chou 2007).

In addition, since the mid-1990s, university funding has increased proportionally from 23.15 % to 38.64 %. According to the Educational Expenditure Proportion of GDP (MOE 2009a), the budget for higher education has remained at 1.9 % of GDP since 2002, which comprises more than one-third of the total education budget in Taiwan. But the public funding for any new program or organization has decreased due to the economic recession and governmental budget cuts. In nearly two decades, the overall

education expenditure distributed to public HEIs has declined and accounts for one-third of the budget shortage (Song 2006).

Although public funding for public HEIs was secure for decades, government policies in recent years have been geared toward the equitable redistribution of funding between the public and private HEIs. In order to enhance social mobility and relieve the tuition burden of the disadvantaged students who attend private HEIs, a 'performance-based' competition system between public and private HEIs was incorporated to encourage more institutional accountability including fund raising and a tuition increase policy (MOE 2012).

The decrease in public expenditure has resulted in the rise of private investment on an annual basis, which has led in turn to a new form of educational inequality. In other words, those who can afford the extra costs can obtain better educational opportunities, and consequently, social mobility for the less advantaged group becomes limited (Chou 2007).

19.3 Unit Cost Per Student

Obviously, the expanded number of universities has produced more students. For example, there were 183,000 more students from 1991 to 1998, which slowed the pace of the growing unit cost. The growth in the number of universities in Taiwan has continued over the last decade, with more than 90 % of students between 18 and 22 now admitted to HEIs. The overall budget with the unit cost of education in universities and colleges (from NT $1,695 in 1980 to NT $5,832 in 2008) thus increasedto the highest educational expenditure in history (MOE 2010a).

19.4 Tuition

The budget that HEIs receive from the MOE has declined from 62.7 % in 2000 to 49.2 % in 2006, whereas the proportion of tuition income has increased from 12.83 % to 21.59 percent (Chou and Ching 2012).

Tuition accounts for more than 60 % of the overall operation budget of private universities, but only 7.6 % to 20 % for public HEIs (Chen and Chen 2009; Lü 2005). By contrast, students who attend private universities pay on average more than twice as much of the tuition as their public counterparts. In other words, tuition at the first-tier public universities is relatively low (from one-fourth to one-fifth of student unit cost), and students enjoy better educational quality and social prestige. Consequently, these students are more competitive in the job market after graduation.

Because university tuition has been steadily rising as public funding is reduced due to the expansion, university students have been faced with fee increases which have become an extra barrier for those from disadvantaged background (Chou 2007).

19.5 Public/Private discrepancy

Currently in Taiwan the proportion of students who attend public and private HEIs is about three to seven. In other words, students at private HEIs represent 70 % of the total number of students, are mostly from less privileged family backgrounds, and receive less government funding.

In addition, there has been a growing budget discrepancy between public/private and top/regular HEIs over the last decade. From 1999 to 2007, the average expenditure data

per university student shows a declining budget allocation according to university ranking - the higher university ranking, the greater the expenditure per student. For instance, since academic year 2007, most higher education expenditure has been allocated to the top research national universities, such as National Taiwan University (NTU), National Tsing Hua University (NTHU), and National Chiao Tung University (NCTU). The rest of the private HEIs have the lowest expenditure per student. The difference between the highest and lowest institutions can be more than 3 to 4 times per year if universities with a medical school are included (Wu and Wang 2008). Specifically, the average expenditure per university student at NTU, NTHU, and NCTU was more than NT$250,000, with NTHU receiving more than NT$300,000 every year. This means that yearly expenditure per student received at these leading public universities was more than 4 times that of other private HEIs in Taiwan (Chou and Ching 2012).

This discrepancy also indicates that Taiwan invests in science and engineering at the expense of humanities-based HEIs. In the academic year 2004, expenditure per student at NTHU (more science and engineering disciplines) was 2.05 times higher than that of National Chengchi University (NCCU) (a comprehensive university renowned for social sciences and humanities), and 4.88 times that of the private Chung Yuan Christian University (CYCU). In addition, faculty members from two prestigious public universities with comparable student populations in Taiwan are funded differently - only half the humanities and social sciences faculty are granted the MOE flexible salary award, which is 50 % less than that of their competitors with a science background. This increasing cultural and reward gap has exacerbated the unequal distribution of resources between science and humanities/social sciences as a result of the university expansion

(Chou, Lin and Chiu 2013).

There is also a “double-income” syndrome, which is found among retired public faculty who are recruited again by private HEIs and then enjoy a double income both from their monthly pension and the new institutional salary. For the private HEIs, the recruitment of these retired senior faculty members not only meets the quota of full professor rank in order to meet evaluation criteria, but also enables them to obtain more resources through their existing networks as well as increased social prestige in the name of the advancement of accountability and global competition (Chou and Ching 2012).

In addition, funding for universities includes tuition, grants from the government, donations from the private sector, and fund-raising activities. Yet, government revenue from tuition and grants constitute the major source of funding. In order to become more financially self-sufficient, leading public universities have initiated fund-raising campaigns, gathering donations from their alumni, the general public, and business enterprises. However, those institutions which lack of a well-established alumni network have been less than successful in obtaining significant support from these sources. In addition, it is atypical in Taiwan for the private sector to donate money to universities, especially to private universities, because of the tax system and social misconceptions. Private HEIs are therefore less likely to receive external financial resources. The resultant discrepancy in public funding and tuition between the public and private HEIs has created a new form of educational inequality in Taiwan.

19.6 Social Class

In dealing with educational opportunity in the context of higher education expansion,

theories such as Maximum Maintained Inequality (MMI) (Raftery and Hout 1993), indicate that educational inequality will not diminish unless educational capacity can fully meet the demand of the elite groups (Ayalon and Shavit 2004). When enrollment levels cannot accommodate all, socially elite groups will have greater access to higher education and profit more from educational expansion.

On the other hand, Effectively Maintained Inequality (EMI) which deals with issues of educational transition, tracking and stress, support the notion that student SES will continue to affect one's educational opportunities no matter how the enrollment rate fluctuates. Children from a higher SES will eventually receive better education regardless of the increased enrollment to higher education (Raftery and Hout 1993). The 2008 OECD study paints a similar picture. For example, most university students in the developed world are more likely to have highly educated fathers than their non-university peers (see table 19.1).i.e.,.

<Table 19.1> Parental Education Background of University Students by Country

	Blue-collar			Higher education		
	Students' fathers	Men in same age group	Odds-ratio	Students' fathers	Men in same age group	Odds-ratio
Finland	12.5	40.6	0.9	45	49.9	0.8
France	7	19.1	0.5	--	--	--
Germany	--	--	--	63.9	69.9	0.5
Ireland	35.7	--	--	36.5	40	0.9
Italy	27.7	19.7	0.6	20	26.7	0.9
Netherlands	21.6	--	--	40.1	66.7	--
Portugal	37.5	--	--	16.2	--	--

Spain	26.4	19.8	0.6	41.6	0.8	0.8

Source: OECD (2008).

The condition remains the same in Taiwan where student socio-economic status continues to play a crucial role in access to top/benchmark universities after the expansion in 1990s. According to a nation-wide higher education survey by Cheng and Jacob (2012), the expansion of higher education in Taiwan has not necessarily resulted in equal access to higher education. An increased stratification of higher education opportunity took place after the 1990s. For example, students with the following characteristics: fathers attained a graduate or college degree, mothers obtained a graduate, college, or junior college degree, male gender, annual family income exceeded NT$1.15 million, ethnicity is Mainlander, and locale is northern and middle regions, have a significantly better chance of accessing top/benchmark universities in Taiwan (Cheng and Jacob 2012).

On the other hand, any freshman whose father has a graduate degree is four times more likely to attend a prestigious public HEI than those whose father only has an elementary certificate. Of those admitted to public HEIs, only 9 have a father educated only at elementary and junior high school level, whereas 30-40 have a father with at least a college degree. Where the father's education is at the elementary education level rather than at the graduate level, the student is three times more likely to be enrolled in a less privileged private institute of technology (Peng 2005; Chang and Lin 2012).

The effect of social stratification and class reproduction on the top leading universities has become more apparent over the years. Dr Luoh (2002), a renowned professor from NTU, indicated that freshmen at National Taiwan University mostly came from rich cultural capitals, had a higher family income and parental educational level, and from

wealthy school zones. Fu (2000) and Hung and Cheng (2008) point out that students with disadvantaged backgrounds tend to be concentrated in private universities. Jao and McKeever (2006) examine how educational attainment is related to personal background. The authors conclude that while students from a Mainlander background are more likely to attend higher education where parental class and education do make a difference, the family background impact has diminished over time as the country approaches economic and political democratization.

Cheng and Jacob (2012) have also shown that the expansion of higher educational opportunity in Taiwan has replicated the preceding MMI and EMI theoretic framework. Although more and more students have access to HEIs, especially to the less selective vocational track HEIs, access to the more selective general track of the top leading universities still remains limited to the privileged group, and inequality in Taiwan higher education has not decreased over time.

19.7 Gender

Gender has become a focus of attention in mass higher education worldwide. For example, the expansion of higher education in the United Kingdom during the 1960s and 1970s resulted in a rapid rise in female participation in higher education, especially in teacher training colleges due to the high demand of teacher profession (Ross 2003; Chen 2012). In Taiwan, more and more women have participated in higher education i since the 1950s. Chen (2009) points out that as HEIs expanded, women's opportunity for universities has mounted. Even though the percentage of female university students at present is only slightly lower than the percentage of male students,

their majors tend to be concentrated in women-dominated fields, like education and nursing,,(Chen 2012; MOE 2013a). Most men still pursue a major in science and technology, while most women opt for liberal arts and social sciences. Statistics shows that female students continue to be the majority in the humanities and social science for the past decade (MOE 2013a). Women tend to be concentrated in education and nursing rather than science and technology, which are still dominated by their male counterparts. The percentage of female students in science and technology remains relatively low (32 %), which has not changed over the past 10 years. Liu and Chen (2007) examined the trends of gender segregation and university disciplines in Taiwan from 1972 to 2003 and concluded that gender segregation in different fields of study continues to exist regardless of mass higher education. The expansion of higher education was a result of institutional upgrading, from technology colleges to science and technology universities in the 1990s. Women continue to study in less advantaged HEIs.

In another study, Chen (2009) studied the correlation between gender and field of study in Taiwan based on three categories: male-dominated, female-dominated, and gender-neutral. It was found that more public universities offer male-dominated and gender-neutral fields of discipline than their private counterparts. The latter tend to attract more women into their female-dominated majors which are less expansive with the unit cost per student.. Huang and Luh's (2008) study further suggests that women students comprise more than half at the undergraduate level, but male students tend to outnumber at graduate levels. More men than women study at the doctoral level. For example, in academic year 2012, the ratio for female to male undergraduate students was 51:49, an indicator of the gender balance that has developed from mass higher education (MOE

2014b). At the masters level, the female to male ratio is 43:57 , and 30:70 for doctoral students.

Regarding job opportunities, university graduates' job opportunities were significantly impacted during 2005 to 2010, particularly after the the global financial crisis in 2008. Although women tend to perform better academically than their male counterparts, women university graduates had more difficulties in finding a job (Chen 2012). In addition, the DGBAS Manpower Survey reports that men with a BA degree or above on average earn more than NT$60,000 per month, nearly three times more than their female counterparts (Chou and Wang 2012). Women with comparable university qualifications are not treated equally with men in the job market in Taiwan.

It is worth noting that issues of class and gender are usually interconnected. Charles and Bradley (2002) studied education in 12 advanced countries and found that women with lower SES tend to study in female-dominated fields, such as education, nursing and liberal arts. Chen (2009) echoed this finding by showing that, in Taiwan, women with a higher SES are more likely to study in science and technology which indicates that family background has a major impact on women's field of study. But for men, the impact of backgrounds on science /technology majors seems less significant. Clearly, in dealing with educational inequality resulting from mass higher education, the seffect of gender and class should not be overlooked.

19.8 Ethnic Minority

One of the unique challenges facing Taiwan's higher education expansion is the status of minority populations, such as aboriginal students and children of foreign spouses,

who are most vulnerable to denial of equal access to higher education.

There were approximately 527,250 aboriginal people (2.26 % of total population) in Taiwan in 2012 (MOE 2013b). The number of Taiwanese aborigines (ethnic minorities) admitted into universities has significantly increased in the past few years. To improve the right of Taiwan's aboriginal students, the MOE has developed a series of measures to ensure their enrollment. In 2011, 38.7 % of the population received a college education compared with 18.49% of the aboriginals . Astudy in 2012 of the aboriginal population over 15 years of age indicates that 85.88 % had received no more than high school or vocational high school education in 2012 (MOE 2013c). Only half of the aboriginal students attended HEIs compared to more than 85 % of their mainstream counterparts (MOE 2013c).

The university enrollment rate for aboriginal students increased from 28.7 % in the 1994 academic year to 76.3 % in 2008, more than four-fold increase over the last 14 years but still 13 % behind the mainstream. At the graduate level, there were only 18 aboriginal students attending during the 1998 academic year, representing 0.02 % of all students. By 2008, the number of aboriginal graduate students had increased to 680, or 0.4 %, a 34.7-fold growth over the years (MOE 2009b).

According to the While Paper on Aboriginal Educational released in 2010, the access rate has increased by 40 % but the average rate is still 40 % less than the mainstream students (MOE 2013a)

The difference is even greater at the graduate level where aboriginal students only comprise 0.49 % in the master's level and 0.2 % at the doctoral level.

In 2013, the Aboriginal Education Law was passed to guarantee equal educational opportunity for aboriginal students (MOE 2013b). Policies have been implemented to

improve the advancement of these minority groups, such as setting a special quota for admitting aboriginal students of special talent for higher education and financial aid/scholarships for overseas study. Despite this, aboriginal students tend to attend less privileged private HEIs with practical training programs, where female aboriginal students outnumber their male peers in five-year nursing and other programs.

Another minority group is that of foreign spouses, mainly women migrated from China and Southeast Asia, and numbering approximately 430,000 in 2009 (Chou and Ching 2012). These foreign spouses often encountered difficulties in social adjustment in Taiwan, including understanding the culture, learning local languages, and looking for employment. The offspring of foreign spouses (referred to as the "new Taiwanese sons") often experience a degree of identity confusion, and face many learning challenges at school (Chang and Lin 2012). Most are attending elementary and secondary schools, which account 11.8 % and 4.09 % respectively of the total student population at each level in 2012 (MOE 2013b). Some = will attend higher education in the near future but many HEIs are not yet prepared to accept these students due to the lack of multicultural higher educational policies.

The government has responded to the needs of aboriginal groups in recent years by enacting Aboriginal Educational Law, and establishing the Ministry of Aboriginal Affairs, aboriginal resource centers, aboriginal education programs, providing counseling for foreign spouses and educational counseling programs for the offspring of foreign spouses (Chang and Lin 2012). In spite of these efforts to protect the educational rights of minority groups, aboriginal children and the children of foreign spouses continue to be disadvantaged, facing social discrimination, more complicated family structures, and economic difficulties. Compared with the mainstream population,

the lower enrollment rate of aboriginals suggests they have difficulty adapting to the school system because of their disadvantaged family or economic difficulties (MOE 2010b). Despite the expansion of higher education, the educational discrepancy and unequal educational opportunity continue.

19.9 Conclusion

Over the past two decades, Taiwan has responded to the worldwide trend of neo-liberalism and globalization through a process of political and social restructuring. Many HEIs have also undergone transformation by prioritizing accountability and efficiency. Along with this transition process, higher education has expanded at an unprecedented pace, allowing access to education by the general public rather than limiting it to the elites, responding to global and local demand for educated talent. Issues such as how to maintain educational quality and preserve equal educational opportunity continue to challenge policy makers as well HEIs with the opening up of the admission quota and capacity. This chapter has focused on these issues and raised the question of "who really benefits from mass higher education in Taiwan?"

Mass higher education should advance equal educational opportunity for all, including historically disadvantaged groups, to fulfill its mission of developing highly qualified employees. However, concerns about the quality of higher education quality and equality of educational opportunities continue.

This chapter examined how mass higher education in Taiwan has encountered the same challenges as other countries. The increasing gap in public resources, social class reproduction, gender inequality, and ethnic disadvantaged educational opportunities

continue in the post- massified university era.

Taiwan's university enrollment rate is one of the highest in Asia, Nevertheless, as the country moves toward more of a market-oriented economy, the distribution of public educational resources is increasingly concentrated on elites from high socioeconomic backgrounds and in a few leading public universities. These elitesrepresent a re-emerging class system and growing inequality taking place on campus. On the other hand, students attending private HEIs in Taiwancomprise 70 % of the total student population and are mostly from lower social backgrounds but receive less government funding. Unlike the 1960s -70s, current higher education is less likely to fulfill the role of advancing social mobility among disadvantaged groups in Taiwan.

It is evident that an increasing class reproduction via mass higher education prevails among the elite groups who continue to enjoy better higher education quality at a much lower cost with good career prospects while disadvantaged groups continue to find the gap widening.

Public funding, family background, gender, and ethnicity continue to affect individuals' higher educational opportunity in Taiwan(Hung and Cheng 2008; Jao and McKeever 2006; Luoh 2002; Fu 2000) Thus the case of Taiwan has replicated the MMI and EMI phenomena in mass higher education as described earlier (Cheng and Jacob 2012; Lucas 2001; Raftery and Hout 1993). In the long term, this will negatively impact the fulfillment of equal educational opportunity and social mobility in Taiwan's higher education.

References

Astin, Alexander W., and Leticia Oseguera (2004). The Declining 'Equity'of American Higher Education.

Review of Higher Education, 27(3):321–341.

Ayalon, Hanna, and Yossi Shavit (2004). Educational Reforms and Inequalities in Israel: The MMI Hypothesis Revisited." Sociology of Education, 77 (2):103–120.

Chang, Yi-jun and Lin, Tsong-hong (2012). Higher education expansion and social inequality: The case study of Taiwan. Paper presented at Association of Sociology Annual Conference. Taipei: National Chengchi University, Taiwan.

Charles, M., and K. Bradley (2002). Equal but Separate? A Cross-National Study of Sex Segregation in Higher Education. *American Sociological Review,* 67(4): 573–599.

Chen, Dorothy I-Ru (2012). Higher Education Reform in Taiwan and Its Implications on Equality. *Chinese Society and Education*, 44(5): 121-137.

Chen, Li-chu, and Shih-tsung Chen (2009). An Analysis of Our Universities' Financial Structures and What It Reveals about Tuition and Fee Policy Formulation. Presented at the Dialogue on Education Research and Education Policy International Academic Symposium, November 20–21, 2009, Taipei, Taiwan Normal University.

Chen, J. J. (2009). Factors Influencing the Hierarchy of Gender in Undergraduates' Fields of Study. *Bulletin of Educational Research,* 55(2):35–67.

Cheng, Sheng Yao & Jacob, W. James (2012). Expansion and Stratification of Higher Education in Taiwan, *Chinese Society and Education*, 44(5):102-120.

Chou, C. P. (2007). Beyond university tuition. *Journal of Education Research*, 154，110-123.

Chou, C.P.; Chiu, Y.J.; Lin, H.F.(2013). The impact of SSCI & SCI on Taiwan's Academe: An outcry for fair play. *Asian Pacific Education Review*, 14 (1): 23-31.

Chou, C. P.; Ching, Gregory S. (2012). Taiwan Education at the Crossroad: When Globalization Meets Localization. International and Development Education. New York: Palgrave Macmillan.

Chou, C.P.; Wang Li-Tien. (2012). Who Benefits from the Massification of Higher Education in Taiwan? *Chinese Education and Society*, 45(5):8-20.

Clancy, Patrick, and Ga ̈de Goastellec (2007). Exploring Access and Equity in Higher Education: Policy and Performance in Comparative Perspective. *Higher Education Quarterly*, 61(2): 136–154.

Fu, Bi-Jen (2000). The study of Education Expansion in Taiwan. *Education Research Bulletin*, 44, 201-220.

Gai, Che-Sheng (2004). An Analysis of the Perceived Need for Increasing Market Orientation in Taiwan's Policy on Higher Education. *Bulletin of Educational Research* 50 (2): 29–51.

Giroux, Henry A. (2002). Neo-Liberalism, Corporate Culture, and the Promise of Higher Education: The University as a Democratic Public Sphere. *Harvard Educational Review*, 72 (4): 1-31.

Hout, Michael (2006). Maximally Maintained Inequality and Essentially Maintained Inequality Crossnational Comparisons. *Sociological Theory and Methods*, 21(2): 237–252.

Hung, Chih-Cheng, and Cheng, Sheng Yao (2008). Accessibility and Equitability: Who Are the Students at Taiwan's Top Universities. In *Inequality in Education: Comparative and International perspectives*, edited by D. B. Holsinger and W. J. Jacob, 247. Hong Kong: Comparative Education Research Centre at the Hong Kong University.

Huang, C. H., and W. M. Luh (2008). The Sex Segregation in Higher Education and Subjective Reasons for Pursuing a Ph.D. Degree. *Journal of Higher Education*, 3 (2): 63–88.

Jao, Jui-Chang, McKeever, Matthew (2006). Ethnic Inequalities and Educational Attainment in Taiwan, *Sociology of Education*, 792): 131-152.

Kim, S. L., and J. H. Lee (2006). Changing Facets of Korean Higher Education: Market Competition and the Role of the State. *Higher Education*, 52:557–587..

Liu, J., and J. J. Chen (2007). The Pattern and Trends of Sex Segregation on Fields of Study for Higher Education, 1972–2003. *Journal of Education and psychology*, 30 (4): 1–25.

Lü, Mu-lin (2005). Taiwan's Higher Education Policies and the Development of Private Colleges and Universities. Paper presented at the Relationship between Government and Higher Education under Marketization, June 8, 2005, Taipei, Tamkang University.

Lucas, S. R. (2001). Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effect. *American Journal of Sociology*, 106 (6): 1642-169022.

Luoh, Ming Ching (2002). Who Are Taiwan University Students? From Perspectives of Gender, Birth Origin, and Residence. *Taiwan Economic Review*, 30 (1), 113-147

Ministry of Education (2014a). Educational Statistical Indicators. Available online at: http://www.edu.tw/pages/detail.aspx?Node=3973&Page=20272&WID=31d75a44-efff-4c44-a075-15a9eb7aecdf#a

_____(2014b). University gender enrolment, gender and number of departments difference. Educational Statistics. Available online at: http://www.edu.tw/pages/detail.aspx?Node=3973&Page=20272&WID=31d75a44-efff-4c44-a075-15a9eb7aecdf#a

_____(2013a).**White Paper for Expertise Cultivation. Available online at:** http://www.edu.tw/userfiles/url/20131204194349/1021204E69599E882B2E983A8E4BABAE6898DE59FB9E882B2E799BDE79AAEE69BB8.pdf

_____(213b). Aboriginal Education Law. Available online at: http://law.apc.gov.tw/LawContentDetails.aspx?id=FL008443&KeyWordHL=&StyleType=1)

_____(2013c). Statistics for aboriginal students. Available online at l https://stats.moe.gov.tw/files/analysis/101native.pdf

_____ (2012). Review on tuition fee increases and the principle of allocation of highereducation resources. Available online athttp://www.edu.tw/userfiles5Curl5C20121011161658/1010402-

E69599E882B2E69687E58C96E5A794E593A1E69C83E5B088E6A188E5A0B1E5918A(E5AE9AE7A8BF).pdf

_____ (2010a) Educational Statistical Indicators. Available online at: www.moe.gov.tw..

_____ (2010b). White Paper on Aboriginal Education Policy. Available Online at:http://www.edu.tw/userfiles/url/20120920153831/100.04E58E9FE4BD8FE6B091E6978FE69599E882B2E799BDE79AAEE69BB8.pdf

_____ (2009a). Main Statistical Tables. Available online at: http://140.111.34.54/ statistics/publication.aspx?publication_sn=1337

_____(2009b). Main Statistical Tables. Available online at: http://www.edu tw/files/site_content/B0013/overview09.xls.

OECD (2008). Education at a Glance2008: Indicator A7: Does their parents' socio-economic status affect students' participation in higher education? Available online at: http://www.oecd.org/edu/skills-beyond-school/41271819.pdf

Peng, Sen-ming (2005). How Shall Taiwan's Higher Education Further Implement the Concept of Fairness? *Journal of Education Research*, 137: 7–15.

Raftery, A., and M. Hout (1993). Maximally Maintained Inequality: Expansion, Reform, and Opportunity in Irish Education, 1921–75. *Sociology of Education*, 66 (1): 41-62: 23.

Ross, A. (2003). Access to Higher Education: Inclusion for the Masses? In *Higher Education and Social Class: Issues of Exclusion and Inclusion*, edited by L. Archer, M. Hutchings, and A. Ross, 45–74. London: Routledge Falmer.

Shin, Jung Cheol (2013). Social meaning of mass higher education and its challenges. Paper presented at 14th International Conference on Education Research Seoul National University, Seoul, *10, 16-18.*

Shin, Jung Cheol & Teichler, Ulrich (2014). The Future of the Post-Massified University at the Crossroads. New York: Springer.

Song, Ping-chung (2006). Comparative Assessment of 65 Universities in Greater China: Taiwan's Teachers Superior; Research Strong in China and Hong Kong. *Global Views Monthly*, October 2006.

Tang, Chih-Min (2003). The analysis of Taiwan's higher education merger and expansion. Available online at: www3.nccu.edu.tw/~tangcm/doc/2.html/article/E219.pdf

Tang, Yao (2005). A Study on the Transformation and Strategy on the University Finance Issues: The Example of Internal Control System. *Journal of Educational Research and Development*, 1 (2): 61–81.

Trow, Martin A. (2006). Reflections on the Transition from Elite to Mass to Aniversal Access: Forms and Phases of Higher Education in Modern Societies since WWII. In *International Handbook of Higher Education* (Vol. 18, pp. 243-280), edited by P. G. Altbach. New York: Springer.

Wu, Chin-chun (2008). Taiwan's Higher Education Inputs and Evaluation. Paper presented at the International Academic Symposium: International Comparison of Nations' Development of Quality Protection for Higher Education, November 22-23, 2008, Chiayi, Chung Cheng University, Taiwan.

Wu, Hai-Yan, and Wang, Xun (2008). Study of Game Scheme for Elementary Historical Education. Paper presented at the 3rd International Conference on E-learning and Games Edutainment, Nanjing, China, June 25–27.

Yang, Szu-Wei（2001）. The development of mass higher education. *Educational Research & Information*, 8(4): 17-31.