




Original Article

Massified Master's Education in Taiwan: A Credential Game?

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Master's education in Taiwan has been significantly transformed since the 1990s in an effort to cope with the knowledge-based economy and the growing demand for greater innovation. In such a context, this study examined how the expansion process of master's education in Taiwan has impacted the labour market and employment opportunities over the past two decades through the lenses of credentialism and signalling theory. Adopting a longitudinal analysis, this study employed authoritative databases from 1995 to 2018, analysing the impacts of massification. Our empirical findings confirm that credential inflation is not obvious, while the signalling effect for a master's degree remains stable, despite a slight decline since 2010. However, pursuing higher credentials (i.e. a master's or even doctoral degree) is inevitable, as youth must maintain their market value through higher credentials. Furthermore, the massified master's education sector brings serious challenges to educational equality and social mobility among different social groups. Disadvantaged students are the most vulnerable group in pursuit of this higher positional good at the societal level.

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Introduction

Master's programs are offered at higher education institutions around the world and are often completed between undergraduate education and doctoral education. A master's education is discipline-specific and requires intensive preparation through undergraduate training (O'Donnell *et al.*, 2009). The time needed to earn a master's degree is less than that of a bachelor's degree and a doctoral degree, and the completion rate is also higher than each of the other degrees (Syverson, 1996). The master's degree bridges the bachelor's and doctoral degrees while providing a strong connection with the market and employment. For the past decade, master's education has been transforming globally in various ways, including attracting an



increasing number of students, providing more diversified programs, and offering different modes of delivery (Jung and Lee, 2019). In Australia, the USA, and the UK, enrolment numbers in master's degree programs increased significantly after the 1990s (Drennan, 2012). Taiwan's higher education sector entered a phase of universal access (more than 50% participation in higher education) starting in 2004 (Yang and Chan, 2017). Over the past two decades, the number of undergraduate students increased significantly, while the number of master's degree students increased sixfold (Chan and Lin, 2015). The main motivation for expanding the master's education sector in Taiwan is to provide workers of sufficient quality for the country's industries and enterprises. The upgrading of the industrial structure into a knowledge-based economy has led to an increased demand for higher degrees, such as master's and doctoral degrees. These talents can be beneficial for company productivity by providing greater innovation and development.

A massified master's education is an essential component to sustain Taiwan's previous vision at the national level and has led the island state to become one of the most highly educated societies, with 48% postgraduate degree holders among its citizens 25–64 years of age. For individual students, a master's degree is said to provide a greater advantage in terms of job opportunities and even higher salaries. Nevertheless, an expanded master's sector has also raised concerns about credential inflation. Blagg (2018) deemed the master's degree as “the new bachelor's degree” for young workers, suggesting that a master's degree would become a basic threshold for the labour market. This position leads to several questions regarding a master's degree. How can the expanded master's sector influence the labour market? Will credential inflation occur within the market or among degrees? Does master's education bring greater employment benefits for individuals, etc.? Based on these questions, this research aims to explore how the expansion process of master's education in Taiwan has impacted the labour market and employment opportunities. As a positional good, a master's degree is subjected to debates regarding greater credential inflation. This study also uses notions of credentialism and signalling theory to examine Taiwanese experiences with respect to wage and employment for the past two decades (from 1995 to 2018). This long-term statistical examination will generate significant implications and shed light on the impacts of greater credentialism on students from different socio-economic statuses.

Master's Education and the Labour Market: Policies, Motivations, and Effects

The rise of the current master's education in developed countries is highly related to the labour market and employment. Several driving forces at both the policy and personal levels can strengthen this linkage. In general, governments are keen to

upgrade their industries and enterprises into creative and high-tech orientations. Talented and professional workers are the cornerstone, and master's education can be an effective channel to provide these high-end workforces in a knowledge-based economy. Based on such rationale, some countries would increase the provision of master's programme graduates for industries and companies. According to a study by Neubauer and Buasuwan (2016), closely linking master's education and employment is an important action of higher education policies in Asia. These authors found that Asian governments highly emphasize higher education policies for preparing graduates in science, technology, engineering, and mathematics (STEM). In addition, Gu *et al.* (2018) noticed a significant increase in in-service master's students in China, thereby providing a greater professional workforce to industries. These moves explain the intended purpose of Asian governments in strengthening the closer link among talent cultivation, master's education, and the wider labour market.

Hoping to obtain a better career in the labour market, individuals/parents are also keen to pursue higher education after their undergraduate studies. In their exploration of the factors involved in pursuing a master's degree in South Korea, as perceived by 11,960 graduates in South Korea, Jung and Lee (2019) indicated that university graduates with higher job prospects and urgent employment needs have lower motivation to pursue master's education. It seems that academic advancement is a more powerful reason for enrolling in master's degree programs in South Korea. However, China presents a slightly different picture. After investigating one well-known Chinese university, Liu and Morgan (2016) found that the prospect of greater employment is an important factor perceived by graduate students when choosing master's and doctoral education programs. These employment prospects include future employability, income, and wages. Institutions' academic reputation and educational quality are also influential factors. Students from families with higher cultural capital and educational resources are inclined to be more motivated and have more opportunities for graduate education. In Europe, Drennan (2012) conducted a questionnaire to compare learning experiences before and after completing a master's education in nursing. The sample included 322 graduates of master's programs in nursing from six universities in Ireland. The study confirmed that the completion of a master's degree in nursing can enhance graduates' willingness to change, communication ability, teamwork abilities, and problem-solving skills. Similarly, Zwanikken *et al.* (2014) conducted an empirical study to collect the opinions of master-level graduates in six countries about their learning experiences. The study found that master's education in public health can enhance graduates' career development, competencies, work performance, and leadership. In summary, receiving a master's education can raise individuals' abilities in relation to the wider notion of greater employability in the labour market.

Based on this perspective, better labour market values are always assumed to be associated with the completion of a master's degree. Most studies provide positive



evidence that earning a master's degree brings greater market value or employment conditions, such as wages. Støren and Wiers-Jenssen (2016) studied the association between the increase in master's students in higher education and over-education in Norway from 1995 to 2013 and found no linear correlation between the two. Moreover, the effects of credential inflation and over-education in master's education were not as significant as previously hypothesized. In the case of Japan, receiving postgraduate education brings higher wages — Masayuki (2013) found that the wages of postgraduate degree holders in Japan were on average 30% higher than those of undergraduate degree holders, according to the data from 2007. Masayuki (2013) even predicted that postgraduate education would become a more important aspect in the context of advancing technology in the Japanese economy structure.

Lindley and Machin (2013) studied changes in the wage premium of postgraduate degree holders in Great Britain. They asserted that there was a significant increase in postgraduate degree holders among British employees. They also pointed out that postgraduate qualifications can help individuals distinguish themselves in the labour market. Acquiring a postgraduate degree can help graduates be more competitive in the labour market. It seems that a master's degree holder sends a stronger signal to employers, showing that he/she has better skills and knowledge. Furthermore, employees with postgraduate qualifications can have a higher wage premium in Great Britain. A master's degree can help workers earn on average an extra £5500 a year compared to bachelor's degree holders. Like in the UK, Waite (2017) investigated the expanding enrolment of postgraduate education in Canada since the 1990s. He argued the importance of exploring the effects of wages among postgraduate degrees and concluded that completing master's and doctoral degrees leads to higher wage premiums, especially in younger cohorts.

Finally, we have slightly different evidence from Taiwan. Yang *et al.* (2011) collected time-series panel data between 1990 and 2004, studying the rates of return of a master's education in Taiwan. They found that the wage increase for master's degree holders was not linear over time. The wage premiums of master's degree holders decreased sharply in 2004. The authors asserted that the rate of return of earning a master's degree in Taiwan was low because of the rapid expansion of master's education, which could harm wage premium and the quality of postgraduate human capital. With these cautions in mind, Støren and Wiers-Jenssen (2016) argued that the expansion of master's education might also cause over-education or credential inflation. However, further concern is related to decreasing social mobility (Marr, 2012), as postgraduate education is expensive and is more attainable among students with better socio-economic backgrounds (Hoeling *et al.*, 2014). If this were the case, master's education as a valuable credential (a positional good) might become a barrier to social mobility. The following conceptual framework illustrates this relevant notion for our study.

Conceptual Frameworks: Credentialism and Signalling Theory

In order to better understand the changing nature of master's education, credentialism and signalling theory are discussed herein to provide wider implications in the Taiwanese context. Credentialism refers to the concept of describing a society's increasing demands for formal educational degrees and qualifications (The NYU Dispatch, 2017). In fact, credentials have been widely regarded as a positional good (Shavit and Park, 2016). As Bills (2016, 65) argued, "the value of one's level of attainment is less a simple function of the amount of schooling one has attained, and more a function of how much schooling one has relative to others in the educational queue". In other words, the comparative advantage is mainly determined by the relative amount of schooling one has obtained in the marketplace. This becomes a major driver for individuals to pursue higher or more credentials in modern society. Adopting a similar stance, Shavit and Park (2016, 1) asserted that:

as education expands, lower and mid-level credentials become widespread and no longer represent the exceptional diligence and ability that employers seek.... Thus, the value of a credential is positional in that it depends on its relative position in the distribution of education.

Such development confirms why the greater massification of advanced degrees, qualifications, and credentials has been taking place in recent decades. According to Van de Werfhorst (2009, 269), "education functions as a positional good, and if education loses value, people need more of it in order to reach the same social class as their parents". His testament indicates that greater credentialism as a result of degree massification might force young generations to pursue higher degrees (e.g. master's or doctoral degrees) to reach their parents' social status and income.

The greater pursuit of higher degrees is highly related to signalling. Educational credentials provide the basic benchmark for employees' ability or capacity. Having a degree and professional qualifications sends a signal to employers in the labour market. Credentials enable the employer to reliably distinguish low-ability workers from high-ability workers (Spence, 1973). Previous literature has also pointed out that a master's degree seems to be a reliable "filter" for selecting a more able workforce. Therefore, we can examine whether the higher credential is recognized or valued from the employer's perspective through the unemployment rate or wage level. Although scholars warn of the danger of misinterpretation about increased educational credentials from employers or the industry (Bills, 2016), their judgment of signals is still a critical element when examining this hypothesis. Therefore, according to signalling theory, those with higher degrees should have more abilities in terms of knowledge, skills, and attitudes. Therefore, a master's education as a higher credential should conceptually be a stronger signal for employers than



undergraduate studies. Based on this concept, this article will explore whether the expansion of master's education in Taiwan will impact the labour market and employment in terms of higher education credentials. Has the signalling effect remained stable or not for master's education for the past two decades along with the expansion? This study will discuss this issue further.

In close connection with credentialism, credential inflation is a key theme. Some sociologist critics in the 1960–1970s stated that American society has over-emphasized formal education and qualifications. Yet a heavy reliance on educational qualifications might lead to social inequality, and credentials and qualifications are mainly controlled by formal higher education institutions. Credentialism normally results in credential inflation, a process of inflation of the minimum standard of a certain profession and the simultaneous devaluation of academic degrees (Bollag, 2007). If this is true, credentialism might be a social barrier creating educational inequality and stratification. Students with a lower socio-economic status might suffer from the effects of credential inflation, as they are unable to accumulate advanced degrees due to the extra costs and time required. We can examine this wider issue from Taiwanese experiences.

Research Methods and Data

In order to understand the changing nature of master's education, we explore what transformations have been taking place at the systematic level and how since the mid-1990s. We focused on the implications of structural transformations of master's education within the labour market and employment. To obtain the outlined evidence and data effectively, a longitudinal research design was adopted. The researchers mainly adopted a time-series analysis ranging from 1995 to 2018 to demonstrate how significantly the transformation has gradually emerged. We chose this period for several reasons. This period has seen the most dramatic evolution of master's education in Taiwan. Conceptually, it is meaningful to infer the possible impact of greater credentialism upon the labour market and employment in terms of the signalling perspective. Moreover, comprehensive conclusions and policy implications can be drawn from the two decades of experiences both theoretically and empirically.

We mainly utilized official information from the Department of Statistics, Ministry of Education (教育部統計處), which has compiled the most reliable and comprehensive data with respect to the student body, entry rate, and new type of master's education programs from the mid-1990s. In terms of wages, we mainly utilized data from the Manpower Utilization Survey (人力運用調查) released by the Directorate General of Budget, Accounting and Statistics, Executive Yuan (行政院主計總處). We compiled the wage data by degree through our own calculation from 1995 to 2018. The Ministry of Labor (勞動部) provides the most

comprehensive database for the unemployment rate among master's degree holders.

The Evolving Nature of Master's Education: Expansion and Diversification

As one of the most highly educated societies across the globe, Taiwan has expanded its master's education dramatically in the past two decades. In further discussing the implications of massification for the labour market and employment opportunities, we focus on several features relevant to the discussion within this study.

An elite tradition and rapid expansion process

Master's degree programs in Taiwan before the mid-1990s were elite and academic oriented, with very limited opportunities for undergraduate students. A master's degree was also viewed as a symbol of talent and elite status in society. As Chen (1993) mentioned, opportunities for graduate education in Taiwan were limited in the 1980s. In order to nurture these high-level talents, the Taiwanese government offered special funds to develop graduate education programs. Almost all master's degree students could receive the benefits of tuition waivers, scholarships, and even monthly stipends (Chung, 1987). The main goal of a master's degree education in Taiwan was to develop students' research and academic abilities, serving as a relay station for doctoral degrees for academic purposes. Therefore, master's students were also called research students (研究生), as were doctoral students. However, this scenario began to change in the mid-1990s.

In reviewing the expansion of master's education (see Fig. 1), a significant increase in the total number of master's degree students occurred at the start of the educational reforms in 1995 (only 33,200 students), peaking in 2010 with 185,000 students. There was an approximately sixfold increase in 15 years. This increase has been extensive in terms of the scale and size within such a short period. Although the number of students gradually decreased after 2010, this reduction mainly came from private higher education institutes (HEIs), while public ones maintained their similar size until today. At the same time, we also observed that the majority of master's students — around 65% throughout our surveyed period — were enrolled at public universities, with private universities hosting only about 35% of students. Such a division has profound implications with respect to the learning cost of master's education because master's students at public universities, subsidized by the government, pay only half the tuition fees that their counterparts at private ones do. Those enrolled at public universities pay around 50,000 New Taiwanese dollars (NTD) per year, while this price is around 100,000 NTD for

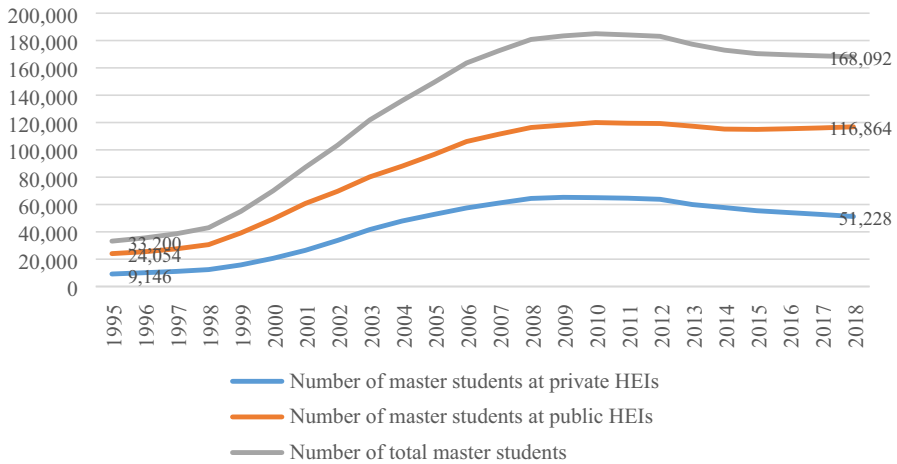


Figure 1. Number of master's degree students in Taiwan.

Source: Ministry of Education in Taiwan (2019a)

private universities. This obvious difference is related to the positional good that credentialism has indicated, as we will discuss in a later section.

Another important indicator to observe participation in master's education is the entry rate. We calculate the entry rate from undergraduate programs to master's programs to determine the Taiwanese system's evolution. Using the same age cohorts for the calculation, more than one in five (21.11%) undergraduate students in 1995 enrolled in master's education (see Fig. 2). This proportion eventually peaked at 36.22% in 2010. In other words, 2010 marked a turning point for master's education in Taiwan. Nevertheless, according to Martin Trow's (2000) concept of the classification of the higher education system, 15% are elite, while 15–50% are massified. Master's education in Taiwan has been a standard massified sector for the past two decades. In its peak year (i.e. 2010), the proportion is relatively high compared to other developed societies. Usually, the entry rate to a master's programme is less than 20% in OECD countries (Denmark is the highest with 34%; OECD, 2020). In other words, comparatively speaking, undergraduate students in Taiwan have plenty of opportunities to access a master's degree programme.

In fact, we would further argue that the proportion of master's students within the same age cohort could be higher than 40% simply because many young students pursue their master's degrees overseas. This number of master's students is not included in the domestic statistics presented earlier. According to official statistics, more than 30,000 students studied abroad annually during the past decade (Ministry of Education in Taiwan, 2019b). A certain proportion of these degree seekers are at

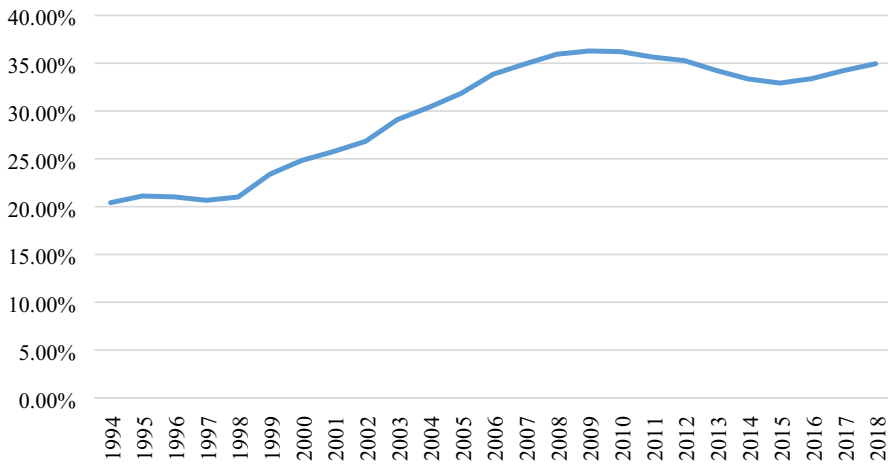


Figure 2. Enrolment rate of master student.
 Source: Ministry of Education (2019a)

the master's level. This group adds to the percentage of master's degree holders in Taiwan as a whole. These students are often from middle-class or even wealthy families. They typically pay higher costs to pursue a master's degree overseas compared to that of a local degree.

New type of master's education: Professional but Privatized

Before 1998, all master's education in Taiwan was obtained through the traditional mode: teaching during the day, mainly serving traditional young students. However, the new form of master's education is professionally oriented, aiming to serve people who already have job experiences. The in-service master's degree programme (碩士在職專班) is a new addition to the traditional master's education. The establishment of this new type of programme was the result of several policy motivations. It is designed as an extra channel for those seeking an advanced degree who already have job experience. The courses are held on weekends or at night, unlike the regular degree schedule (i.e. daytime classes). Enrolees in this programme pay much higher tuition fees than those in the traditional master's degree programme. The revenues from these higher tuition fees (no fee caps) provide additional income for university finances. For some programs, such as business and engineering programs, students may pay more than three times the tuition of traditional programs. Therefore, the in-service master's degree programme can be considered a "privatized" product for universities and students. It is also a new avenue for professional development for different qualifications, diplomas, licenses, and credentials (e.g. teachers, counsellors, social workers,

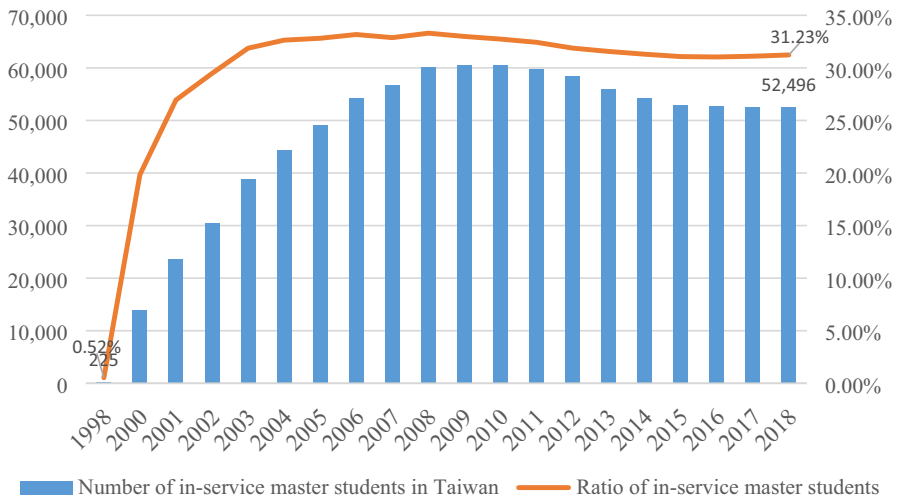


Figure 3. Number and ratio of in-service master students in Taiwan.

Source: Ministry of Education (2019a)

lawyers). Presumably, having a professional master's degree might lead to greater employment opportunities or a better salary in the labour market. Unfortunately, we do not have separate data on these graduates to verify such outcomes. Figure 3 shows the numbers and ratios of the in-service master's programme and indicates rapid growth after 2000, significantly contributing to the massification of master's education in Taiwan. As with traditional master's degree students, this growth peaked in 2010, reaching 60,566 students. This new type of programme accounted for more than 30% of all master's degree students since 2003, and such numbers have remained stable since then. Therefore, we can fairly conclude that 30% attend in-service programs while 70% are in traditional programs today.

Wages and employment

In this section, we examine the changing status of the labour market for master's degree graduates over the past two decades. Three different types of indicators were used to help illuminate the scenarios: initial wage, average wage, and unemployment rate in a comparative manner (by degree). Figure 4 illustrates the initial wages for bachelor's and postgraduate degree holders between 2003 and 2018. Both lines rise, showing the increased value of master's and bachelor's degree. However, postgraduate degrees could be more valuable than bachelor's degrees in terms of the rate of increase. In other words, having a higher degree is more advantageous in seeking one's first job. Moreover, the salaries between the two types of degrees maintain a relatively stable gap. A smaller difference existed

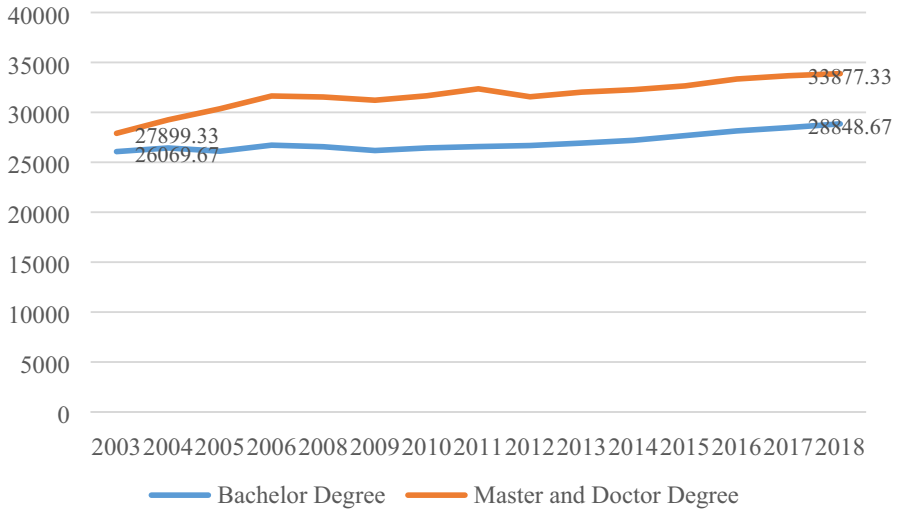


Figure 4. First job monthly salary (in NTD) by degree.

Source: Ministry of Labor (2019)

between 2003 and 2006, but widened to \$5000 NTD per month (around 18% more) afterwards, signifying a better labour market position for postgraduate degree compared to bachelor's degree holders.

Shifting to the average wage for different degrees, we have a complete dataset for estimation. Figure 5 shows the average salary for three degrees for the past 23 years. This abundant information helps us position the relative status of master's education in the labour market. Representing the salary of master's degree holders for the past two decades, the orange line remains stable with some fluctuations (see Fig. 5). In the early years, this salary increased slightly from 2002 to 2003. However, it followed a decreasing trend after 2010, which represents a gradual loss of market value. In addition, Fig. 5 shows a similar trend as initial wages do, with a stable gap among the different degrees. As shown in previous studies examined in the literature review (Lindley and Machin, 2013; Masayuki, 2013; Støren and Wiers-Jenssen, 2016), master's degree holders consistently demonstrated more earnings than bachelor's degree holders (by roughly 50%) during the survey period. This gap is quite huge in terms of relative income per month, yet this difference was much smaller prior to 2000, suggesting that massification had a much worse impact on bachelor's degree holders, producing a stagnant income level. On the other hand, doctoral degree holders are more highly valued than the other two types of degree holders, as they earned much higher average wages despite some fluctuations between 2007 and 2018. These obvious gaps point to the validity of credentials and signalling effects, which we will discuss in greater detail later.

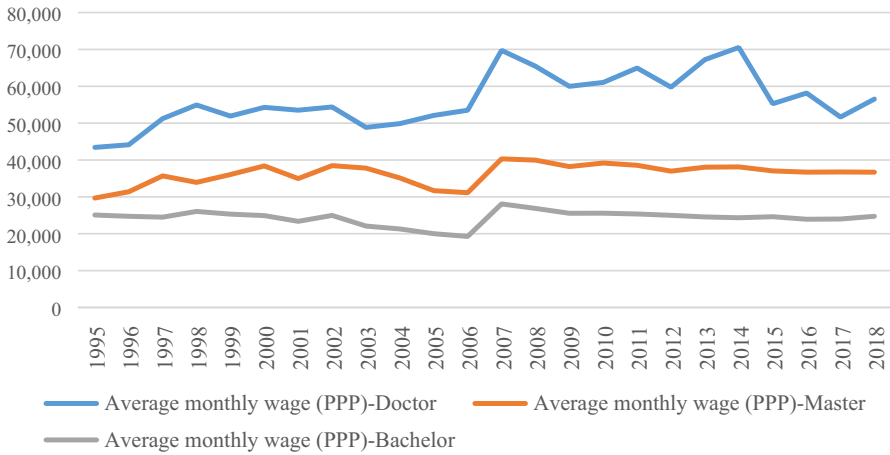


Figure 5. Average monthly wage by degree (in NTD). *Note:* The obvious fluctuations before and after 2006 are caused by the definition of a student's status (finished or still completing the program). Purchasing power parity (PPP) is calculated using the accumulated CPI of Taiwan (1995 as the starting year).

Source: Directorate General of Budget, Accounting and Statistics, Executive Yuan (2019)

Finally, the unemployment rate among degrees also shows a better or more advantageous position for master's degree holders. Figure 6 confirms that postgraduate degree holders have around a 3% unemployment rate compared to 5–6% for bachelor's degrees (almost twice as much). This information provides further evidence that master's education is more accepted in the labour market, while undergraduate degree holders face higher risks without favoured jobs. Thus, master's degrees, compared to bachelor's degrees, bring positive effects to individuals in terms of higher starting wages (around 18%), higher average wages (about 50%), and a lower unemployment rate (by 50%). This evidence confirms that having a master's degree results in substantial economic benefits and values.

Discussions: Credentialism, Signalling Effect, and Positional Competition

In this section, we synthetically discuss our empirical evidence in relation to the relevant literature and conceptual frameworks. The discussion focuses on the impacts of massified master's education on the labour market from the perspective of signalling. In addition, we address how pursuing a master's education as a credential game influences the educational opportunities and social mobility of individuals in Taiwan.

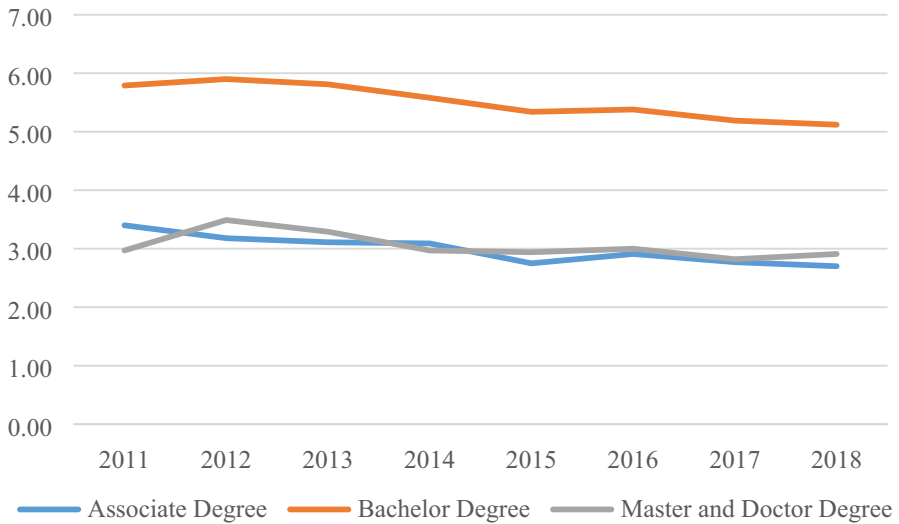


Figure 6. Unemployment rate by degree.

Source: Directorate General of Budget, Accounting and Statistics, Executive Yuan (2019)

Greater credentialism and signalling in the labour market: a compulsory game?

Previous empirical evidence has provided no doubt that greater credentialism has been prevalent at the societal level. However, its overall impacts on the labour market and employment are far from clear. Its implications even bring wider debates in the long run. As observed in the rapid expansion of master's education in Taiwan, the whole sector has expanded due to the regular programs, in-service programs, and even those self-funded individuals studying abroad. The Taiwanese entry rate into master's education, according to Martin Trow's (2000) classification, has massified compared to many developed countries in the past two decades. However, such expansion brings different results, as analysed.

Compared to a bachelor's degree, master's education seems to be favoured by employers, with a low unemployment rate, higher initial wages, and average wages during this period. These results echo the research findings from Masayuki (2013) in Japan, Lindley and Machin (2013) in the UK, and Waite (2017) in Canada — all of whom reported that master's degrees bring an advantage over a bachelor's degree. In other words, greater credentialism does not undermine the signalling effect of master's degrees. Nevertheless, if we turn attention to master's education, it is not so straightforward or convincing. However, with increasing initial wages for the first job, the average wage for master's degree holders fluctuates. In particular, we saw a decreasing trend after 2010 (see Fig. 5) in the context of the



shrinking number of master students (see Fig. 1). Thus, 2010 was the turning point for master's education in Taiwan, when the decreasing average salary and reduced number of enrolled students occurred simultaneously, suggesting that the public began to understand that higher credentials cannot guarantee a high salary. This tendency, to some extent, echoes the research from Taiwan by Yang *et al.* (2011), who found a decreasing rate of return for master's education and even a declining quality of postgraduate education.

In terms of the signalling effect, master's education is more advantageous than undergraduate studies in the labour market, along with massification. This proves the validity of master's education being a positional good in the labour market. This conclusion is similar to the finding of Støren and Wiers-Jenssen (2016) in Norway, where the effects of credential inflation are not as significant as hypothesized. However, if we examine two decades from a longitudinal perspective, this message has been becoming weaker since 2010 in the long run.

Nevertheless, in order to maintain a stronger signal to employers, students have been forced to engage in the credential game because bachelor's degree holders are much more vulnerable in terms of the employment rate and wages. We found that the average wage for bachelor's degree holders suffered a greater loss than for master's degree holders after 2010. Thus, this competition for a better position in the labour market would push those from the younger generation into an inevitable credential game to earn a higher degree.

Massified master's education and positional good: the unintended effect of decreasing social mobility

One of the major concerns expressed by sociologists for greater credentialism is decreasing social mobility and even stratification (Marr, 2012). As we have argued, master's education in Taiwan has become substantially massified compared to many Western societies. Although the signalling effect is still valid in terms of wages and employment for master's education, what are the unintended effects? As a higher positional good, master's education plays a critical role, as Bills (2016, 65) has argued that "the value of one's level of attainment is... a function of how much schooling one has relative to others in the educational queue". Thus, we should understand how some are in a better position than others in this credential game in Taiwan.

According to student distributions, public universities host 65% of master's degree students nationwide. Moreover, middle-class and wealthy students in Taiwan have a better chance to enrol in master's education at public universities (Chan and Lin 2015; Shen and Lin, n.d.). This means that the government subsidizes middle-class families pursuing master's education in a massified system, whereas working-class students do not have equal opportunities. This reverse-income redistribution goes against the notion of the "public good" (Shen and Lin, n.

d.). Furthermore, as Fig. 5 shows, graduates with master's degrees earn significantly more than those with bachelor's degrees, meaning that credential inflation has a stronger negative effect on people with bachelor's degrees than master's degrees. In other words, massified master's education in Taiwan has created dual barriers for social mobility, thereby subsidizing the wealthy family for higher positional good and compressing the average wage of bachelor's degree holders.

Hoeling *et al.* (2014) indicated that postgraduate qualifications are expensive and are more affordable and attainable for students with better socioeconomic backgrounds. This is a similar situation to that of Taiwan. As we have indicated, those who enrol in in-service and study-abroad master's programs bear the entire learning cost. Such a privatized choice is not an easy option for disadvantaged students, as they do not expand new opportunities for higher credentials (even if they do, it is at a high cost). Therefore, greater credentialism or credential inflation might not be harmful to master's education per se, but it becomes very acutely felt among bachelor's degree holders and leads to a new type of educational inequality in light of the positional good.

Conclusion

Taiwan's master's education has experienced a major expansion with a new modality of programs furthering massification development. However, our empirical evidence has indicated that the massified master's education has seen a slightly declining trend since 2010 with respect to wages. Such phenomenon inevitably leads to the weakening of the signalling effect of this higher credential. However, an even pressing issue is the implications of growing misalignment between the provision of a master's degree and the demands of industries. It seems that the total capacity to accommodate master's degree holders has overstretched within the Taiwanese labour market. This means that greater credentialism would become more prevailing in Taiwan in the longer run. On top of this, how to balance the dynamic relationship between master's education and the labour market becomes even more critical.

Gradually, the master's degree has become the "the new bachelor's degree" for young generations (Blagg, 2018) as the credential game is inevitable. It is our suggestion that the government should play a more active role in supporting disadvantaged students in this unequal competition for greater credentialism. This is particularly important if the system becomes massified. At least, policies should be designed to equalize the financial support to master's students at either public or private universities. Otherwise, reverse income distribution would occur and it will prevent the pursuit of better social equality in the higher education sector. Additionally, any nation seeking to expand its master's education sector should



carefully balance the relative provision of bachelor and master's education at the societal level. As we have seen, the pursuit of a master's degree as higher positional good has brought significant implications to the issues of social justice. The Taiwanese case has demonstrated that bachelor degree holders suffered considerably in the labour market compared to master's degree holders. Therefore, how to sustain an appropriate size of master's education at the national jurisdiction is critical to policy-makers for the sake of both the labour market and social equality.

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