# *Title: How Labor Market Perceptions Affect Undergraduates' Preparation – Gender Differences Included*

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## 1. Introduction

### 1.1 Graduate labor market and job preparation

Youth unemployment issue has drawn increasing attention in Asian and European countries (Kim and Lee, 2006; Postiglione, 2011; Wolbers, 2007). Studies regarding higher education showed that credential inflation results in unprecedented number of undergraduates as well as a severely competitive graduate labor market. Results drawn from graduate labor market outcome reveal that the transition from education to labor market is getting harder and harder for current graduates and the hurdle to get a traditional 'graduate job' is higher and higher (Bai, 2006; Brynin, 2002; Dolado et al., 2000; Kanellopoulos, 1996; Kim and Lee, 2006; Li et al., 2009; Plumper and Schneider, 2007; Salas-Velasco, 2007; Walker, 2007; Wolbers, 2007). Meanwhile, research revealed that without experiencing difficulties in finding a job, undergraduates could misapprehend their labor market future and thus fail to well prepare for it. Gedye, Fender, and Chalkley (2004) showed that undergraduates are optimistic about private rate of return from higher education credential and thus underestimate the obstacle in getting a satisfied job compared to graduates who already entered to the labor market. Furthermore, graduates in this study based on their own labor market experiences emphasized that the need for higher education institutions to equip their students for the labor market. The abovementioned research results suggest that the graduate's viewpoint toward higher education institutions' job preparation changed as they enter the labor market. The possible explanation could be that while they are still in college, they do not perceive the need to prepare for future job due to their labor market misunderstanding. The remained question would be if undergraduates acknowledge a fierce competitive labor market awaits them upon graduation, would this perception affect their job preparation during college years? To fulfill this gap, this research would like to examine the association between undergraduates' observation regarding the graduate labor market and their job preparation while studying in college.

Research demonstrates that instead of equalizing the quality and reputation of all universities, higher education expansion has sorted higher education institutions into different echelons, with prestigious research intensive universities on the top and non-prestigious teaching-only ones at the bottom (Ding, 2007; Kim and Lee, 2006; Strathdee, 2009; Wu, 2009; Yogev, 2007). Studies further disclose that graduates from top universities enjoy higher rate of private return from college credentials than otherwise. Income disparities between prestigious and non-prestigious university graduates are well documented (Bai, 2006; Ding, 2007; Kim and Lee, 2006; Pretorius and Xue, 2003; Rosado and David, 2006; Thomas and Perna, 2004). It seems that a college credential values differently according to its accredited university. However,

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the aforementioned research results are all drawn from the labor market outcomes, none of them is from the undergraduate's assessment regarding credential currencies. Does current undergraduate sense the college credential currency differences among various universities? Do they recognize that the credential inflation has led to different extent of devaluation for varied college credentials? In addition, how do they associate the competitive graduate labor market with the credential currency value?

Studies revealed that skill development courses and certificate related programs are favored by undergraduates during economic recession (Postiglione, 2011; Wu, 2011). As the college degree becomes normalized, undergraduates detect the need to add additional values to their credentials (Tomlinson, 2007, 2008; Wu, 2011). Research revealed that those undergraduates who utilize course taking to increase their ability are more likely to be employed (Li et al., 2008), though might not help rise starting wages (Li et al., 2009). In addition to course arrangement, research show that a growing number of undergraduates utilize paid employment to increase their employability, including regular and professional working skills (Beerkens, Mägi and Lill, 2011; Howieson et al., 2012; McInnis and Hartley, 2002). Clearly, undergraduates try to expand their working ability and skills through course taking and paid employments. In addition to course taking and paid employments, this study incorporates an Asian cultural element, cram schools, as a mechanism that undergraduates apply to enhance their working ability, since Asia countries have long history of using cram schools to prepare for all kinds of tests related to educational attainments and public service jobs (Dawson, 2010; Kwok, 2004). Nowadays, labor with flexibility has an edge in current market. Second profession development adds to one's labor flexibility to secure a job or find a new one. Further, due to rapid changes in the industries and job contents, labors in nowadays are expecting to develop a second profession. The competitive labor market both shape the rate of return of a college credential and penetrate the credential devaluation in the society. This study is designed to examine if undergraduate's perception of graduate labor market has impacts on their assessment toward credential devaluation and their strategies to deal with it. This research would like to examine the associations among competitive labor market, credential devaluation, second profession development and credential value addition. It is possible that undergraduates apply strategies that add additional values to their diplomas because they acknowledge increasing difficulties in getting a job. As a significant number of youths possess higher education credential, the distinction function of it diminishes. Obviously, finding a job, especially a traditional 'graduate' position, is getting harder and harder for newly graduates. Therefore, students need to equip additional capacities in order to increase the chances to outperform others with similar educational attainments.

### 1.2 Women's participation in Taiwan's higher education

Though some studies showed that higher education expansion has raise the female's participation in higher education (Berggren, 2006; Rosado and David, 2006), a number of studies further demonstrated that they tend to go to non-elite institutions (Berggren, 2006; Grubb and Lazerson, 2005; Walker, 2007). This is also the case in Taiwan. The government statistics showed that in the bachelor level, the woman's participation rate in top six Taiwanese universities is 44.86% compared to 48.94% in the overall universities in 2011, revealing that in Taiwan female undergraduates center on the non-elite universities (Ministry of Education, 2012). Since females tend to go to non-elite universities, would this tendency affect their credential currency evaluation? Could it possible that majority females go to non-elite universities is because they hold relatively equalized credential currency values? In other words, is it possible that males acknowledge that elite university credentials devalue less than non-elite ones; therefore, majority males go to elite universities? This research attempts to investigate if gender differences exist in college credential currency assessments.

Females less likely than their male counterparts attend graduate schools in Taiwan. Statistics from Taiwanese government showed that from year 1996 to 2011, women's participation rate in bachelor credential have been over 48% every year (Ministry of Education, 2012). In addition, woman participation rates in graduate school increased gradually form 28.86% in 1996 to 43.28% in 2010. Evidently, more and more women try to obtain a master credential. This could imply that as a bachelor credential has become a normalized standard, women also see the need to attain further education. However, their participation in post-graduate degrees are not compatible with their male counterparts. The government statistics also revealed that the women's participation rate in Ph.D. program has rose from 19.20% in 1996 to 28.91% in 2010 (Ministry of Education, 2012). Clearly, males maintain their dominant role in Ph.D. programs. In sum, more males attain post-graduation credentials than females. It meant that more females enter the labor market earlier than their male peers. The question is does the earlier labor market entry than males affect women's learning during college years? Would female undergraduates thus sense higher needs to prepare for their future jobs compare to their male counterparts while in college? In other words, would female undergraduates have higher sensitivities to graduate labor market as opposed to males?

## 1.3 Research questions

- 1. Could gender differences be found in job preparation, credential devaluation and labor market conceptions?
- 2. How undergraduates' perception regarding current graduate labor market affected their credential currency assessment, second profession development and credential value addition?

## 2. Methods

Current research funded by Taiwanese National Science Council was (NSC-101-2410-H-260-044-). Two elite national universities, two non-elite national universities, and two historical private universities were surveyed in this study. As for the two elite national universities, one has high prestige on her humanities and social science departments and the other has high reputation on her outstanding technical and engineering disciplines. As for the other two non-elite national universities, one is newly established on the purpose of stimulating local economic development and the other one has not only long history with huge alumni network, but also a reputation on agricultural education. Both private universities are comprehensive historical ones that also have large numbers of alumni. Two of the six universities were located in northern metropolitan area, and another two were sited in central metropolitan area in Taiwan. As for the last two universities, one is located next to the oldest Science Park, and the other is in non-metropolitan area in central Taiwan. From September 2010 to January 2011, data were collected on students who enrolled in general studies courses because students in these courses come from various university departments and thus increase sample representativeness for the sampled universities. More than 240 undergraduates in each university were surveyed to obtain a representative sample for the university. The total sample size consisted of 2407 students, including 1260 females, 1135 males, and 12 unidentified.

Insert table 1 about here

Independent t-test was initially used to examine gender differences in undergraduate's assessments regarding current graduate labor market, the ways to develop second profession, credential devaluation and credential value addition. Next, structural equation modeling (SEM) was utilized to investigate the associations among four latent variables: labor market, credential devalue, second profession, and credential

addition. SEM was chosen because it not only helps investigate the direct as well as the indirect effects among the four aforementioned latent variables, but also because it helps evaluate the construct validity. Randomly missing data were imputed using full-information maximum likelihood (FIML) estimation. Because Chi square is sensitive to sample size, researchers recommend goodness-of-fit indices as the criteria for evaluating the SEM model (Bentler and Bonett, 1980; Kline, 1998; Marsh and Grayson, 1990). Goodness-of-fit indices help locate and evaluate a best-fitting solution (Loehlin, 1998). Several fit indices have been applied as standards for choosing the best-fitting model. The present study used the Bentler–Bonett Normed Fit Index (NFI), Tucker–Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA) to account for goodness-of-fit and model parsimony. The commonly recommended level for RMSEA is 0.05 or lower (Loehlin, 1998), the level for TLI is 0.90 or higher, and the level for NFI is 0.80 or higher (Kline, 1998).

The constructs and item content were presented in table 1. The subscale titled 'labor market' surveyed whether undergraduates think that current graduate labor market is highly competitive and the available job positions for college graduates are shrinking. 'Second profession' focused on second profession development via part-time jobs, course taking, and cram school attending. The construct named 'credential devalue' asked if a diploma valued differently according to accredited universities and the credential devalued lesser if the accredited universities and departments are better. The latent variable 'credential addition' asked if undergraduates believe that a minor subject, double majors or taking certificate programs added to their credential value. Responses to all of the items were given on the six-point Likert scale, with 1 meaning ''strongly agree'' and 6 denoting ''strongly disagree.'' Because all of the items included in the SEM model were closed questions, there were few missing data. After list-wise deletion, the sample size consisted of 2369 students, representing less than 3% missing data in the sample.

## 3. Results

3.1 Results from independent t-tests

Insert table 2 about here

The means for males and females on C1 were 1.66 and 1.60. The independent t-test revealed that no statistically significant mean difference was detected in this item,

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meaning that both genders held consonant viewpoint toward graduate labor market competitiveness. Since both means were under 2, it meant that male and female undergraduates both agreed that current college graduate labor market is highly competitive. The means for males and females on C2 were 2.25 and 2.14, and the mean difference had reached statistically significant. The result demonstrated that female undergraduates that compare to male undergraduates, female ones tend to be more pessimistic on job vacancies for college graduates. Female undergraduates were more likely believe that the job openings for college graduates had diminished.

As for the three items related to developing a second profession, gender differences were discovered. The means for the female undergraduates on S1, S2 and S3 were 2.61, 2.23, 3.19 respectively, and for the male ones on three items were 2.77, 2.46, and 3.34 respectively. The independent t-test results on those three items showed averagely, females scored statistically significantly lower on S1, S2 and S3 than their male peers. Since females scored significantly lower on the three ways to development a second profession during college years, revealing that female students had higher willingness than their male counterparts in developing a second profession. That is, females were more likely to make use of part-time employments, course taking and cram school to expand their professions, which might in turn increase their employability and likelihood of getting employed upon graduation. Evidently, females were more active in building their labor flexibility during college years using on-campus and off-campus resources.

Regarding the three items, A1, A2 and A3, gender differences were also identified in the three strategies regarding credential value addition. The means for the female undergraduates on A1, A2 and A3 were 2.23, 2.03, 2.23 respectively, and for the male ones on three items were 2.36, 2.20, and 2.34 respectively. The independent t-test results on those three items showed on average, females scored statistically significantly lower on A1, A2 and A3 than their male counterparts. Again, female undergraduates had statistically significantly lower means than their male peers on the three items, including minor subject, double majors and certificate programs. The significant mean differences revealed that females agree more than males that a minor subject, double majors and certificate programs could add additional values to their college credentials. Since getting a minor subject and double majors and attending certificate programs need to take additional courses, the results not only demonstrated that male undergraduates put less credits on these three methods than female ones in enlarging their credential currency values, but also implied that female undergraduates are more likely than males one to make use of course arrangement as an instrument in enhancing future employability.

Gender differences also found in the three items related to credential devaluation caused by higher education expansion. The means for the female undergraduates on V1, V2 and V3 were 2.02, 2.33, 2.53 respectively, and for the male ones on three items were 1.92, 2.13, and 2.40 respectively. The independent t-test results on those three items showed that females scored averagely statistically significantly higher on V1, V2 and V3 than their male counterparts. The significant mean differences indicated that compared to their male counterparts, females held a more equalized viewpoint on credential currency values accredited by various universities after higher education expansion. Male undergraduates were more inclined to believe not only that a credential devalues less if it is accredited by a prestigious university or a top ranking department, but also that obtaining a credential from non-elite ones. The results implied that male undergraduates held larger discrepancies in college credential currency than females.

## 3.1 Results from structural equation modeling

The chi square of the SEM model was 192.67, with 38 degrees of freedom and a significant p-value of 0.00. Because chi square is sensitive to sample size, TLI, NFI, and RMSEA were used to evaluate the proposed SEM model. Results from the SEM model showed that TLI, NFI, and RMSEA were 0.96, 0.97, and 0.041, respectively. All indices show that this model gave a good fit to the data (Hu and Bentler, 1999; Browne and Cudeck, 1993) and further explanation is thus possible. All of the factor loadings in the current model were above 0.44, indicating good construct validity.

Results from SEM revealed that the structural coefficient from 'labor market' to 'credential devalue' was 0.30, indicating that undergraduates' observation regarding credential devaluation was significantly influenced by their perception about graduate labor market. That is the more competitive students perceived labor market was, the more they believed that a credential issued by elite universities or respected departments devalued less than otherwise. Clearly, the way undergraduates assess credential currency was affected by their graduate labor market awareness. As they sensed increasing competitiveness and shrinking positions in the graduate labor market, they acknowledged credential currency devalue and the extent a credential devalued depend on accredited universities or departments.

The structural coefficient from 'labor market' to 'second profession' and 'credential addition' were 0.25, meaning that students who observed a congested labor market were inclined to develop a second profession via part-time jobs, course arrangements

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and cram schools. In other words, undergraduates utilize pay employments, course taking and capital investment to increase their future employability in order to enlarge the chance to get employed in a perceived cut-throat graduate labor market. In addition, the structural coefficient from 'labor market' to 'credential addition' 0.16, indicating that as undergraduates realized a competitive graduate labor market awaiting upon graduation, they would try to increase their credential currency through course arrangements. The course arrangements include a minor, double majors or certificate programs. All of them require additional course taking. Put it differently, undergraduates recognize course taking is a way to increase credential currency values. Evidently, the aforementioned three positive structural coefficients demonstrated that undergraduates' future labor market perceptions have impacts on their credential value assessments and corresponding coping strategies. Competitive labor market initiates undergraduates' motivation to prepare for it. Evidently, if undergraduates were aware of a cut-throat labor market, they would take actions to cope with it while still studying in college.

The 0.14 statistically significant structural coefficient from 'credential devalue' to 'credential addition' showed that the more undergraduates believed credential devalue unequally, the more they believed a minor, double majors and certificate programs would increase their credential currencies. This result implied that as students acknowledged that the diploma rated differently according to accredited universities, they would try to enlarge their credential currencies via other arrangements. The result suggested that those students who applied strategies to increase their credential currencies are those who sensed increasing difficulties in getting a job and decreasing college credential currencies. Further, the statistically significant structural coefficient from 'second profession' to 'credential addition' was .36, confirming a positive association between these two latent variables. That is, those undergraduates who observed the need to develop a second profession also tended to see the need to increase credential currency values. Moreover, the insignificant structural coefficient from 'second profession' to 'credential devalue' revealed that undergraduates' differentiated credential devaluation was not influenced by their profession expansion.

Insert figure 1 about here

#### Discussion

Results from independent t-tests demonstrated that female undergraduates sensed more need to develop a second profession and add additional value via course taking to the attained credentials. In addition, female students stood a more pessimistic viewpoint toward graduate labor market than their male counterparts, since they agreed more that job positions for college graduates decreased. As both to nurture a second profession and to increase credential currency are future job related, the results could indicate that compare to their male peers, females have higher needs to increase their employability. The higher needs to increase employability through credential value addition and second profession development could be due to that they tend to enter the labor market earlier than male students, for their lower percentage in Regarding credential devaluation, pursuing post-graduate degrees. male undergraduates held a more differentiated viewpoint than females. Males tended to agree more that college credentials value differently according to accredited universities. Also, males tended to agree more that credentials from elite universities and prestigious department devalue less than otherwise.

Results from independent t-tests revealed that gender differences were found in credential value assessments, implying that male students were more sensitive to higher education stratification, since they were more inclined to agree that the better the university or the department is, the less the credential devalued. On the contrary, female undergraduates held a relatively more fairness standpoint than their counterparts in credentials' currency value could be misleading, as discerned credential values are confirmed by previous research (Bai, 2006; Ding, 2007; Kim and Lee, 2006; Pretorius and Xue, 2003; Rosado and David, 2006; Thomas and Perna, 2004). Furthermore, the females' relatively equalized viewpoints toward credential currency could partially explain why they center on non-elite universities after higher education expansion (Berggren, 2006; Grubb and Lazerson, 2005, Walker, 2007). If they believe that credentials value similarly between prestigious and non-prestigious universities, then to them, graduating from elite and non-elite universities will not make a sensible difference. This misunderstanding could lead to future labor market disadvantages, since research found that elite university graduates are more welcome by elite employers (Morley, 2007). Future research could explore the possible gender related contexts or education that contribute to this gender credential value difference. Further research could investigate the factors that contribute to the differences. In addition, females' higher willingness in developing a second profession and adding additional currencies to their credential suggested that female undergraduates could have higher employment pressure than males. It could due to that a glass ceiling effect on educational attainment that prevents females pursuing post-graduate credentials, so

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that they tend to enter labor market earlier than their male counterparts. If the case stands, then gender inequity has thus persisted through levels of educational attainment, rather than through bachelor credential participation rates after higher education expansion.

Results from SEM model demonstrated that how undergraduates recognized the labor market situation influenced their credential valuation and their strategies to prepare for it. Results revealed that those undergraduates who recognized a competitive graduate labor market were not only more likely to think that credential devalued differently according to universities and departments, but also more inclined to develop a second profession and add value to their hard diploma. The above results proposed that those undergraduates who pay attention to current cut-throat graduate labor market are those who actively take actions to prepare for it. If the case stands, then arising students' awareness regarding current congested graduate labor market could be the incentives for them to apply strategies to cope with it and thus really make a good use of universities' resources in preparing for a job. The universities and the government could thus educate these youths the labor market realities during college years rather than let the students find it out by themselves after entering it.

Results from SEM model further revealed that the need to enlarge college credential currency is influenced by undergraduates' perceived degree devaluation and labor market competitiveness. Manifestly, a tough graduate labor market along with shrinking college credential currency push undergraduates to take actions add additional values to their attained degree in the hope to maintain the distinguished function of the degree. In order to be employed upon graduation in an outnumbered graduate labor market, undergraduates sense the need to do a lot of things, including taking additional courses and part-time employments, associated with employability enhancement. Contemporary undergraduates are distancing from traditional ones for they are facing enlarging pressure in getting a secured job that signals independent from their family. Future research could further investigate other factors that affect undergraduates' future job preparation especially during economic recession.

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