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Abstract: One reason often put forward for South Korea's rapid economic growth has been the rising level of educational attainment of its workforce. Correspondingly, the proportion of Koreans who complete tertiary education has also rapidly increased (and is also considerably higher than the OECD average). Such increases raise the possibility of overeducation if the amount of jobs which require such education do not increase at a similar pace. Among the consequences of overeducation are reduced life satisfaction and underutilised human capital. Given that Korean females are better educated than males, and they also face more discrimination in the labour market, the consequences of overeducation are likely to differ by gender. Using Korean panel data and both a subjective and objective measure of overeducation, the results are consistent with females having lower aspirations despite their high levels of education, and indicate that a more female friendly labour market could address the country's currently underutilised human capital, for the benefit of the females themselves, as well as males, and the Korean economy.

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“Seungyeon always said girls don’t need special treatment – they just want the same responsibilities and opportunities. Instead of choosing the lunch menu, they want to run for president.”

Kim Jiyoung, Born 1982, Nam-Joo, 2020, p. 78

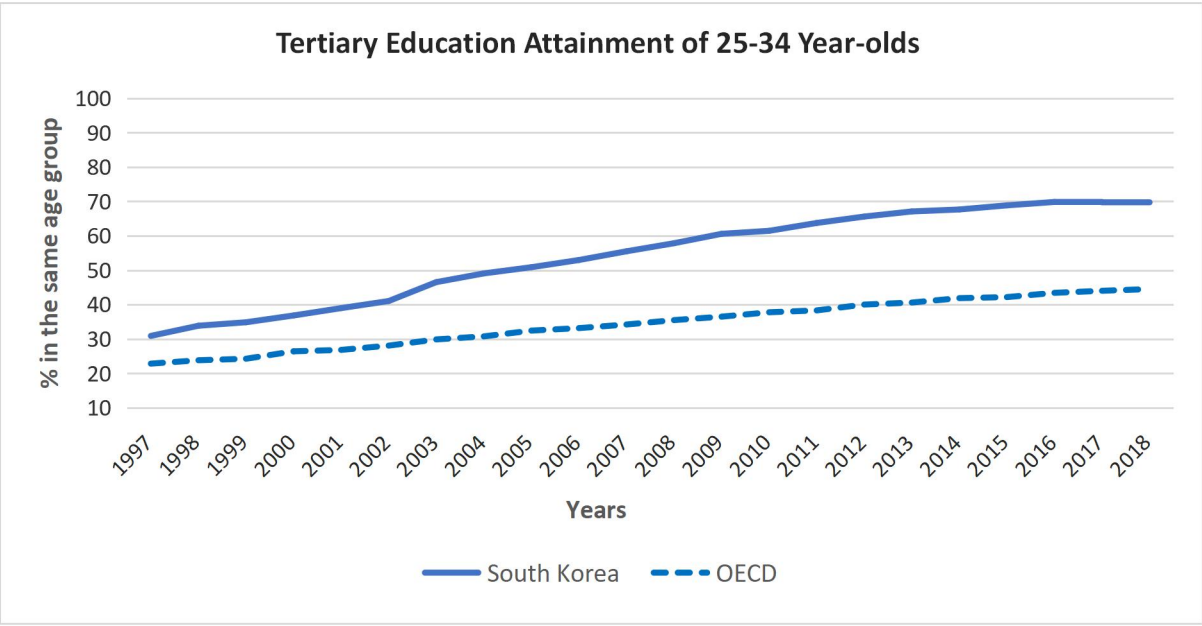
1 Introduction

In the past few decades South Korea has experienced rapid economic growth, managing to transform itself from a developing country to a developed country in less than 50 years.¹ Currently it is the fourth largest economy in Asia behind China, Japan and India. This transformation has attracted the attention of many scholars who have been interested in the underlying factors (Park, 2011; Lee, 2012; Cho, 2019; Lee and Lee, 2019). According to this literature, a key factor that has contributed to Korea’s economic development and growth is education (Piazolo, 1995; Lee, 2000). Education has been argued to have accelerated growth and development through the improvement of labour force quality, productivity, and innovativeness (Lee, 2000; Bak, 2018). Particularly, as Figure 1 shows, in Korea the number of individuals who complete higher education has more than doubled in recent years and was in 2018 at 69.6 % of all individuals aged between 25 and 34, significantly exceeding the OECD average of 44.5 % (OECD, 2020).² This trend is similar for males and females, although the rate has always been higher for women in Korea (75.7 % in 2018) than men (64.1 %), a gap similar to the OECD average (50.8% females compared with 38.5% males). Given this, and the often-recorded discrimination of females in Korea and the Korean labour market, gender is an important consideration.

¹ In common with much of the academic literature, in the remainder of this article we will refer to South Korea as Korea.

² Statistics also show that participation and completion at levels of education lower than tertiary have also increased over the same time period (World Bank, 2020a, 2020b).

Figure 1: Development of Tertiary Education Attainment in Korea and the OECD between 1997 and 2018 (OECD, 2020).



With the increase in higher education participation, one phenomenon that has gained attention is that of overeducation (see e.g. Sicherman, 1991; Chevalier, 2003; Piper, 2015). Overeducation occurs when a rapid expansion in higher education has not been met with a corresponding increase in the demand for highly educated labour (Patrinos, 1997; Belfield, 2000; Piper, 2015; Delaney et al., 2020). Overeducation has been demonstrated to be a significant societal problem as well as an individual one: with overeducated individuals having been found to be less innovative (Lämsäsalmi et al., 2004; Agut et al., 2009); have lower job satisfaction and the companies they work for experience a higher turnover (Tsang, 1987; Alba-Ramírez, 1991; Tsang et al., 1991; Sloane et al., 1999; Park and Shahiri, 2015; Verhaest and Verhofstadt, 2016) and a general underutilisation of human capital. As well as being associated with lower life satisfaction (Artés et al., 2014; Piper, 2015; Frank and Hou, 2018), a study of overeducated Swedes even found that they have a higher mortality rate than the non-overeducated (Garcy, 2015).

In Korea, a high incidence of overeducation seems likely, as the number of jobs that require a high level of education has not caught up with the increasing rate of graduates of tertiary education programmes (Ministry of Education, 2017). This problem is intensified by the fact that the Korean market is dominated by ten large conglomerates (including Samsung and Hyundai), which have managed to grow without creating many jobs for graduates of tertiary education (Yang and Kim, 2019). The authors have further illustrated this by quoting Ban Ga-

woon, who stated that “South Korea is paying the price for its overprotection of top-tier jobs and education fervor that produced a flood of people wanting only that small number of top jobs” (Yang and Kim, 2019). In an attempt to tackle this imbalance, a continual effort to generate better opportunities for ‘jobless graduates’ has been underway. As just one well-known example, the former president (2013-2017) of South Korea, Geun-hye Park, has designed the ‘K-Move’ programme, which aims to support thousands of graduates in seeking a job abroad, offering overseas training and aid for overseas business start-ups (Kim, 2018). Recent statistics presented in a news report by Yang and Kim (2019) indicate that, as of 2018, around 6,000 Korean graduates work overseas with such government help.

When Koreans fail to find a job that matches their education abroad or in Korea, they are likely to settle for a job that is below their educational level (i.e. that they are overeducated for) to avoid unemployment. According to a recent study by H. Kim et al. (2016), it appears that this is a route that many Korean graduates take. The authors reported that almost 20% of employed college graduates are working in jobs that do not match their level of education.³ In a Western context, a growing body of research has begun to explore potential consequences for overeducated individuals, including their income and well-being (see e.g. Bracke et al., 2013; Haisken-DeNew and Kleibrink, 2013; Piper, 2015; Frank and Hou, 2018).

Such issues have, until now, received little academic attention in the context of Korea even though there are strong reasons suggesting that overeducation might be an important phenomenon (Cho and Lee, 2014). In Korean society, Confucian core ideals such as education, hard work, and respect for family are deeply embedded (Berthrong and Berthrong, 2000; Kim, 2009). As such there is a belief that a high level of educational attainment guarantees a successful life and future in terms of social status, employment and income (Ministry of Education, 2017). However, as a consequence, when this is not fulfilled for overeducated Koreans, they are expected to be less satisfied with life. Korean parents usually invest large sums of money into their children’s education and they closely monitor their children’s academic performance, expecting high achievements (Kim and Bang, 2017). These high expectations cause more stress for the students (Kim and Lee, 2013; S. Park et al., 2018). In light of these findings, there are many reasons to believe that Korean graduates,

³ This figure is broadly similar to that in many other countries though, as the next section explains, the incidence of overeducation depends upon how it is measured.

who have gone through stressful years in college and school, will be significantly affected by not obtaining a job that matches their level of education. Our investigation assesses this via the prism of life satisfaction, while considering the important role of income for the overeducation-life satisfaction relationship.

Importantly, for the case of Korea, it is likely that there are some gender differences regarding the link between overeducation and life satisfaction, and the moderating role played by income. These relate to the different patterns of labour market participation of the genders, and the gender pay gap which is the largest within all OECD member states (OECD, 2017). Given that 90% of legislators, senior officials and managers in Korea are men (World Economic Forum, 2019), it is conceivable that women are used to 'worse' jobs, have lower expectations, and thus might be less affected by lower life satisfaction due to overeducation than men.⁴ The Global Gender Gap Report 2020 published by the World Economic Forum (2019) shows that Korea has a high gender inequality in economic participation and opportunity as well as political empowerment, ranking 108th out of 153 countries in the Global Gender Gap Index. Additionally, in the 'environment for working women'-indicator of the Glass-Ceiling-Index published by The Economist (2020) Korea has ranked bottom for eight years in a row. Since Korean women have higher levels of educational attainment than men, this could be regarded as a waste of economic resources and human capital (OECD, 2017). These gender differences are discussed further in subsection 2.1, after a brief introduction regarding the definition and measurement of overeducation. Subsection 2.2 and 2.3 report on the academic literature regarding overeducation and income, and overeducation and life satisfaction, respectively. Section 3 describes the data and methods used, section 4 presents the results, section 5 the discussion and limitations of our work and section 6 concludes.

⁴ A similar argument has been made in a job satisfaction context by Bender et al. (2005). Due to social norms, especially in female dominated workplaces, women tend to report a higher job satisfaction than men as they have relatively low expectations to begin with. Kim Jiyoung, Born 1982: "It didn't occur to the child Jiyoung that her brother was receiving special treatment, and so she wasn't even jealous. That's how it had always been" (Nam-Joo, 2020, p. 15).

2 Literature Review and Theoretical Framework

2.1 The Concept of Overeducation

Overeducation, also referred to as *overschooling* or *educational mismatch*, has been “defined as the difference between a worker’s attained or completed level of schooling and the level of schooling required for the job the worker holds” (Leuven and Oosterbeek, 2011, p. 9). An issue investigated for several decades, one of the earliest discussions was about overeducated Americans by Richard Freeman in 1976. Since then, as an increasing number of people participate in higher education, the topic of overeducation has become even more relevant. In general, the academic literature distinguishes between four different approaches to measuring overeducation (Verhaest and Omey, 2006). Two of these approaches are subjective: direct self-assessment, and indirect self-assessment. The other two are objective: job analysis, and the statistical ‘realised matches’ method.

The first two ways of measurement, direct and indirect self-assessment, rely on self-reports of individuals. Direct self-assessment is the worker’s perception of how their level of education compares with the educational requirements of their job, the indirect self-assessment asks workers about the educational level required for their occupation (either based on the required level to do or to get the job) which is then compared to the education they actually have. In contrast, job analysis and realised matches do not involve asking the worker about their job. Job analysis involves job analysts stating the educational level firms require for a given position within occupational classifications. In contrast, the realised matches method is statistical, and compares the years of education an individual has to the average level of education of workers within the same industry or occupation (or a combination of both). Individuals are considered overeducated if they have more education than this average by some statistical distance (usually one standard deviation; Verhaest and Omey, 2006). An advantage of the Korean data we use, and thus our study, is the ability to measure overeducation using both a subjective measure, direct self-assessment, and an objective measure, realised matches.

Most studies rely on just one of the four measures, often because of data constraints. Verhaest and Omey (2006) is a rare exception that investigates all four measurements of overeducation using SONAR data of Flemish school leavers. They found that the effects of overeducation and the conclusions drawn from this clearly depend on how it is measured.

Moreover, in an earlier meta-analysis of 25 European and American studies, Groot and Maassen van den Brink (2000) found that, compared to the other measurements, the realised matches approach gives lower estimates of educational mismatches. More recently, Clark et al. (2017) found that overeducation is not just a short-term phenomenon with overeducation persisting twelve years after labour market entry. They also found that women in the US are about 5 to 13% more likely to be overeducated than men. The arguments they give for this finding are that female workers might attach more importance to the compatibility of job and family, and therefore accept jobs that do not fit their educational level, as well as the direct discrimination of women in the labour market (Clark et al., 2017). These issues are likely to be of particular importance for understanding the Korean labour market as well as the consequences of its conditions, as discussed below, and to justify our choice to investigate genders separately.

Previous work investigating overeducation in Korea is scarce. Using the 2005 Korean National Follow-up Survey of College and Graduate School Graduates on Economic Activity with data from 12,666 individuals who graduated in 2003 and the indirect self-assessment to measure worker's overeducation, H. Kim et al. (2016) found that in Korea 70.4% of the sample worked in a job that matches their education whereas 17.4% of the workers were overqualified. In addition, they found that both two-year Korean female college graduates and female workers with graduate degrees were more likely to be matched (and thus not overeducated) than equivalent males (H. Kim et al., 2016). Our results below suggest that if overeducation was measured objectively this outcome might be reversed.

Similarly, a study of the Japanese labour market by Kucel et al. (2016) using the indirect self-assessment measure could not find a significant relationship between the female gender and overeducation, and could therefore not confirm that Japanese women are more likely to be overeducated than men. One explanation is that women tend to understate their actual job expectations, and, as a result, their overall level of overeducation. Again, it follows that, when measured subjectively, overeducated women report to be adequately educated, though they may not be (Kucel et al., 2016). Occupational crowding may also play a role here, with female graduates working with other female graduates disproportionately in non-graduate jobs. This may also explain why in the study of H. Kim et al. (2016), more men self-report being overeducated than women. However, if measured using objective approaches (realised matches or job analysis), more women are expected to be overeducated in Korea,

suffering from labour market discrimination and societal norms about family life.⁵ These observations further highlight the importance of considering both subjective and objective measures of overeducation.

2.2 Overeducation and Income

A key area of interest regarding the overeducated has been with respect to their income. The income of the overeducated can be compared to those with the same level of education but in matched employment, and secondly, to those in similar employment but matched (i.e. lower) education. Previous studies have established that overqualified workers earn more money than their colleagues who are adequately educated for the similar job. However, the overeducated also earn less money than individuals with the same schooling working in a job that matches their education (see, for example, Sicherman, 1991; Lin and Wang, 2005; Verhaest and Omey, 2006). Using both pooled OLS estimates and fixed effects regressions, Bauer (2002) found that overeducated (measured by the realised matches method) German males earn 10.6% less than their peers who have the same level of education but work in a job that matches their education. Verhaest and Omey (2006), using the four measurements of overeducation presented above, found some differences regarding overeducation and wages, though all indicate a significant negative relationship when comparing overeducated workers to appropriately educated workers with the same educational level. Furthermore, in their longitudinal study, Clark et. al (2017) found that although additional years of schooling are associated with higher wages, the rate of return for additional years of schooling that surpass the job requirements is only approximately a third the size of the return associated with additional years of schooling that match the required level.

In Korea, H. Kim et al. (2016) found that the subjectively overeducated earn less than workers whose degree matches the one required by their job, and that the amount differs between the genders: men earn 4.48% less and women 7.24% less. K. Park et al. (2018),

⁵ In particular, the labour supply of females is posited to follow an 'M curve' (J. Kim et al., 2016). This shows that their participation in the labour market decreases during the late 20s and early 30s (because they are having children and Korea has a lack of good and affordable childcare facilities), increases mainly during the 40s and decreases again at the end of their working life. Therefore, for the majority of Korean women, it is expected that they will leave the labour market again after some years resulting in the fact that, once they start working, they already know that this is only a temporary situation. Clark et al. (2017) also suggest that a woman's overeducation can be partly explained by her role as a mother.

using a sample of 2,832 working Korean doctorate holders from the Korean survey of Careers and Mobility of Doctorate Holders (KCDH), find that approximately 44% reported to be subjectively overeducated, and also found a wage penalty: overeducated doctorate holders earn approximately 6.5% less than those in a job that matches their schooling. Additionally, they found that female doctorate holders in Korea earn approximately 11.1% less than male Koreans with doctoral degree (K. Park et al., 2018). Given the statistics about participation in higher education in Korea (see section 1) and the findings of previous studies, gender forms a part of our investigation. The next subsection discusses overeducation and life satisfaction both generally and in the Korean context.

2.3 Overeducation and Life Satisfaction

In the last few years there has been interest in the relationship between overeducation and life satisfaction. Using the indirect self-assessment method and two waves of the European Social Survey, Artés et al. (2014) found a significant negative effect of overeducation on life satisfaction by comparing the overeducated with individuals that have a similar educational level and are not overeducated. An argument presented for this finding is that education raises expectations which, for the overeducated, are not met in comparison to the non-overeducated. Similarly, using the realised matches objective method and several waves of British panel data, Piper (2015) found a negative relationship between overeducation and life satisfaction which became less pronounced for later cohorts. Thus, as overeducation became more prevalent in the UK (due mainly to the expansion of participation in higher education), being overeducated became less damaging to well-being: a result potentially attributable to changing comparison effects and social norms.

For well-being generally, relative comparisons have been found to be important (Senik, 2005; Clark et al., 2008) and been argued to be a main pathway through which overeducation affects life satisfaction (Piper, 2015; Yin, 2015). If individuals compare themselves to others who have a lower level of education, but work in similar employment positions, they are likely to be dissatisfied. When investing time and money into the attainment of a degree, individuals expect that this will bring about benefits in the future. However, when these hoped-for benefits are not obtained, individuals may be disappointed about the lack of returns for their investment in their human capital. This disappointment should be seen in

lower life satisfaction. As the Introduction makes clear, such a situation is likely to be prevalent for the overeducated in Korea.

The negative relationship between overeducation and life satisfaction is also found by Salinas-Jiménez et al. (2016) who, similar to Artés et al. (2014), used data from the European Social Survey. They extended the analysis using a quantile regression model, and found that being overeducated, again measured by indirect self-assessment, is negatively associated with life satisfaction and that there are differences across the distribution. Notably, at the top of the happiness distribution, education effects are lower (Salinas-Jiménez et al., 2016). Additionally, in a study that uses ESS data from the working population of 25 European countries (N=19,089), overeducated workers (measured using both objective methods) seem to be more depressed than the workers with a matched educational level for their occupation (Bracke et al., 2013). Using both the realised matches and the job analysis method, the authors observed higher levels of depressive symptoms for overeducated individuals. Verhaest and Omey (2006) found that the overeducated were less satisfied with life and less likely to engage in training.

While, as far as we can tell, there is no academic literature about overeducation and life satisfaction in the Korean context – our work is seemingly the first – there is potentially relevant evidence on Korean adolescents who are undertaking education. Park and Huebner (2005), for example, found that Korean students are less satisfied with life than US students, and that the contribution of the school satisfaction domain to global life satisfaction is higher for Korean adolescents. As explained in the Introduction, traditional Confucianism sees education as a key variable for success and results in high educational pressure on Korean students. Since education is an important determinant of Korean individuals' life satisfaction, it is expected that overeducated Korean graduates who recently finished their education face the same situation as these Korean adolescents and are thus likely to be less happy because they cannot adequately use the education for which they have invested a significant amount of time, finance and effort. For these reasons, and those mentioned above, we expect overeducated Koreans to be less satisfied with life than the non-overeducated.

As indicated in section 2.1, we expect gender differences in the size of the negative relationship between being overeducated and life satisfaction. Given cultural expectations, social norms, the 'M-curve' and other trends in labour market participation we expect

overeducation to be more distressing to men. Confucian cultures such as the Korean one are known for male dominance which gives Korean men greater privileges and opportunities. As a result, Korean men report higher life satisfaction than women (Park and Huebner, 2005). However, because their privileges and opportunities are likely to be key contributors to their life satisfaction, working in a job that does not fulfil their high expectations and aspirations and does not allow them to make use of their educational level makes them likely to be even less happy than women. This can also be argued using the social comparison theory. Based on social comparison theory, as men usually dominate higher job positions in Korea, they are also likely to compare themselves to those working in higher job positions (Lee, 2017). The fact that the Korean labour market is dominated by men makes it even more difficult for them not to suffer under their mismatching job position. Given that Korea has a large gender pay gap, it is conceivable that income may ameliorate the subjective well-being penalty of being overeducated more for males than it does females. Our empirical analysis takes this into consideration.

3. Data and Methods used

The data for our investigation come from the Korean Labour and Income Panel Study (KLIPS). Commencing in 1998, KLIPS is an annual longitudinal study covering approximately 10,000 individuals in each wave.⁶ In nearly all waves individuals are asked about their education, employment situation, income, life satisfaction, and many socio-economic factors, meaning the dataset is fruitful for many quantitative investigations. For our investigation one major advantage is that the data enables measurement of overeducation in both a subjective and an objective way. As the literature review demonstrates, how overeducation is measured can affect the incidence of overeducation and subsequent associations with income and life satisfaction. For the subjective measure, we make use of a question where individuals are directly asked whether they think that, in comparison to the level of education that they have, the level of their current work is (very) low, well-matched, or (very) high on a five-point scale. In our analysis, everyone who reports their level of work as low or very low perceives themselves as overeducated.

⁶ Please see https://www.kli.re.kr/klips_eng/index.do for more information and access to the data.

Our objective overeducation measure relies on the ‘realised matches’ way of measuring education. We use information from KLIPS about an individual’s highest qualification, and attach a years of ISCED schooling value to this using the method that UNESCO recommends.⁷ Following this, we calculate a mean and standard deviation of years of schooling for each combination of occupation and industry category. Individuals are then classed as overeducated if they have more than one standard deviation of education above the average for their employment group (i.e. their particular occupation-industry combination).⁸ This is one of the typical ways of calculating ‘realised matches’ overeducation, however given the increase in education generally over the life of our data, we also create an overeducation variable based on a particular occupation-industry-year combination. We show present descriptives and results from the more traditional measure below, though these are supported by this alternative calculation (available upon request). Life Satisfaction is measured on a five-point scale with respondents stating whether they are very satisfied (recoded as 5), satisfied (4), neither satisfied nor dissatisfied (3), dissatisfied (2) or very dissatisfied (1). Income is individual after-tax income deflated by the CPI, though if pre-tax income is considered, or household income, the results presented below are almost identical. Table 1 below presents descriptive statistics.

In the present analysis, we only consider individuals who are 35 years old or younger (however the results below are substantially the same without this restriction) for the following reasons: the rise in participation in the higher education sector in Korea is a recent phenomenon thus affecting younger people; the age restriction also makes the comparison group more realistic – for example, a 30 year old is unlikely to compare themselves to a 50 year old; and studies that consider the whole of working life and use the realised matches approach often conflate individuals changing their job with a change regarding whether they become overeducated or stop being overeducated.⁹ Regarding the latter point, after a certain age, individuals rarely increase their level of formal education and thus changes in the realised matches overeducation measure capture changes of industry and occupation

⁷ Details are here: <http://uis.unesco.org/en/isced-mappings>

⁸ Note well, with this measure, we exclude individuals who report no formal schooling who would otherwise be automatically classed as being overeducated. However, given our age restriction (discussed in the next paragraph) this is of negligible importance.

⁹ The youngest worker in our sample is 15, though only 0.05% of our sample is under 18 years old.

category. This conflation issue is particularly a problem when studies rely on fixed effects estimation, with its focus on changes for each individual.¹⁰ This partly explains our methodological choice explained below.

Table 1: Descriptive statistics for the overeducated and non-overeducated. KLIPS data 2002-2015.

	(1. Subjective measure)		(2. Objective measure)	
	Overeducated	Non-overeducated	Overeducated	Non-overeducated
Life Satisfaction (1-5)	3.22	3.44	3.52	3.41
Years of Schooling (ISECD)	13.83	13.92	16.82	13.57
Real Disposable Income,	2036.19	2586.55	2821.75	2447.43
Female	35.7%	42.0%	28.8%	43.2%
Male	64.3%	58.0%	71.2%	56.8%
Age	28.5	29.5	30.0	29.4
Single	62.8%	53.9%	54.9%	55.8%
Married	35.7%	45.0%	44.6%	42.9%
Separated	0.4%	0.2%	0.08%	0.2%
Divorced	0.9%	0.8%	0.4%	0.1%
Widowed	0.07%	0.04%	0%	0.04%

Note: Life satisfaction is positively coded; real disposable income is annual and measured in units of 10,000 Won (which is about 7.5 euros); years of schooling is the standard ISECD measure; the rest are binary variables.

A comparison between those who consider themselves overeducated and those that do not (i.e. the first two columns) reveals that the subjectively overeducated are, on average, less satisfied with life. They also earn considerably less money, and are less likely to be married. Both groups have a very similar average amount of schooling. In contrast, the objectively overeducated are slightly more satisfied with life, on average, than the non-objectively overeducated (columns 3 and 4). This is in contrast to the discussion in section 2.3, however

¹⁰ Furthermore, as Chadi and Hetschko (2016) show, there is often a honeymoon effect with new jobs that can result in higher life satisfaction. Dependent upon whether a change in job categorises someone as moving from being overeducated to matched or vice versa, the honeymoon effect can bias the result.

the objectively overeducated also, on average, receive considerably more income: a potential reason for the finding of higher average life satisfaction. The overeducated – expected given how it is measured – have, on average, more years of schooling. Gender, age, and marital status reveal no noteworthy differences between the two groups.¹¹ Comparing the subjectively overeducated and objectively overrated reveals that the subjectively overeducated report less life satisfaction and receive less income; once again indicating that income will be an important control variable for the overeducation-life satisfaction relationship.

Table 2 provides averages for real after tax income by gender and all, and the differences in income for the genders and demonstrates descriptive evidence for some of the arguments made in sections 1 and 2. Furthermore, the averages in our sample reflect official statistics for the average incomes of females and males in Korea.

Table 2: Mean (and standard deviation) of annual real after tax income, 10,000 South Korean Won. KLIPS data 1998-2015.

	(1. Females)	(2. Males)	(3. All)
	Real after tax income	Real after tax income	Real after tax income
Subjectively overeducated	1695.76 (1167.76)	2207.46 (1303.04)	2036.19 (1282.17)
Subjectively not overeducated	2088.96 (1184.14)	2927.85 (1636.40)	2586.55 (1525.96)
Objectively overeducated	2240.78 (1366.33)	3049.88 (1788.09)	2821.75 (1718.72)
Objectively not overeducated	2016.08 (1169.20)	2756.40 (1576.19)	2447.43 (1466.71)

Table 2 shows that, in all four categories, females receive substantially less real income after tax than males.¹² Our discussion above suggests that, controlling for income (and other commonly control variables in life satisfaction estimations), the expected negative

¹¹ The descriptive statistics indicate that there is also no difference between the overeducated and not overeducated for health status. However, health status is only available in many waves of the dataset as a subjective measure and is not included in our analysis. Some scholars claim that subjective health, in a subjective well-being context, falls into the category of a bad control (Angrist and Pischke, 2008). All results presented, however, are robust to the inclusion or exclusion of subjective health status.

¹² Information about whether an individual works full or part-time only appears in a few of the later waves, so it is not included in our analysis. The vast majority of workers interviewed as part of this survey are full-time.

association of being overeducated with life satisfaction will be lower for females. However, not controlling for income may change this picture given the much lower average wages females earn. Table 2 also shows that the average income for subjectively (objectively) overeducated people are lower (higher) than those who are not. Thus, it is conceivable that individuals deciding that they have too much education for their job might be responding to what they consider to be their low pay; certainly, as Table 1 shows, the subjectively overeducated and not subjectively overeducated have, on average, only a negligible difference with their actual years of schooling (despite the large pay differentials). Also noteworthy is the finding that the objectively overeducated have more income than the objectively not overeducated, as well as having more income on average than the subjectively overeducated. These substantial income differences highlight the importance to not just relying on subjective measures and to carefully consider the role of income in any investigation of overeducation.

Ideally, for our estimation technique we would exploit the longitudinal nature of the dataset. However, with one exception we are unable to. With the realised matches measure of overeducation, there is not enough 'within' a person change: individuals rarely move from not being overeducated to being overeducated or back. One solution to a lack of within variation is to employ dynamic panel estimation techniques like System General Method of Moments (GMM). The obtained coefficients from this estimator fully support the results presented below, though the diagnostic testing of the models indicate that much caution is necessary if used for this investigation.¹³ As a consequence, for all of the estimates for objective overeducation we use ordered probit analysis taking account of the ordinal nature of the dependent variable, even if we cannot take into account individual unobserved heterogeneity (for reasons just given). We present the coefficients obtained by the estimations and the key marginal effects calculated post-estimation. For comparison purposes, we employ the same method for the subjective measure of overeducation too. Given that there is sufficient 'within' variation with the subjective measure, we first assess this via fixed effects analysis, and then proceed to the ordered probit estimations of both measures of overeducation. Due to the importance of income (see Table 2), we undertake –

¹³ The obtained coefficients reveal that realised matches overeducation is negative and significant (for the main model the coefficient is -0.138, with the z-statistic being -8.41), but the diagnostic testing of the models is not supportive of its use for this investigation.

for each measure of overeducation – two estimations: one that controls for income and one that does not.¹⁴

4. Results

Table 3 presents the results from fixed effects estimation for the subjective measure of overeducation. There are two columns for each group: all, female and male. The first column for each group does not control for individual income, whereas the other column does. Importantly, our subjective overeducation variable captures changes of how an individual perceives their level of work compared to the education they have: As the first paragraph of section 3 states, individuals are subjectively overeducated if they rate the level of work comparison as low or very low.

Table 3: Fixed effect coefficients from Korean Panel data. KLIPS data 2002-2016.

	(1. All)	(2. All)	(3. Females)	(4. Females)	(5. Males)	(6. Males)
	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction
Subjectively overeducated	-0.084*** (0.010)	-0.070*** (0.011)	-0.059*** (0.017)	-0.021 (0.019)	-0.097*** (0.012)	-0.095*** (0.014)
Years of Schooling	0.011 (0.008)	0.005 (0.009)	0.009 (0.011)	0.005 (0.013)	0.011 (0.012)	0.007 (0.013)
Real pre-tax Income		0.004*** (0.000)		0.003*** (0.000)		0.004*** (0.000)
Age	0.080*** (0.022)	0.078*** (0.025)	0.080** (0.034)	0.074* (0.038)	0.074** (0.030)	0.070** (0.034)
Age squared	-0.001*** (0.000)	-0.001*** (0.000)	-0.002*** (0.000)	-0.001*** (0.000)	-0.001** (0.000)	-0.001** (0.000)
Married	0.160*** (0.014)	0.175*** (0.016)	0.184*** (0.023)	0.190*** (0.025)	0.144*** (0.019)	0.164*** (0.021)
Separated	-0.013	-0.026	0.196	0.233*	-0.280*	-0.373**

¹⁴ We also undertake all of the objective overeducation estimations again, narrowing down the comparator group to members of the same sex (as well as occupation-industry combination), though, as Table 5 shows, this does not make much difference to the results obtained.

	(0.094)	(0.101)	(0.124)	(0.133)	(0.143)	(0.153)
Divorced	-0.102*	-0.109*	-0.040	-0.074	-0.154*	-0.133
	(0.053)	(0.059)	(0.071)	(0.081)	(0.079)	(0.087)
Widowed	-0.535	-0.488	-0.516	-0.481		
	(0.372)	(0.367)	(0.371)	(0.366)		
Constant	1.615***	1.823***	1.395***	1.879***	2.541***	2.147***
	(0.401)	(0.408)	(0.327)	(0.395)	(0.427)	(0.537)
Observations	28,433	23,480	11,588	9,233	16,845	14,247
Individuals	6,848	5,920	3,010	2,518	3,838	3,402
R-squared	0.038	0.036	0.047	0.044	0.035	0.037

*Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Income unit is 1,000,000 Won (about 750 euros). Reference category: single. Region and year controls included.*

For everyone together and males separately, subjective overeducation is associated with lower life satisfaction. However, for females the situation is less clear cut and supports the speculation based on the descriptive statistics in Table 2: the dissatisfaction that females report with the level of their job compared to their education level, may reflect their relatively low salary, at least in part. When real disposable income is not controlled for (column 3), subjectively overeducated females are less happy than females who do not report being overeducated for their jobs. However, this difference is no longer significant when income is controlled for (column 4).¹⁵ Thus, income does seem to play a role in the judgement of Korean females regarding the requirement of their job compared to their education level. For males, even though Table 2 shows us that the subjectively overeducated have substantially less income than the subjectively not-overeducated, income does not modify the overeducation-life satisfaction relationship. Therefore, for subjective overeducation in Korea we uncover a substantial gender difference.¹⁶ We now turn to the objective realised matches variable, which only has a low positive correlation with this subjective measure (approximately 0.1). This may be, partly, a result of occupational crowding, gender discrimination and resulting societal norms.

¹⁵ Caution is necessary with this conclusion however, because when ordered probit estimation is used – see Table A1 in the Appendix – subjectively overeducated female Koreans are still less satisfied with life, when income is taken into account, than those who do not consider themselves overeducated.

¹⁶ The changes between the columns for the constant term may be indicative of the gender inequalities discussed in sections 1 and 2 and support the gender based findings and arguments of Park and Huebner (2005).

Table 4 presents ordered probit analysis regarding life satisfaction and investigates objective overeducation. The columns follow the same pattern as in Table 3, and given the higher level of income of the objectively overeducated we are looking at two things: are the overeducated less satisfied with life than those not overeducated; and does the higher income compensate for any life satisfaction penalty due to being overeducated (if such a penalty is found).¹⁷

Table 4: Life Satisfaction and Objective Overeducation. Ordered Probit Analysis Results. KLIPS data 2002-2016.

	(1. All)	(2. All)	(3. Females)	(4. Females)	(5. Males)	(6. Males)
	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction
Objectively overeducated	-0.322*** (0.025)	-0.306*** (0.028)	-0.222*** (0.045)	-0.180*** (0.051)	-0.342*** (0.032)	-0.307*** (0.036)
Years of Schooling	0.157*** (0.004)	0.136*** (0.005)	0.141*** (0.007)	0.114*** (0.008)	0.164*** (0.006)	0.124*** (0.007)
Real Income		0.014*** (0.001)		0.018*** (0.001)		0.015*** (0.001)
Age	0.163*** (0.023)	0.127*** (0.029)	0.204*** (0.035)	0.140*** (0.043)	0.178*** (0.034)	0.164*** (0.043)
Age squared	-0.003*** (0.000)	-0.003*** (0.001)	-0.004*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Married	0.512*** (0.018)	0.465*** (0.019)	0.444*** (0.029)	0.456*** (0.032)	0.544*** (0.022)	0.462*** (0.025)
Separated	-0.438*** (0.159)	-0.418** (0.166)	-0.205 (0.205)	-0.138 (0.216)	-0.900*** (0.251)	-0.983*** (0.263)
Divorced	-0.267*** (0.073)	-0.312*** (0.078)	-0.265*** (0.096)	-0.296*** (0.104)	-0.379*** (0.116)	-0.508*** (0.121)
Widowed	-0.804** (0.395)	-0.762* (0.420)	-0.698 (0.452)	-0.644 (0.492)	-1.291 (0.795)	-1.178 (0.795)

¹⁷ Additionally controlling for mother and father's education has almost no impact on the results presented here (and in the previous table).

Constant cut1	-0.035 (0.470)	-0.736 (0.573)	1.052 (0.715)	-0.429 (0.934)	-0.147 (0.644)	-0.272 (0.785)
Constant cut2	1.284*** (0.467)	0.613 (0.569)	2.341*** (0.710)	1.006 (0.925)	1.203* (0.641)	1.058 (0.781)
Constant cut3	3.365*** (0.467)	2.720*** (0.569)	4.377*** (0.711)	3.077*** (0.925)	3.330*** (0.641)	3.211*** (0.782)
Constant cut4	5.973*** (0.468)	5.427*** (0.570)	7.012*** (0.713)	5.816*** (0.927)	5.932*** (0.642)	5.929*** (0.783)
Observations	27,814	23,106	11,405	9,173	16,409	13,933

Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Table 3 note.

Ceteris paribus, Table 4 reveals that the more years of schooling a Korean individual has, the more satisfied with their life they are. However, controlling for this, if they are overeducated they are less satisfied than those who are 'matched' with respect to their education and job. With and without the income control, based on the size and confidence intervals of the coefficients obtained for objective overeducation, males, as expected, suffer a greater happiness penalty than females. Thus, the higher income of the objectively overeducated (see Table 2) does not seem to offer much compensation in terms of life satisfaction.¹⁸

Table 5: Marginal effects post ordered probit estimation. KLIPS data 2002-2016.

	(1. All)	(2. All)	(3. Females)	(4. Females)	(5. Males)	(6. Males)
	No income control	Income control	No income control	Income control	No income control	Income control
Subjectively overeducated						
Very Satisfied	-0.004***	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***
Satisfied	-0.176***	-0.154***	-0.136***	-0.093***	-0.190***	-0.171***
Neither	0.162***	0.144***	0.125***	0.088***	0.175***	0.159***
Dissatisfied	0.018***	0.013***	0.013***	0.007***	0.018***	0.014***
Very Dissatisfied	0.000***	0.000***	0.000***	0.000*	0.000***	0.000***

¹⁸ For comparison purposes, Table A1 in the Appendix shows the same table for the subjective measure of overeducation. Here, we simply note no substantial difference for the main variables of interest.

Objectively overeducated						
Very Satisfied	-0.004***	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***
Satisfied	-0.125***	-0.119***	-0.086***	-0.070***	-0.132***	-0.120***
Neither	0.111***	0.108***	0.077***	0.064***	0.117***	0.109***
Dissatisfied	0.017***	0.013***	0.011***	0.007***	0.017***	0.013***
Very Dissatisfied	0.001***	0.000***	0.000***	0.000*	0.000***	0.000***
Objectively overeducated II						
Very Satisfied			-0.002***	-0.002***	-0.003***	-0.002***
Satisfied	n/a	n/a	-0.094***	-0.085***	-0.141***	-0.124***
Neither			0.084***	0.080***	0.129***	0.116***
Dissatisfied			0.012***	0.006***	0.015***	0.011***
Very Dissatisfied			0.000***	0.000*	0.000***	0.000***

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5 presents the marginal effects associated with overeducation. The main changes reflect individuals less likely to be satisfied with life and more likely to be neither satisfied nor dissatisfied with life. This is the case for both genders and whether income is controlled for or not. For individuals who are either very satisfied or very dissatisfied with life, there is negligible change with respect to being overeducated rather than not overeducated (and vice versa). This result supports the similar finding of the top end of the distribution that there is little movement at the extremes of the well-being distribution found by Salinas-Jiménez et al. (2016).

The marginal effects of Table 5 also highlight that Korean males are more affected by overeducation than females. This is in line with the arguments advanced in section 2: males, in a male dominated society with more opportunities and better pay than females, suffer more when their investments in education are not sufficiently rewarded in a (favourable) labour market; females are also affected, though the percentage changes are lower. For both genders, controlling for income moderates the overall findings: given the considerably lower average incomes earned by females, controlling for income has a bigger impact on the marginal effects for being overeducated than it does for males. A claim made based on a comparison of the changes between the third and fourth column (i.e. females) and fifth and

sixth column (males). The last panel changes the objective overeducation industry-occupation comparator group to only include members of the same sex: for males this makes negligible difference whereas for females there is a minor increase in the marginal effects obtained post-estimation. The next section discusses these results in the context of the literature review and Korean context.

In line with the notion that the negative association with overeducation might fade over time as more peers are also overeducated, we investigated overeducation at two different points in time (similar to Piper, 2015, p. 10-12, which found this with British panel data). The two points in time are 2002-2006, the first five years of available data, and 2012-2016, the last five years of available data, at the time of writing. In most cases, the results are in line with those of Table 5. In the early period the results are similar, as they are in the later period for both genders together and males. An exception is found in the later period for females, and the marginal effects (for both periods) are presented in Table 6.

Table 6: Overeducation and life satisfaction (females only), 2002-2006; 2012-2016. KLIPS data 1998-2016.

	(1. 2002-2006)	(2. 2002-2006)	(3. 2012-2016)	(4. 2012-2016)
	No income control	Income control	No income control	Income control
Objectively overeducated				
Very Satisfied	-0.004***	-0.003**	-0.001**	-0.000
Satisfied	-0.118***	-0.097***	-0.0731**	-0.049
Neither	0.093***	0.082***	0.071**	0.048
Dissatisfied	0.028***	0.019***	0.003**	0.002
Very Dissatisfied	0.001***	0.000	0.000	0.000

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The key difference here is that in the more recent period, when income is controlled for, there is no statistically significant difference between overeducated and not overeducated females in terms of life satisfaction.¹⁹ This possibly reflects both the comparison effect and the lower expectations of success in the labour market given gender inequality and social norm expectations about motherhood. Females engage in higher education even though

¹⁹ The p-values for these particular marginal effects are approximately 0.16.

they do not necessarily expect this to be rewarded in the labour market, and in the later period they are less alone in such a situation given the increases in participation and completion of tertiary education courses (see Figure 1), which could be an important explanation for the found lack of statistical significance (last column of Table 6).

5. Discussion: gender inequality in Korea; limitations

“The world had changed a great deal, but the little rules, contracts and customs had not, which meant the world hadn’t actually changed at all. [...] Do laws and institutions change values, or do values drive laws and institutions?”

Kim Jiyoung, Born 1982, Nam-Joo, 2020, pp. 119-120

The issue of gender inequality in the labour market is particularly highlighted by the fact that 90% of top jobs are held by Korean men (World Economic Forum, 2019), and that Korea has the largest gender pay gap among OECD member states (OECD, 2017). As already mentioned, the country ranks very low in the Global Gender Gap Index (World Economic Forum, 2019). Moreover, Korea has also ranked the last among all surveyed countries in The Economist’s Glass-Ceiling-Index for many years (The Economist, 2020). It follows that while women in Korea do tend to attain a similar or even higher level of education than their male counterparts, their chances and opportunities in the labour market are relatively limited.²⁰ This gender inequality was also prevalent in our study which, through the prism of overeducation, indicated that the levels of gender inequality in Korea is a substantial problem. Females are more successful than males, in terms of tertiary education, and find it harder to find appropriate jobs in the country. However, the mismatch of education and employment does not make them as unhappy as it does males. This is suggestive of both lower individual expectations, tradition, and societal norms.²¹

The consequences from the discrimination of women in their everyday life and the labour market as well as the underuse of their human resources are several, not only for individual

²⁰ Kim Jiyoung, Born 1982: “Women don’t stay [in the company] because you make it impossible for us to stay” (Nam-Joo, 2020, p. 85).

²¹ As already stated above, according to the ‘M curve’, Korean women usually leave the labour market to care for their children (J. Kim et al., 2016), which is a reason why many employers decline to employ women despite their high educational levels. Since the women are used to this discrimination they do not suffer that much as their male counterparts. Another reason is the discrimination of women in society.

workers but also for the Korean economy in general. A higher percentage of females attain university degrees than males, but find it more difficult to find employment that rewards their investment in their human capital.²² That females are less negatively affected by overeducation than males, we argue, reflects two main phenomena: lower expectations, and social norms. In a society where gender inequality is prevalent (in terms of pay, promotion and job prospects), females do not try and do not expect to get good jobs.

This reduced life satisfaction is a problem for the individuals themselves, as well as the companies they work for and Korea in general. The discrimination of highly educated women in the labour market like for example the preference of employers towards male workers who do not leave for maternity even increases the issue of overeducation in Korea. Many well-educated Korean women struggle with finding an appropriate job after graduation, and if they find one, they feel the discrimination through unequal payment, lower career opportunities or sexual harassment at work.²³

Korean society appears to have many gender inequalities.²⁴ Our analysis suggests that future research should consider the large gender gaps in Korea and its implications for individual well-being, institutional success and economic growth among other issues of potential relevance. Apart from discrimination of women in the labour market, a further aspect that intensifies the issue of overeducation and its association with gender inequality in Korea is found in Confucianism – an aspect that leads to high educational pressure and a mismanagement of supply and demand for highly educated labour in Korea. It has also often been argued that men’s superiority to women as well as the suppression of women in society are deeply rooted in these cultural patterns (for example, Koh, 2008).

Already visible changes in the thinking of the Korean youth and especially women have gained a lot of attention worldwide. Korean women use social networks or protest on the streets in order to fight against the mistreatment of women in the country. For example, they fight against sexual harassment and violence against women, and demand to reduce the educational pressure put on them. Today, Korean women still take a suppressed role in

²² Kim Jiyoung, Born 1982: “Jiyoung continued to apply for work, lowering her standards in small increments [...]” (Nam-Joo, 2020, p. 91).

²³ Kim Jiyoung, Born 1982: “He found it more cost-efficient to invest in employees [men] who would last in this work environment than to make the environment more accommodating” (Nam-Joo, 2020, p. 111).

²⁴ The gender gap, in general, has already been a focus of recent work (Minkus, 2019; Piper, 2019).

society, often in the obligation to obey men, be it the father or later the husband or son. Another observation is the decreasing fertility rate in Korea. In 2018, on average, every Korean woman had one child compared to more than six in 1960 (World Bank, 2020c). Among the reasons are that modern Korean women want to have an independent life and follow their career. The so-called 'Sampo Generation' rejects dating, marriage and childbirth (Hwang, 2011) to protest against a life as a suppressed (house)wife, discriminated on the labour market for their role as a women and mother. In the future, when the fertility rate does not grow, the ageing Korean society may also affect the economy negatively (Quick and d'Efilippo, 2019)

The Korean government already set up some government policies to improve the current (labour market) situation. The so-called 'Basic Plan for Gender Equality Policies', presented on the website of the Ministry of Gender Equality and Family of the Republic of Korea, is a plan renewed every five years in order to reduce gender inequality. Within this plan, 22 implementation strategies are presented to promote awareness on the topic of inequality, strengthen women's role in the labour market, improve the work-life balance and eradicate violence against women (Ministry of Gender Equality and Family, 2020).²⁵

As emphasised by the OECD (2017), quotas should be introduced to help promote women in management and political positions and use their qualifications while receiving a fair remuneration. By strengthening their role in the labour market, the usage of women's high qualifications could lead to a decrease of overeducated female workers in Korea. In addition to that, as a further effect, overeducated men would compare themselves less to men in higher job positions as these are then not only held by men, which, in turn, could attenuate the negative effect on their life satisfaction. Thus, one potential consequence of a more gender equal society and labour market could be that less individuals would suffer from overeducation and its negative effects. Whether overeducation is less present in a more gender equal, developed society and what its effects are could be a subject for future research.

²⁵ Kim Jiyoung, Born 1982: "In 1999, the year Kim Eunyong turned twenty, new legislation against gender discrimination was introduced, and in 2001, the year Kim Jiyoung turned twenty, the Ministry of Gender Equality was formed. But in certain pivotal moments in women's lives, the 'woman' stigma reared its head to obscure their vision, stay their hands and hold them back. The mixed signals were confusing and disconcerting" (Nam-Joo, 2020, p. 60).

There are some limitations to this work as some issues could not be addressed with the KLIPS dataset. For instance, it is difficult to know if individuals who perceive themselves to be overeducated see it as their own fault or the fault of the Korean society. These two possibilities may have a differing relationship with well-being. Also, we do not know if individuals choose to be overeducated on purpose, perhaps as insurance in the labour market, or because they were previously studying their passion rather than anything that they expected to help them secure a good job. Again, these may have different consequences for the well-being of the overeducated. In general, the overeducated are likely to be heterogeneous and we rely on average effects for our results. We might learn who the overeducated compare themselves with and explore the well-being associations for different comparison groups. A qualitative study where the overeducated are interviewed may supplement this research and find nuance that we might miss. Given the dataset, we were unable to address the possibility that individuals with a migration background may find it harder to secure work which suits their education, perhaps due to labour market discrimination or unrecognised qualifications (Wen and Maani, 2018; Bijedić and Piper, 2019). The overeducated may be pushed into self-employment, or may even leave Korea to take up more fitting employment abroad.²⁶ Information about children is seemingly complex in the KLIPS dataset, though none of the results are any different with the additional inclusion of a control for children in the household. Motherhood thus remains an interesting issue for future research to address.

6. Conclusion

Overeducated Koreans are less satisfied with life than those not overeducated. Furthermore, this lower life satisfaction is stronger for males than females. Such a result is consistent with males having higher expectations from the labour market than females. Despite females being better educated, in general, they suffer from labour market (and other) discrimination as recorded by organisations including the OECD, the World Economic Forum's Gender Gap Index, and The Economist (see references elsewhere). This finding is quite robust, being consistent with (objective) overeducation being calculated in different ways considering

²⁶ As mentioned in the Introduction, thousands of Koreans take part in the 'K-Move' program which helps the young graduates to find a job abroad (Kim, 2018).

combinations of occupation, industry, year and gender, and held whether the sample was restricted to younger individuals or no age restrictions. How income was treated (individual pre-tax, individual post-tax, household), nor the inclusion or exclusion of subjective health status or whether they live in a household with children also did not affect the key findings.

Like other investigators, we find a substantial size difference between these different ways of measuring overeducation. Those who feel themselves to be subjectively overeducated have a larger negative association with life satisfaction than those who are classified as objectively overeducated (in comparison to the respective not overeducated categories). In our study, the role of income provides a further example of the danger in relying on just one method of measuring overeducation. For females, their much lower average income appears to explain somewhat the (subjective) self-reporting that the demands of their job are too low for the education they have. For males, income makes only a negligible difference. In contrast, those overeducated according to the various (objective) realised matches measures are paid considerably more than the not objectively overeducated (see Table 2), and are only slightly compensated by this larger salary regardless of gender. In general, and in line with the discussion of sections 1 and 2, we find that males have, *ceteris paribus* and on average, a larger negative association with being overeducated than females, a result concomitant with lower expectations induced by discrimination, despite the higher average level of education. The differences between objective overeducation and subjective overeducation also support a conclusion based upon expectations. Social norms may also reinforce this inequality.

Through this study, it becomes clear that the issue of overeducation in Korea is a very serious one that cannot be solved without addressing the presence of significant gender inequalities in the country. A more level playing field between males and females may attenuate the reduction in life satisfaction felt by males (due to less expectations of a good job and being the breadwinner) and help the Korean economy and society by better utilising the human capital of the well-educated female population. Both, society in general and the government must change their mindset and enforce stronger to help and encourage Korean women better integrate into society and the labour market. If not, Korean graduates (especially women) will continue to invest high amounts of time and money in education that cannot be used, or leave the country in order to find a good job which will have demographic as well as economic consequences for Korea.

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Appendix 1

Table A1: Life Satisfaction and Subjective Overeducation. Ordered Probit Analysis Results.
KLIPS data 1998-2016.

	(1. All)	(2. All)	(3. Females)	(4. Females)	(5. Males)	(6. Males)
	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction	Life Satisfaction
Overeducated	-0.416*** (0.018)	-0.374*** (0.022)	-0.347*** (0.029)	-0.232*** (0.037)	-0.437*** (0.022)	-0.417*** (0.028)
Years of Schooling	0.128*** (0.003)	0.109*** (0.004)	0.125*** (0.006)	0.102*** (0.007)	0.128*** (0.004)	0.107*** (0.005)
Real Income		0.013*** (0.001)		0.017*** (0.001)		0.014*** (0.001)
Age	0.137*** (0.020)	0.135*** (0.029)	0.182*** (0.031)	0.152*** (0.043)	0.134*** (0.029)	0.143*** (0.043)
Age squared	-0.003*** (0.000)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Married	0.489*** (0.017)	0.461*** (0.019)	0.431*** (0.028)	0.449*** (0.032)	0.516*** (0.021)	0.464*** (0.024)
Separated	-0.435*** (0.143)	-0.376** (0.167)	-0.297 (0.188)	-0.085 (0.217)	-0.725*** (0.221)	-0.978*** (0.263)
Divorced	-0.273*** (0.071)	-0.342*** (0.078)	-0.310*** (0.093)	-0.320*** (0.104)	-0.307*** (0.109)	-0.529*** (0.121)
Widowed	-0.643** (0.306)	-0.696* (0.379)	-0.549 (0.347)	-0.677 (0.428)	-1.129* (0.641)	-0.882 (0.797)
Constant cut1	-0.895** (0.440)	-1.052* (0.570)	0.375 (0.677)	-0.516 (0.931)	-1.290** (0.596)	-1.036 (0.778)
Constant cut2	0.458 (0.438)	0.308 (0.566)	1.686** (0.674)	0.934 (0.922)	0.097 (0.593)	0.302 (0.774)
Constant cut3	2.560*** (0.438)	2.432*** (0.566)	3.752*** (0.674)	3.010*** (0.923)	2.234*** (0.593)	2.480*** (0.775)
Constant cut4	5.151***	5.151***	6.369***	5.749***	4.818***	5.218***

	(0.439)	(0.567)	(0.676)	(0.924)	(0.594)	(0.776)
Observations	25,262	22,398	10,427	8,947	14,835	13,451

*Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Reference category: single. Estimates also includes region and year dummy variables.*

Appendix 2

***Kim Jiyoung, Born 1982* by Cho Nam-Joo: about the novel**

Kim Jiyoung is the central figure in the book ‘Kim Jiyoung, Born 1982’, a bestseller in Korea, China, Taiwan and Japan, written by Cha Yam-Noo. The book was published in Korea in 2016, and later translated into 18 languages as well as made into a film. The English translation of the novel was published in February 2020. Showing the struggles of a young woman living in modern Korea and the way gender inequality affects nearly every aspect of women’s lives in the country, the book struck a chord with Koreans. The fictional character became a symbol for gender inequality and sexual harassment, as Kim Jiyoung (the Korean equivalent for ‘Jane Doe’) could represent any Korean women.

The book’s sales indicate its popularity: ‘Kim Jiyoung, Born 1982’ is the first Korean book within a decade to sell more than one million copies. As part of the Korean version of the #MeToo movement, it helped move gender inequality centre stage in cultural and political discourse in Korea. After its publication the novel started and informed several debates about gender differences and women’s rights in the country. Female politicians and celebrities (for example K-pop stars) started to talk about the novel in public, creating more awareness of the topic of gender discrimination in Korea; a topic seemingly previously ignored for a long time. The novel has also been, famously in Korea, discussed in political circles.

Reports indicate that the film version of the book led to couples breaking up as well as angry responses from males dismissing the discrimination of women in their country, with many counter movements still not accepting the reality of women’s suffering in Korea. Gender inequality in the country also becomes revealed through the reactions of the public to the novel and its subsequent film. On the popular film rating platform *Naver Movie* men awarded its film 2.72 points out of 10 whereas women rated it on average with 9.51 points (39,836 online users). The novel itself provoked a failed crowd-funding campaign for a male

version called 'Kim Jihoon, Born 1990' intending to show the discriminations men are face in the country. Through the film, and the recent translations of the novel, the debate it has inspired about gender inequality in Korea has spread to other countries and continents and gets more and more attention worldwide.

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