

Over- and Underskilling in the Malaysian Labour Market: Evidence from the 2003 – 2012 Labour Force Survey (LFS)

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Abstract

The purpose of this article is to explore the incidence and the characteristics of over- and underskilled workers in Malaysia across the four Labour Force Survey (LFS) period – 2003, 2006, 2009 and 2012. Using the 1998 and 2008 Malaysia Standard Classification of Occupation (MASCO) of job analysis, of the total 164,896 workers, 66.4%, 13.5% and 20% respectively were classified as adequately-matched, overskilled and underskilled workers. Across year, the incidence of overskilling was lower in 2003 than the rest, around 12%. Underskilled workers were found to be higher than the average level in 2009 (24%) and 2012 (22%). There was no gender difference with respect to overskilled. For underskilled, the incidence was higher (lower) for male (female). Further exploration suggests that being more educated, male, young cohort, Malay ethnic increased the risk of being overskilled whereas underskilled workers were more prone for less educated people, female, non-Malay ethnics and older cohort. It was also considerable variations in overskilling and underskilling with respect to stratum, region, occupation levels, employment status and sector. These findings suggest that mismatch phenomenon seems prolong in the labour market and improving economic performance would reduce the incidence among workers.

Keywords: Labour Market, Job Analysis, Malaysia, Overskilling, Skills Deficit, Underskilling

Introduction

The expansion of higher education in Malaysia has allowed many individuals to gain access to higher education and with this comes higher expectations in the labour market in terms of a better job and improved salary. One can see that there was a significant increase in enrolments at the tertiary level in the public HEIs, especially after 1995. Between 1985 and 1995, the total number of students in tertiary education at degree level increased by more than 100%, but over the period of 1995 - 2013, it increased by over 200% - from 37,840 in 1985 to 75,709 in 1995 and increased to approximately 1.56 million in 2013 (Ministry of Education, 2014).

Unsurprisingly, there has been a dramatic rise in the number of graduates produced by public HEIs, from 62,990 (both diploma and degree qualifications) in 1985 to 273,893 in 2013 - an increase by 4.35 times. Nevertheless, the quality of the workforce in terms of educational attainment has tremendously increased between 1985 and 2013. While there has been a decline in the share of those employed who possess primary or informal qualifications, the share of those with secondary and tertiary education has increased significantly. By 2014, the percentage of the labour force with tertiary education increased to 47%, more than three times higher than it was in 1982 at about 7 percent, i.e. - from 318,000 to 3.85 million (Department of Statistics, 2015).

Despite these developments, there are a number of outstanding challenges facing the Malaysian labour market and the eminent one is a shortage of skilled workers (World Bank, 2009, 2011). The skills shortage in the labour market points to a mismatch between the skills provided by Malaysia's education system and those demanded by its firms. The fact that some studies in Malaysia have revealed that one-third of graduates in Malaysia have ended up in jobs that are not commensurate with their education background or what so-called over-education (Zulkifly, Ishak, & Abu Hassan, 2010; Lim, Rich, & Harris, 2008; Lim, 2013; Zakariya & Mohd. Noor, 2014; Zakariya, 2014a, 2014b) There is the case that overeducation leads to a lower job satisfaction (see for example Fleming & Kler, 2008; Peiró, Agut, & Grau, 2010) and reduce individuals' productivity via lower earnings outcomes (for example, see (Hartog, 2000; McGuinness, 2006; Leuven & Oosterbeek, 2011). There is also some evidence of negative externalities from having mismatched workers at the workplace (Belfield, 2010). This would suggest that overeducation may result in diminished not only individuals' well-being but also firm performance.

However, it is broadly accepted in the literature that over-education is a far from perfect indicator of mismatch in the labour market, especially related to unobserved heterogeneity/ability. Instead, overskilling¹ is much relevant on the context employment since its capturing the skills available and skills required for which could not be captured by formal educational achievements due to it makes explicit reference to the respondents' abilities to perform in a job (Mavromaras, McGuinness, O'Leary, Sloane, & Fok, 2010; McGuinness & Sloane, 2010). Although small literature has documented the incidence of overskilling (Mavromaras, McGuinness, O'Leary, Sloane, & Fok, 2010a, 2010b; Mavromaras & McGuinness, 2012; McGUINNESS & Wooden, 2009), no such study available in any developing countries included Malaysia. Indeed, Mehta, Felipe, Quising, & Camingue (2011) argued that mismatch might have different normative implications if it is found in developing economies where incomes are low, education levels are rising fast from a low base and the quality of education is highly variable.

¹ Overskilling can be defined as a worker's actual skill accumulated exceeded the skills required for jobs he/she doing (Allen & Weert, 2007).

The main objective of this paper is therefore to explore the incidence and the characteristics of over- and underskilled in Malaysia between 2003 and 2012 by employing Labour Force Survey (LFS). To do so, the paper is structured as follows. Section 2 provides some discussion of dataset utilised here and the measurement of over and underskilling whilst Section 4 explores the incidence of overskilling across individuals' and demographic background, academic characteristics and job attributes. Final section provides some concluding remarks.

Methodology Of The Study

Data

This study employs cross section data across the four Labour Force Survey (LFS) - 2003, 2006, 2009 and 2012 published by Department of Statistics (DoS). Total number of respondents were 275,750 across the four surveys and detail of the respondents and their labour force status at the time of the survey carried out is shown in Table 1. Roughly, men and women shared the same percentage - 50% each and over 29% of the total respondents came from 2009 survey and followed by 28% from 2012. Of the total respondents, nearly 60% were employed at the time of the survey and only 2 percent were unemployed. Around 38% were considered outside of the labour force. Higher proportion of employed and unemployed belongs to 2003 sample with the corresponding figures of 62% and 2.2 percent.

Table 1 Labour force status among respondents across year 2003 - 2012

Labour force status	2003	2006	2009	2012	Total
	N/%	N/%	N/%	N/%	N/%
Employed	31,550 62.1	39,575 59.0	47,183 58.6	46,588 60.3	164,896 59.8
Unemployed	1,123 2.2	1,281 1.9	1,655 2.1	1,364 1.8	5,423 2.0
Outside labour force	18,127 35.7	26,179 39.1	31,753 39.4	29,372 38.0	105,431 38.2
Total	50,800 100.0	67,035 100.0	80,591 100.0	77,324 100.0	275,750 100.0

Source : Labour Force Survey (LFS) 2003 – 2012. Department of Statistics

By gender, Table 2 displays that men were more likely to be employed than women (76% against 44%, respectively). Conversely, women tend to be being outside the labour force as compared to their men counterparts (55% vs 22%).

Nevertheless, the main focus of current paper of over and underskilling status among employed person, those who unemployed and being outside of the labour force were excluded from the analysis. Therefore, final sample for the analysis purpose is 164,896 persons in which males represent 63.4% and females signify 36.6%, respectively.

Table 2 Distribution of respondents' labour force status by gender across year

Survey	Male (137,976)			Female (137,774)		
	Employed	Unemployed	Outside labour force	Employed	Unemployed	Outside labour force
2003	79.02	2.81	18.17	45.29	1.62	53.09
2006	75.90	2.51	21.59	42.19	1.31	56.5
2009	74.53	2.60	22.88	42.6	1.51	55.89
2012	75.29	2.10	22.61	45.18	1.43	53.39
Total	75.9	2.480	21.62	43.72	1.46	54.82

Source : Labour Force Survey (LFS) 2003 – 2012. Department of Statistics

There are two main issues of the LFS, on the one hand is how one measured over and underskilling and on the other hands is how required skill is measured? In general, there are at least three major ways to measure overeducation² and for overskilling, there has no specific measure used except for the subjective method (Allen & Velder, 2001; Mavromaras et al., 2010a; Zakariya & Mohd. Noor, 2014b). Relative to other overskilling studies, here we utilise the objective method via job analysis approach as widely used in overeducation study. Specifically, we employ Malaysia Standard Classification of Occupation (MASCO) version 1998 and 2008 to determine the skills required for the jobs or occupations held by respondents.³

Table 3 Standard Occupational Classification (SOC) measure

Skill Level	Educational Level	Major Groups
Fourth	Tertiary education leading to a University or postgraduate university degree; Malaysian Skills Advanced Diploma (DLKM) Level 5 or equivalent.	Professionals
Third	Tertiary education leading to an award not equivalent to a first University Level; Malaysian Skills Certificate (SKM) Level 1-3, Malaysian Skills Diploma (DKM) Level 4.	Technicians and Associate Professionals
Second	Secondary or post-secondary education; Malaysian Skills Certificate (SKM) Level 1-3	Clerical Support Workers Service and Sales Workers Skilled Agricultural, Forestry and Fishery Workers Craft and Related Trades Workers Plant and Machine-operators and Assemblers

² The three major methods are the subjective, the realised method and the objective method.

³ For LFS Year 2001-2010, the 1998 Malaysia Standard Classification of Occupations (MASCO 98)" was utilized for LFS before 2010 and the 2008 Malaysia Standard Classification of Occupations (MASCO 08) " was used for the survey after 2010.

First	Primary education	Elementary Occupations
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Source: Malaysia Standard Classification of Occupation (MASCO) 1998 and 2008

We define firstly required skill as the skills required by workers to perform tasks and duties of an occupation. Based on the MASCO 98 and 08, the required skills consist of two dimensions; (1), skill level - which is a function of the complexity and range of tasks and duties involved, and (2) skill specialization - defined by the field of knowledge required the tools and machinery used, the material worked on or with, as well as the kinds of goods and services provided. With respect to the former, there are four skill levels available from one (low skill) to four (high skill). These four skills levels are based upon workers' actual educational level per se. However, these skill levels mean that the skill necessary to perform the tasks and duties of a given occupation can be acquired through informal training and experience apart from formal education.⁴ Table 3 summarises the skill level required to perform any particular job given.

By comparing individuals' actual skill level (S^a) and the required skills to do the job (S^r), we can identify over- and underskilling status amongst workers. A worker is then classified as overskilled if his/her actual skill is greater than the required skill ($S^a > S^r$) and becomes underskilled if his/her actual skill is below than the required skill ($S^a < S^r$).⁵ Table 4 shows the incidence of overskilling across the four surveys. In general, the proportion workers whose their jobs are matched to their skills level (well-matched) are considerably higher, i.e. 66%. Around 14% of the workers were considered to be employed in jobs below their skills level (overskilled) and another 20% were working in jobs which apparently lack of skills or deficit skills (underskilled). By year, well-matched group was higher than the average level, i.e. over 70% for 2003 and 2006 whereas the incidence of overskilling in 2003 was lower than the rest, around 12%. Underskilled workers were found to be higher than the average level in 2009 (24%) and 2012 (22%). To examine whether the distributions of frequency are equally across year, we run chi-square likelihood ratio test and the test suggest that the distribution of skills mismatch has changed across time between 2003 and 2012. However, the considerable expansion of higher education in the intervening 9 years might suggest that our second measure is not a wild exaggeration.

Table 4 Distribution of skills mismatch incidence between 2003 and 2012

Skills mismatch status	2003	2006	2009	2012	Total
	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>
	%	%	%	%	%
Adequately-matched worker	12,627	17,019	23,233	25,525	78,404
	71.36	71.51	62.14	65.23	66.44
Overskilled worker	2,199	3,460	5,202	5,116	15,977
	12.43	14.54	13.91	13.07	13.54

⁴ So, when classifying an occupation as for example engineer, it does not mean that the post can only be occupied by a formal, registered engineer, although the activities will correspond quite close to those undertaken by the said engineer. In addition, the focus is on the skills required to carry out the tasks and duties and not on whether a worker having a particular occupation is more or less skilled than another worker in the same occupation.

⁵ We should acknowledge that the objective method is advantageous as it provides a clear measure of the qualification level required to carry out the tasks and duties of a given occupation (Hartog, 2000). However, the method relies on the assumption that all jobs within the same occupational title have the same skill requirements with no allowance made for any variation in job levels. Indeed, McGuinness (2006) argues that workers with the same job title may be doing different jobs. In addition, the occupational code takes time to compile and this may be costly. In which case, the information collected may become outdated quickly. This is especially problematic in a dynamic economy where required qualifications and skills are likely to change.

Underskilled worker	2,870	3,319	8,953	8,490	23,632
	16.22	13.95	23.95	21.7	20.02
Total	17,696	23,798	37,388	39,131	118,013
	100	100	100	100	100

Pearson $\chi^2(6) = 1.2e+03$ Pr = 0.000; Likelihood-ratio $\chi^2(6) = 1.3e+03$ Pr = 0.000
 Source: 2003 – 2012 Labour Force Survey. Authors’ own calculations.

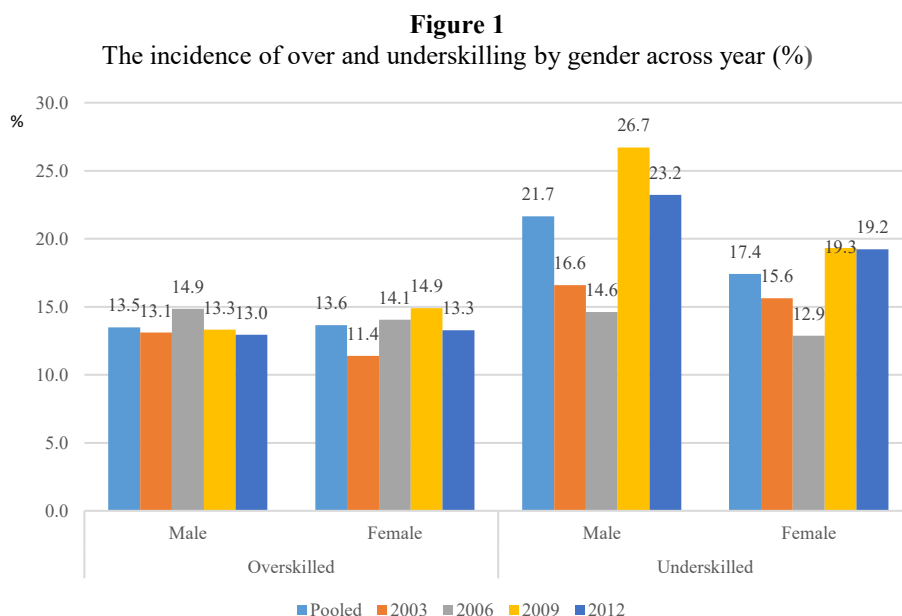
EVIDENCE FROM LABOUR FORCE SURVEY (LFS) 2003 - 2012

In this section, we explore the incidence of overskilling across year with respect to individuals’ characteristics (gender and age), educational background (level of education and field of study), demographic background (ethnic group, marital status, region, strata and citizenship) and job attributes (employment status, sector and occupation). In general, there is a variation in the over and underskilling incidence and we discuss those details below.

Individuals background

Gender

Fig. 1 (left side) exhibits that in general no gender differences in the level of overskilling, roughly at 14% each. However, across year, the incidence seems a quite a bit different for men and women. For men, the overskilling incidence shows a consistent trend between 13 and 13.5% over the period of 2003 – 2013, being exceptional in 2006 where it stood at 15%. For women, the incidence was lower in 2003 (11%) but increased substantially in the following survey, 14% in 2006 and 15% in 2009.



Pearson $\chi^2(2) = 320.3852$ Pr = 0.000; Likelihood-ratio $\chi^2(2) = 324.8020$ Pr = 0.000

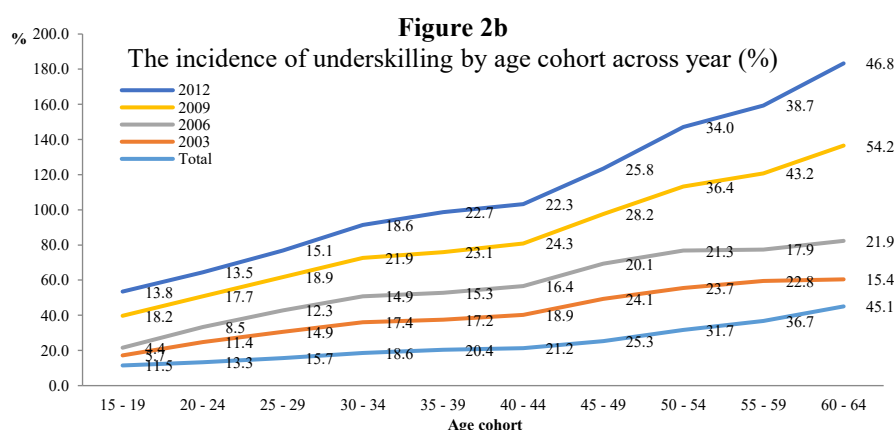
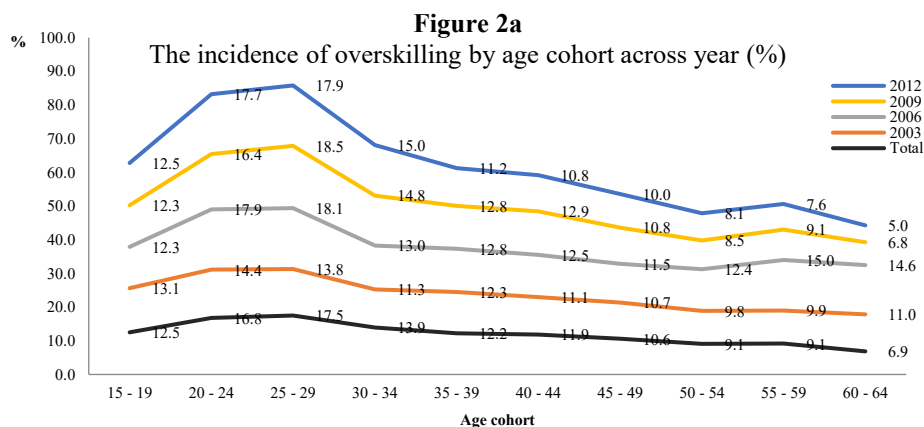
Source: 2003 – 2012 Labour Force Survey, Authors’ own calculations.

With respect to underskilling, the incidence was higher for men with 22% against 17% for women over the period of 2003 - 2012. By year, the incidence was lower than the average level in 2003 and 2006 regardless of gender – 17% and 15% respectively for men with the corresponding figures of 16% and 13% for women. After 2006, the incidence was considerably increased to 27% (2006) and 24% (2012) for men and 19% (2009 and 2012) for women. This is an important result. One interpretation is that many non-graduate men have greater (continuous) work experience or other informal qualifications than women and thus may often be able to compete successfully for well-matched jobs. It may, however, also reflect discrimination or labour market segmentation.

Age

According to the extended human capital model (Becker, 2009), one might expect the level of overskilling tend to be negatively associated with age if 'surplus' skills compensates for lower levels of investment in other forms of human capital (Alpin, Shackleton, & Walsh, 1998). Thus, overskilling should be higher for young cohort as they enter the labour market. The data illustrated in Fig. 2a appears to uphold this hypothesis. With respect to overskilled, in general the fraction of the incidence was higher among young cohort (below 30 years) and the incidence declines with age. This observation seems almost consistent across year, being exceptional for cohort 60 - 64 years where the incidence appears to be a bit higher than the cohort of 55 – 59 year.

Similarly, we would also expect that older cohort tends to be in jobs for which they are underskilled as they have accumulated greater skills through on and off-the job training and work experience compared to young generation. This argument holds for our finding where the proportion of underskilled workers (Fig. 2b) broadly increases with age regardless of year. At the beginning career, roughly 4.5 to 18% of young cohort were classified underskilled with the highest (lowest) figure reported in 2009 (2006). As workers' age increase, the incidence of underskilling reach the highest point for older cohort, 60 – 64 years with on average 45% or roughly 15% to 54%. Thought, older cohort from 2009 and 2012 surveys experienced a greater underskilling incidence, i.e. above average level with the corresponding figures of 54% and 47% each. By contrast, the lowest proportion was in 2003 and 2006, i.e. below average with 15% and 22% respectively.



Pearson $\chi^2(18) = 3.7e+03$ Pr = 0.000; Likelihood-ratio $\chi^2(18) = 3.5e+03$ Pr = 0.000

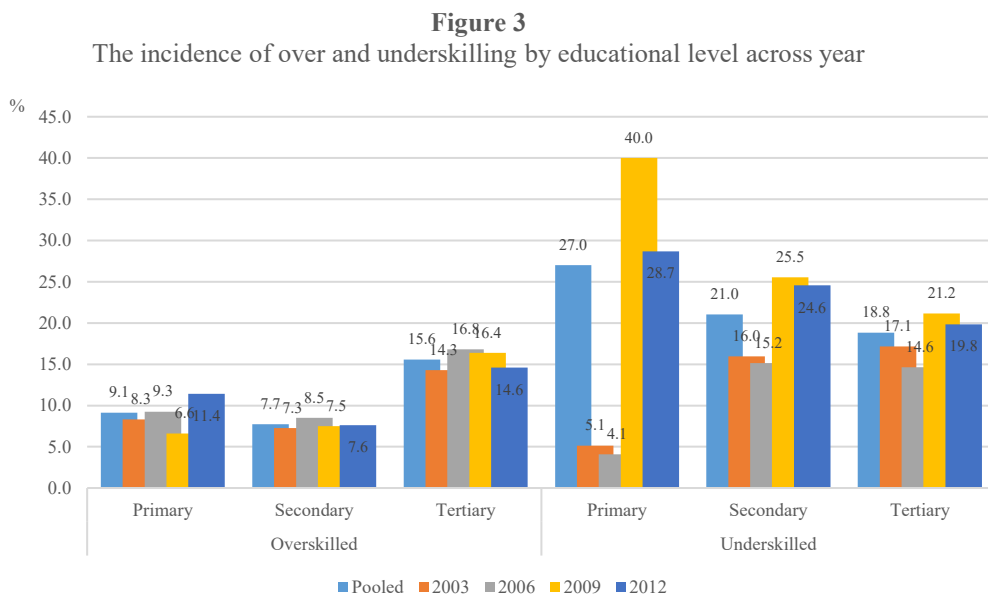
Source: 2003 – 2012 Labour Force Survey, own calculations.

Academic background

We also explore the incidence of over and underskilling by respondents' academic background across year and indicators of the background are education level and field of study.

Education level

As presented in Fig. 3, overskilling is more likely among highly educated workers whereas underskilling tend to be taking place among lowly educated workers. Specifically, workers who have tertiary education have a higher probability of being overskilled, on average at 16% throughout the year 2003 – 2012. The probability was higher in 2006 (17%) and was lower in 2012 (15%). By contrast, the risk of being employed in overskilled jobs were lower for those who secondary education was the highest achievement and followed up by workers with primary education, on average 8 and 9 percent respectively. Meanwhile, underskilling incidence was higher among those with primary education, followed by secondary school leavers and those with tertiary education with 27%, 21% and 19%, respectively By year, the risk for being underskilled was the lowest point in 2003 and 2006 especially amongst workers with primary education (5 and 4 percent respectively).



Pearson $\chi^2(4) = 2.1e+04$ Pr = 0.000; Likelihood-ratio $\chi^2(4) = 1.7e+04$ Pr = 0.000

Source: 2003 – 2012 Labour Force Survey, Authors' own calculations.

Degree Subject

We now narrow our analysis by focusing on graduates only, especially their field of study. Our primary concern is should we expect degree subject to influence the probability of being overskilled? Or the subject which graduates have studied at tertiary level might not have a direct relevance to employment?. It clearly does as Table 5 demonstrates (Pooled sample) the likelihood of being overskilled was higher among those with Social Sciences, Business and Law; Services; and Humanities and Arts. By contrast, graduates from Health and Welfare; and Education appear to be the least likely to be overskilled. The pattern of these findings are quite similar across year.

Table 5 The incidence of over and underskilling by field of study across year

Field of study	Pooled		2006		2009		2012	
	Over-skilled	Under-skilled	Over-skilled	Under-skilled	Over-skilled	Under-skilled	Over-skilled	Under-skilled
General Programmes	19.6	22.4					19.6	22.4
Education	9.5	22.1	12.6	9.6	13.2	12.6	2.7	43.6
Humanities and Arts	30.5	6.8	35.5	3.9	38.3	6.4	20.6	8.6
Social sciences, Business and Law	48.8	8.4	50.1	9.1	49.9	8.6	47.1	7.8
Science, Mathematics, Computing	35.2	9.6	36.6	10.5	38.8	9.1	31.3	9.7
Engineering, Manufacturing, Construction	24.9	17.4	32.9	9.7	23.8	20.5	22.2	18.2
Agriculture and Veterinary	25.2	17.3	40.0	8.0	29.1	27.2	16.0	12.8
Health and Welfare	8.5	11.4	9.4	1.8	6.3	14.3	9.8	13.3
Services	42.9	9.8	63.0	6.5	40.8	14.4	39.6	7.6
Total	28.6	13.8	31.3	8.6	30.1	13.1	25.9	17.2

Pearson $\chi^2(16) = 493.0896$ Pr = 0.000; Likelihood-ratio $\chi^2(16) = 540.1423$ Pr = 0.000

Source: 2003 – 2012 Labour Force Survey. Authors' own calculation

Individuals who studied General programmes; Education; Engineering, Manufacturing and Construction; Agriculture and Veterinary appear to be most likely to be employed in job for which they are underskilled. In contrast, Humanities and Arts; Social Science, Business and Law; and Science, Mathematics and Computing are associated with substantially below-average proportions of underskilled graduates.

Demographic Characteristics

Looking at the incidence of overskilling and underskilling in more detail, we find considerable differences associated with the personal characteristics of workers in the labour market.

Ethnicity

Bottom part of the Table 6 shows that Malays have a higher fraction of well-matched workers as compared to minorities group with nearly 70%. By contrast, Chinese has a lower proportion of overeducated workers relative to others (around 10%). Being Malays also have a lower risk of being underskilled than that of other ethnic groups. When the figures are broken down across year, the differences in these incidences become more accentuated. While the incidence of overskilling was slightly reduced for other Bumiputeras and Indian or remains constant for Chinese, this was not the case for the Malay and Other where the proportions who were overskilled increased.

Table 6 Distribution of skills mismatch incidence by ethnic group (%) across year

Skills match	Malay	Other Bumiputeras	Chinese	Indians	Others
2003					
Adequately-matched worker	71.4	69.3	72.5	67.5	75.7
Overskilled worker	12.8	12.6	10.2	14.4	17.6
Underskilled worker	15.8	18.2	17.3	18.1	6.7
2006					
Adequately-matched worker	71.1	73.2	73.3	68.4	72.2
Overskilled worker	15.4	12.5	11.0	15.6	23.5
Underskilled worker	13.6	14.3	15.7	16.0	4.3
2009					
Adequately-matched worker	64.3	58.6	61.3	60.9	48.1
Overskilled worker	15.3	12.4	9.3	12.1	17.9
Underskilled worker	20.4	29.1	29.5	27.0	34.1
2012					
Adequately-matched worker	67.9	59.5	62.8	64.4	54.4
Overskilled worker	13.5	11.2	9.8	13.1	22.9
Underskilled worker	18.6	29.3	27.4	22.5	22.8

Pooled					
Adequately-matched worker	67.9	62.7	66.3	64.9	56.2
Overskilled worker	14.3	12.0	10.0	13.6	20.4
Underskilled worker	17.7	25.3	23.7	21.6	23.4
	100.0	100.0	100.0	100.0	100.0

Pearson $\chi^2(8) = 1.1e+03$ Pr = 0.000; Likelihood-ratio $\chi^2(8) = 1.1e+03$ Pr = 0.000

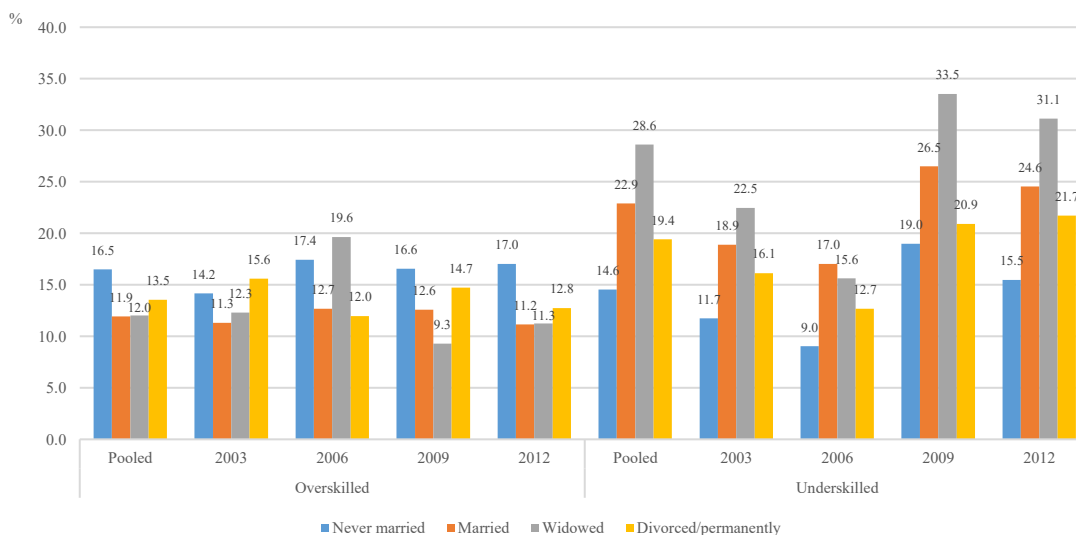
Source: 2003 – 2012 Labour Force Survey. Authors’ own calculation

In contrast, the fraction of underskilled workers was substantially increased between 3 and 16 percentage points between 2003 and 2012 irrespective of ethnic group. Yet, being Malay reduces the risk of being underskilled than being ethnic minorities. This sort of pattern again strongly suggests that underskilling is a marker for relative advantage in the labour market.

Marital status

In regard to marital status, it would be expected that married respondents tend to have higher proportion of well-matched job and less likely to be over- or underskilled than single respondent. The argument is marriage makes workers productive through specialization as they, especially men can devote more effort to work-related responsibilities or find higher paid jobs for the sake of their families than that of single respondent. As shown in Fig. 4, it is clear that married respondents are less likely to be overskilled than never married workers, roughly 12% (pooled sample) and this proportion is consistent across year. By contrast, widowed or married workers have a higher risk of being underskilled as compared to workers whose status with never married or divorced. This finding is consistent across year.

Figure 4
The incidence of over and underskilling by marital status across year



Pearson $\chi^2(6) = 1.5e+03$ Pr = 0.000; Likelihood-ratio $\chi^2(6) = 1.5e+03$ Pr = 0.000

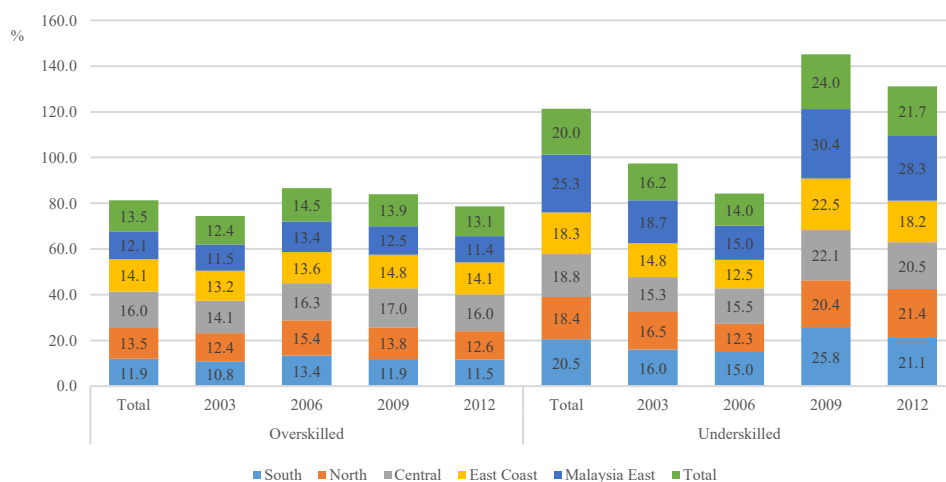
Source: 2003 – 2012 Labour Force Survey. Authors’ own calculation

Region

With regards to region, it is hypothesised that those who live in region with a high-density population and employment such as Central (Klang Valley) increase the likelihood of finding a well-matched job. This may be due to the fact that a large labour market may provide more opportunities for individuals to find a job that corresponds to their educational background relative to a small labour market. However, our finding as demonstrated in Fig. 5 (left side) did not support the argument as we found workers from Central region have amongst the highest, roughly 2 – 4 percentage point higher proportions of overskilled compared other regions. This finding also holds across year. By contrast, those who employed in Southern region have the lowest risk of being overskilled regardless of year. As such, the results here are in contrast to our early expectation where overskilling risk reduces with large labour markets. Perhaps, large areas are compensated for by a greater number of job-seekers and the larger numbers of vacancies in large labour markets are offset by a larger number of job searchers. Workers have to compete to get a better well-matched job.

There are also considerable variations in the underskilling incidence (right side of Fig. 5), with Malaysia East and Southern region have amongst the highest risk of underskilling whereas the Northern and East Coast have the lowest risk of underskilling. Higher incidence of underskilling in these regions might come from the fact that a shortage of skilled workers relative to the demand for them. While there has been a high vacancy rate (World Bank, 2009) for professionals and skilled production workers in these regions, these vacancies were inadequately filled because the available graduates for hire did not have skills required by employers.

Figure 5
The incidence of over and underskilling by region across year



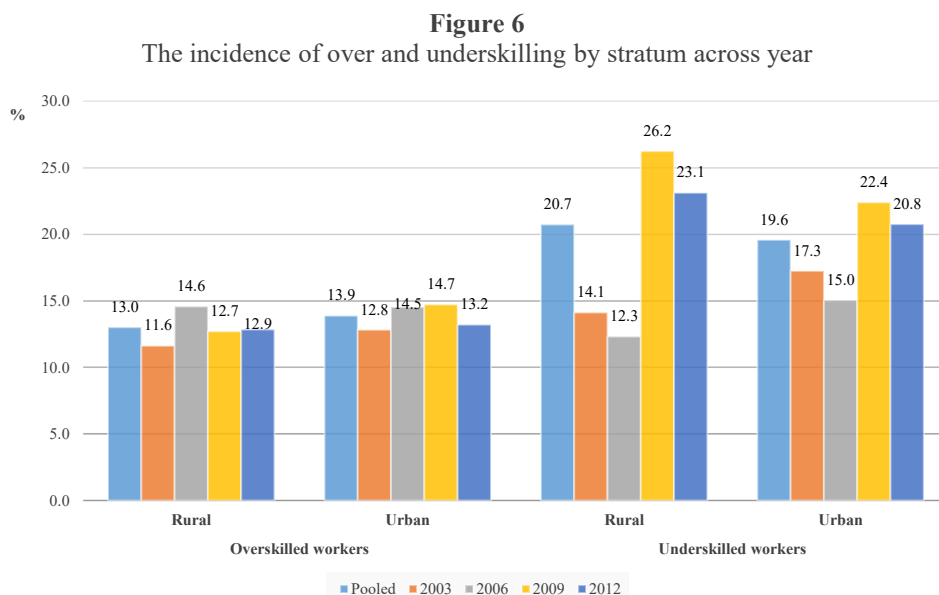
Pearson $\chi^2(8) = 612.4068$ Pr = 0.000; Likelihood-ratio $\chi^2(8) = 592.1646$ Pr = 0.000

Source: 2003 – 2012 Labour Force Survey. Authors’ own calculation

Stratum

As shown in Fig. 6, overskilling seems does not a stratum matter as the probability of being employed in overskilled looks similar between rural and urban areas, roughly between 11.6 and 14.6% for rural and between 12.8 and 14.7% for urban. Conversely, the incidence of underskilling does a stratum matter and indeed there is a variation in the incidence across

year. General finding is underskilling stood at approximately 20% for both, yet by year, underskilling was higher (lower) for workers in 2003 and 2006 (2009 and 2012) surveys. In particular, the risk of underskilling was on average 3 percentage points lower for workers in rural than workers in urban in 2003 and 2006. After 2006, workers in rural area were on average four percentage points higher to be underskilled than workers in urban (25% against 21%)

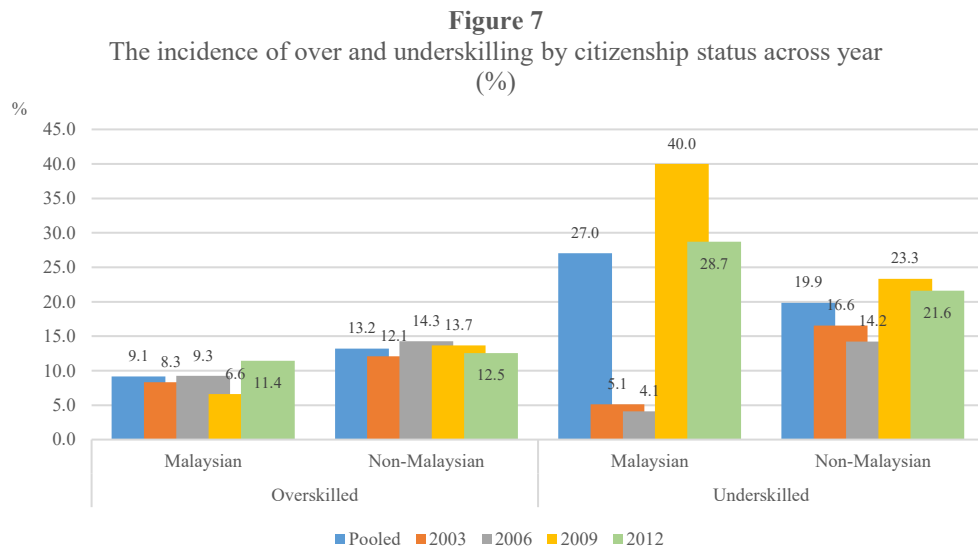


Pearson $\chi^2(2) = 35.3006$ Pr = 0.000; Likelihood-ratio $\chi^2(2) = 35.2968$ Pr = 0.000

Source: 2003 – 2012 Labour Force Survey. Authors' own calculation

Citizenship

Meanwhile, Fig. 7 displays the incidence of over and underskilling among Malaysian and Non-Malaysian citizen. We would expect that being from a minority (i.e.-Non-Malaysian citizen) increases (reduces) the risk of overskilling (underskilling) as compared to the Malaysian. This might stem from discrimination (Verdugo and Verdugo, 1988; Battu and Sloane, 2002, 2003) where ethnic minority employees are more likely to be ignored during recruitment, less likely to be promoted, or are placed at the back of job queues, such practices are likely to cause higher levels of overskilling.



Pearson $\chi^2(2) = 373.5918$ Pr = 0.000; Likelihood-ratio $\chi^2(2) = 344.1536$ Pr = 0.000

Source: 2003 – 2012 Labour Force Survey. Authors' own calculation

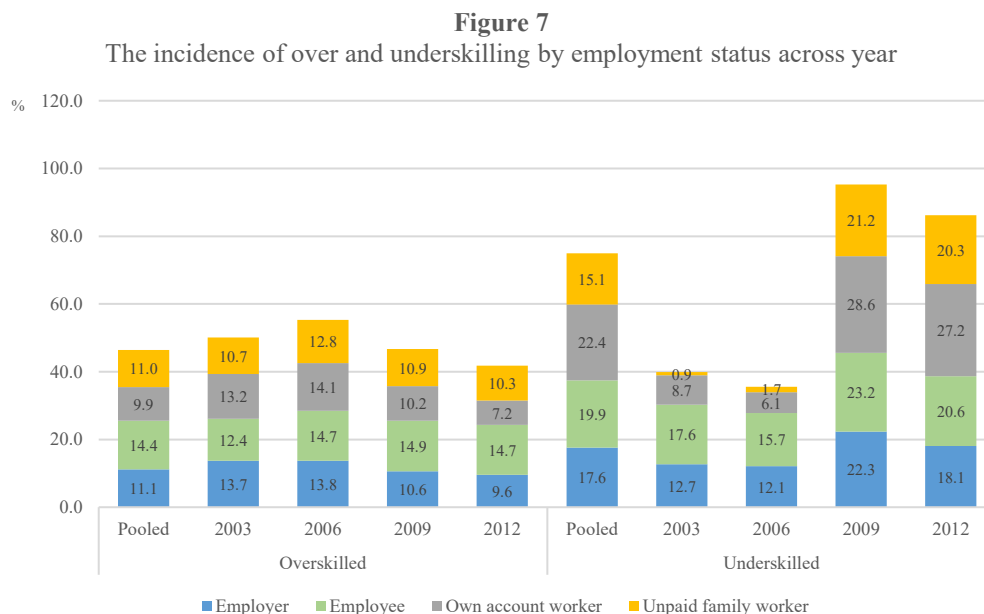
Our findings support this hypothesis as Fig. 6 exhibits that overskilling incidence was lower for Malaysian (9 percent) than non-Malaysian (13.2%). By year, the highest (lowest) proportion of overskilling for Malaysian was in 2012 (2009) with 11.4% (6.6 percent). For non-Malaysia, the likelihood of being overskilled was higher (lower) in 2006 (2003) with the corresponding figures of 14.3% (12.1%).

Job attributes

In addition to the influence of personal characteristics, it is clear that the likelihood of individuals being over- or undereducated depends in part on the characteristics of the employer and the workplace.

Employment sector

There is a wide variation in the proportions of overskilled employees between group across year as Fig. 8 shows. Employees were found to be the highest proportions of overskilled and followed by employers and unpaid family workers. Own account workers were considered as the lowest group of overskilling incidence. By contrast, underskilling was correspondingly low (high) amongst the unpaid family workers and employees group (employers and unpaid family workers).



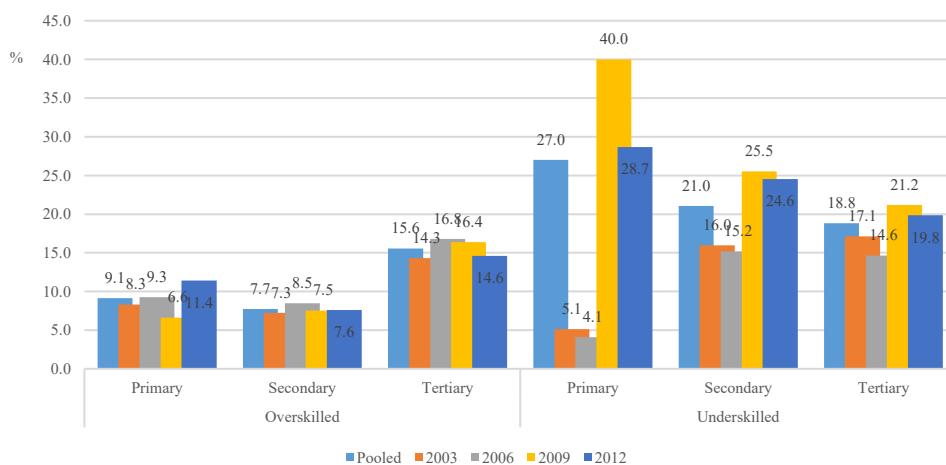
Pearson $\chi^2(6) = 422.3204$ Pr = 0.000; Likelihood-ratio $\chi^2(6) = 442.9657$ Pr = 0.000

Source: 2003 – 2012 Labour Force Survey. Authors' own calculation

Sector

Figure 9 demonstrates that overskilling seems to be primarily a tertiary sector phenomenon. The level of overskilling in the sector was roughly 15.6% according to the pooled sample, and as high as 16.8% according to 2006 sample. Workers in the secondary sector were found to be the lowest percent of overskilling incidence with only 7.7 percent (pooled sample) and up to (down to) to 8.5 percent (7.3 percent) in 2006 (2003), respectively. Conversely, the level of underskilling was higher in the primary sector with 27% as compared to 21% and 19% in the secondary and tertiary sector, respectively. Yet, the incidence of underskilling was lower in 2003 and 2006 for primary sector workers with 5.1 and 4.1 percent respectively. Instead, secondary and tertiary sector show smaller disparities between the observed and required level of qualification.

Figure 9
The incidence of over and underskilling by sector across year



Pearson $\chi^2(4) = 1.4e+03$ Pr = 0.000; Likelihood-ratio $\chi^2(4) = 1.5e+03$ Pr = 0.000

Source: 2003 – 2012 Labour Force Survey. Authors’ own calculation

Occupation group

With respect to occupation group, overskilling seems the case for workers at upper level jobs. Instead, workers who employed at low level jobs, especially in elementary occupation have a higher chance of being overskilled as compared to other occupations. From Table 7, on average around 8 in 10 workers in that group were deemed overskilled and indeed, the figure reaches 100% in 2003 and 2006 before decreased to 74 and 72% respectively, in 2009 and 2012. There was no overskilling status for workers who employed in professional jobs throughout the four surveys. Plant and machine operators, and skilled workers in agricultural were among the lowest proportion of overskilled with the corresponding figures of less than 2 percent each. These findings remained consistent across year.

Conversely, underskilling seems a phenomenon among workers in upper level jobs, i.e- Technician and professional associate, and professional as it increases the probability of underskilling by 60 and 34% respectively relative to other groups. Skilled agricultural workers came third with 29%. Clerical support workers were the lowest proportion of overskilling and followed by craft and related trade workers, and services and sales workers. All of these findings look similar across year of survey.

Table 7 The incidence of over and underskilling by employment status across year

Occupation group	Overskilling					Underskilling				
	Total	2003	2006	2009	2012	Total	2003	2006	2009	2012
Professionals	0.0	0.0	0.0	0.0	0.0	33.9	37.3	33.0	28.8	36.2
Technicians and Associate Professional	11.0	7.5	10.0	13.7	10.6	59.6	64.4	57.7	58.9	58.9
Clerical Support Workers	16.9	12.3	14.6	16.7	21.9	1.0	0.0	0.0	2.0	1.4
Services and Sales Workers	5.0	4.4	5.4	4.4	5.5	9.2	0.0	0.0	13.3	13.2

Skilled Agricultural workers	1.7	1.8	2.4	1.2	1.9	28.8	0.0	0.0	42.2	34.0
Craft and Related Trade Workers	3.2	3.5	4.9	2.4	2.9	13.8	0.0	0.0	21.2	20.9
Plant and Machine Operators	1.7	1.6	2.6	1.5	1.2	10.5	0.0	0.0	18.7	17.0
Elementary Occupation	80.7	100.0	100.0	73.6	72.0	0.0	0.0	0.0	0.0	0.0
Total	13.5	12.4	14.5	13.9	13.1	20.0	16.2	14.0	24.0	21.7

Pearson $\chi^2(14) = 8.0e+04$ Pr = 0.000; Likelihood-ratio $\chi^2(14) = 6.5e+04$ Pr = 0.000

Source: 2003 – 2012 Labour Force Survey. Authors' own calculation

Conclusions

We have seen that the likelihood that a worker's skills are underutilised in the labour market is affected by a range of factors such as workers' characteristics, job attributes and demographic background. Individuals are seemingly more likely to face this form of apparent disadvantage in the labour market if they are younger employees, work in the private sector (especially in small firms), have studied certain types of degree and are ethnic minority graduates. As some of these characteristics are correlated, or reflect other underlying causative influences, more formal modelling is necessary to establish their precise influence. Furthermore, we have suggested that the incidence of overskilling (underskilling) may be increasing over time and is likely to persist especially among young (older) cohort. However, we are also aware that the significance of this problem can be exaggerated. Overskilling is only temporary for many individuals; as they acquire job-related skills and experience they are able to improve their job match.

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