THE DETERMINANTS OF INDIVIDUAL UNEMPLOYMENT DURATION: THE CASE OF MALAYSIAN GRADUATES

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ABSTRACT

This paper estimates determinants of individual unemployment duration of Malaysian graduates. Estimation result suggests that lack of proficiency in English, a mismatch between the type of graduation degree and the requirements for the available jobs in the labor market, family background, state of happiness in overall life, self-expectation on one's employability and some socio-demographic characteristics (such as ethnicity) are significant determinants of graduate unemployment duration in Malaysia. Specifically, the 'hypothesis of selection' in literature of happiness studies is supported; non-English languages proficiency (including Chinese) has no significant impact; and it is imperative to have a realistic self-expectation on one's employability.

Field of Research: *Unemployment duration; Malaysian graduates; proportional hazard model; hypothesis of selection*

1.0 INTRODUCTION

Higher education has been widely recognised as one of the major forces to achieve sustainable economic growth. For example, the higher education sector produces skilled labour which is needed to initiate research and development activities and thus provide a base for sustainable growth (Romer, 1990; Stokey, 1995). In Malaysia, the government has announced a target that at least 40% of the Malaysian population should receive a university education by the year 2010, as compared to only 28% in 2005 ("Sasaran 40% ke", 2005). To achieve this objective the Malaysian university education sector has been expanded rapidly both in terms of number of universities and student enrolment.

In the midst of this rapid growth, the concern of unemployed graduates is gaining momentum in Malaysia (Bagayah and Smith, 2005; Lim, 2005). Unlike the graduate unemployment problem in the mid-1980s, the current graduate unemployment has been a persistent issue since the financial crisis of 1997 (Lim, 2005). Unemployed graduates pose a serious problem to the country because it reflects a waste of the nation's valuable resources and also implies a poor return on huge investment incurred by the government on public universities. Furthermore, fresh graduates are new to the labour market and thus the erosion of skills due to prolonged unemployment could be substantial. Hence, it is imperative to understand the nature of graduate unemployment and the underlying determinants which have an impact on unemployment duration.

The objective of this paper is to estimate the determinants of Malaysian graduate unemployment durations using individual-level data on recent graduates. In the approach taken here, the available exit states from unemployment are: full-time employment commensurate with qualification (FT1); full-time employment not commensurate with qualification (FT2); and self-employment and part-time employment (SEPT). Graduates can exit from the state of unemployment through these different exits. It is likely that the effect of a covariate on unemployment duration is different across the different exit states because different processes govern them. Thus, the aggregation of these exit states into one as suggested by a single risk framework might lead to state aggregation bias (Edin, 1989).

Indeed, Edin (1989) suggested the use of a competing risk framework to separate and control the effects of these different exit states. Since the exit state of FT1 is the best-expected outcome of the recent graduates, the present paper focuses its attention on estimating the determinants of FT1, using a duration model within a competing risk framework to control for the effects of other exit states.

The rest of this paper proceeds as follows. A literature review on individual unemployment duration is presented in the following section. The third section comprises the data and methodology. Data analysis and the results are sequentially discussed in the fourth and fifth sections. The final section presents conclusion of this paper.

2.0 LITERATURE REVIEW

During the past two decades, the literature on individual unemployment duration has grown rapidly. In analysing the determinants of individual unemployment durations, most studies used the reduced form hazard function to estimate the probability of leaving unemployment. This is due to the two unique features of unemployment duration data, namely censoring and time-varying explanatory variables (Allison, 1984).

Generally, studies on unemployment duration have mainly focused on the impact of personal characteristics, unemployment insurance (UI) and local labour market characteristics on the probability of leaving unemployment (Lancaster, 1979; Nickell, 1979; Atkinson, Gomulka, Micklewright, and Rau, 1984; Edin, 1989; Holmlund, 1998; Roed and Zhang, 2003, 2005; Pellizzari, 2006). In particular, the effect of UI has been the centre-piece of unemployment duration analysis for many developed countries.

Theoretically, unemployment insurance (UI) benefit increases the value of continuous job search and reservation wages. Hence, it is expected that the level of any UI benefit decreases the probability of leaving unemployment. Empirically, this negative impact of UI benefit has been clearly established. It is also found that the probability of leaving unemployment rises sharply before the exhaustion of UI benefit (Holmlund, 1998; Roed and Zhang, 2003, 2005).

UI is unavailable in most developing countries, including Malaysia. However, the findings of significant UI effects suggest that unearned income, financial support received, and financial constraints faced during the job search period are all possible determinants of individual unemployment duration.

In addition to supply side factors, demand side factors such as local unemployment rates, unemployment-vacancy ratios and place of residence are all typically found to be significant determinants of individual unemployment duration (Arulampalam and Stewart, 1995; Grogan and Berg, 2001; Tansel and Tasci, 2003; Kupets, 2006; Serneels, 2007). For instance, Grogan and Berg (2001) observed that those living in Moscow or St Petersburg have higher exit rates than those living in other regions in Russia.

Theory of informal job search suggests that another potential significant determinant of an individual's employability is family background. Other demographic characteristics such as age, health conditions, own-and parental education levels, previous working experiences and spouse employment status, are found to be significantly associated with exit rates (Edin, 1989; Narendranathan and Stewart, 1993; Chuang, 1999; Lazaro, Molto and Sanchez, 2000; Grogan and Berg, 2001; Tansel and Tasci, 2003; Kupets, 2006; Serneels, 2007).

In developed countries, it is recognised that minority ethnic groups are more vulnerable to prolonged unemployment spells. According to the Current Population Survey of the United States in 2003, the median unemployment duration of African American workers is 9.4 weeks longer than that of the white workers (Dawkins, Shen and Sanchez, 2005).

In Malaysia, ethnicity also has been consistently found to be a significant determinant of graduate employability. Specifically, the Malay graduates are found to have significantly lower exit rate, compared to non-Malay (Lim and Normizan, 2004). While Malay graduates are found to have significantly lower exit rate, this finding is typically obtained without controlling for other factors (such as Chinese language proficiency), which are believed to be less favourable to Malay graduates. For instance, generally, non-Malay graduates can speak more languages than Malay graduates. Thus, the significant influence of ethnicity might just be picking-up the influence of other omitted variables.

In the global setting, a crucial determinant of unemployment duration is the level of English language proficiency. In Australia, Carroll (2006) observed that the exit rate of those born in non-English speaking countries is lower than that of those born in an English speaking country. Nevertheless, as the length of their stay in Australia increases, this negative effect on exit rate tends to diminish. In countries using English as second or third language such as Malaysia, the proficiency of English language is also an important determinant in one's employability. Lim and Normizan (2004) found that there is a positive impact of English language proficiency on exit rates; however, it is limited only to pre-university proficiency. Given the wide use of English language among private sector companies in Malaysia, English language proficiency gives an added advantage to job applicants.

Types of degree obtained also have a significant influence on one's employment duration. Using a sample of Universiti Utara Malaysia graduates, Lim (2007) found that accounting graduates have the highest probability of leaving unemployment compared to other business-related degree graduates. This highlights the possible mismatch between the types of degree graduates produced and industries' demand.

In short, previous studies have suggested that the determinants of individual unemployment duration are the (proxies for) demand constraints and the socio-demographic variables related to the supply side. Nevertheless, the effects of some of these variables, including language proficiency, are yet to be examined in the Malaysian graduate unemployment duration context[1]. In addition, the impact of graduates' self-expectation on their employability and overall life happiness are largely ignored in the literature on Malaysian graduate unemployment.

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[1] Studies by Lim and Normizan (2004) and Lim (2007) appeared to be the only studies conducted on Malaysian graduate unemployment duration. But these studies use cross-section data with retrospective information about the date of starting job search and obtaining job. There is no time varying variable.

According to Job Search theory, self-expectations on employability influence job search intensity and reservation wages. Hence, this self-expectation should have a significant influence on graduate unemployment duration. Whereas, for overall life happiness, in the related literature, the 'hypothesis of selection' suggests that graduates who are happy with their life would have shorter unemployment spells. The 'hypothesis of selection' states that an individual's happiness (well-being) influences his or her employment outcomes. The assertion is that those with certain low employability characteristics (such as always thinking negatively) could lead to low level of happiness, and hence they are more likely to be unemployed.

Thus, the present study contributes significantly to the current literature by filling the existing gaps by incorporating these variables (language proficiency, overall life happiness and graduate self-expected employability) into a duration model using a sample of the Malaysian graduates to examine the issue of graduate unemployment in Malaysia.

3.0 DATA AND METHODOLOGY

3.1 DATA

This paper uses data from Lim (2008). The data were obtained from two surveys soliciting 240 respondents. The first survey's data collection was implemented between July 2005 and March 2006, using self-administered questionnaires. The targeted population was the final year students of Universiti Utara Malaysia (UUM, a public university in Malaysia), and Universiti Tunku Abdul Rahman (UTAR, a private university in Malaysia). The first survey successfully collected a total of 430 useable responses (304 from UUM and 126 from UTAR). This represents a response rate of 14.41% (UUM: 11.83%; UTAR: 30.36%).

Due to this low response rate, it is imperative to evaluate the sample representativeness. The population frame (list of all final year undergraduate students in UUM and UTAR) was not available due to administrative bureaucracy on the grounds of confidentiality. However, using the published statistics (aggregated by types of degree) released during the convocation of September 2006 (UUM) and March 2006 (UTAR), the sample representativeness could be evaluated.

The χ^2 goodness of fit test (between population and sample distribution by types of degree for UUM graduates) concluded that there is evidence that the sample and population distribution fit with a p-value of 0.3371, except BIT (which is over-represented). For UTAR graduates, the χ^2 goodness of fit test concludes that there is good fit between sample and population distribution (p-value=0.3107).

In addition, it was found that the first survey's sample characteristics of gender (dominated by female), ethnicity (UUM is dominated by Malay and UTAR consists of almost all Chinese), marital status (almost all are single) and age (mean age 23), are reflecting the well-known UUM and UTAR undergraduate population characteristics (and also the Malaysia public and private university undergraduate population). Thus, it is concluded that the sample (first survey) has at least an acceptable level of representativeness.

The second survey was implemented between November 2006 and February 2007, targeting the 430 graduates who had responded during the first survey, using mailed questionnaire. A total of 240 questionnaires were successfully obtained, a responses rate of 55.81% (of the 430).

3.2 METHODOLOGY

The Cox Proportional Hazard model is used to estimate the determinants of graduate unemployment duration. The Cox Proportional Hazard model with time-varying and time-constant covariates can be specified as follows:

$$h_i(t) = h_0(t)\exp[x_i{}'\beta + z_i(t)\alpha] \quad i = 1, 2, ..., n \tag{1}$$

where x_i = vector of explanatory variables (time-constant)

$\quad \beta$ = vector of coefficient of explanatory variables (time-constant)

$\quad z_i(t)$ = vector of explanatory variables (time-varying)

$\quad \alpha$ = vector of coefficient of explanatory variables (time-varying)

$\quad h_0(t)$ = baseline hazard.

The partial maximum likelihood function can be specified as:

$$L(\beta) = \prod_{j=1}^{k} \frac{\exp(x_i{}'\beta + z_i(t)'\alpha)}{\sum_{i \in R_j} \exp(x_i{}'\beta + z_i(t)'\alpha)} \tag{2}$$

where R_j = risk set at time j (j = 1, 2, ..., k)

$\quad k$ = number of distinct observed failure times.

The βs and α are estimated by maximising the log of this partial maximum likelihood function. This Cox Proportional Hazard Model is estimated within an independent competing risks framework. The focus of the analysis is on exit from unemployment through obtaining full-time employment commensurate with qualification (FT1), whereas the other exit states are used as controls to avoid state aggregation bias (Allison, 1984).

During the second survey, the dates of: starting a job search; obtaining a job; and job termination (if any) were asked retrospectively. Fewer than 8 respondents were identified as having multiple unemployment spells. Thus, this study was confined to the first unemployment spell of the graduates.

The explanatory variables were measured at first survey (time-invariant variables) except the following ten variables: number of job applications submitted; expected wage; the lowest wage for which graduates are willing to work; job search/interview training; sharing of job market information among friends; unearned income received while unemployed; financial support received while unemployed; financial difficulties faced while unemployed; ratio of job seekers over job vacancies; and age.

Retrospective information was also asked for each month of unemployment for the following time-varying variables: number of job application submitted; expected wage; lowest wage for which willing to work; receipt of unearned income while unemployed; obtaining financial support while unemployed; and financial difficulties faced while unemployed.

The ratio of job seekers to job vacancies was collected from various issues of Monthly Statistical Bulletin published by the Central Bank of Malaysia. Appendix 1 presents the definition and measurement of the explanatory variables.

4.0 ANALYSIS AND RESULTS I: DESCRIPTIVE STATISTICS

4.1 EXIT STATES

Data in Table 1 reveal that the largest proportion of unemployment spells (37.92%) ended with the exit state of full-time employment commensurate with qualification (FT1). Then, it is followed by the exit state of full-time employment not commensurate with qualification (FT2, 26.25%); then to self-employment (SE, 1.67%); and finally to part-time employment (PT, 4.17%).

Over a fifth (23.33%) of spells are incomplete (i.e., still enduring in state of unemployment). Some of the graduates have extended, or furthered, their studies (6.66%) and no unemployment spells are reported. Hence, they are omitted from the analysis.

Table 1: Exit states and mean of unemployment duration

Exit states	%	Mean of unemployment duration (days)
Unemployed (spell incomplete)	23.33	67.75
Full-time employment commensurate with qualification (FT1)	37.92	49.50
Full-time employment not commensurate with qualification (FT2)	26.25	67.25
Self-employment (SE)	1.67	131.25
Part-time employment (PT)	4.17	62.60
Further studies	3.33	-
Extend studies	3.33	-
Economically inactive	0.00	-
Graduate Training Scheme	0.00	-

With regard to the mean of unemployment duration, Table 1 shows that exit state FT1 has the lowest mean unemployment duration (49.5 days), whereas SE has the highest (131.25 days). This implies the control of the exit state of self-employment (as implemented in this paper using a competing risk framework) is crucial to avoid potential state aggregation bias.

4.2 JOB SEARCH START DATE

Table 2 presents the graduates' date of starting their job search. The earliest job search started on August 2005 whereas the latest is on January 2007. In terms of time available to the graduates for conducting their job search (before close of second survey on February 2007), only a small percentage (3.52%) had less than 3 months to search for jobs. In other words, almost all graduates (96.46%) had more than 3 months to conduct their job search. Thus, it can be concluded that time available for job search is sufficient.

Table 2: Start date of job search

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Job search start	%	Cumulative %
August 2005	0.44	0.44
September 2005	1.32	1.77
October 2005	1.32	3.10
November 2005	2.64	5.75
December 2005	7.50	13.27
January 2006	6.61	19.91
February 2006	2.21	22.12
March 2006	4.41	26.55
April 2006	7.49	34.07
May 2006	13.69	47.79
Jun 2006	9.27	57.08
August 2006	11.46	79.65
September 2006	10.14	89.82
October 2006	5.30	95.13
November 2006	1.32	96.46
December 2006	2.20	98.67
January 2007	1.32	100.00

Note: Closing date of second (final) survey - 15 February 2007.

4.3 CHARACTERISTICS OF RESPONDENTS AND UNEMPLOYMENT DURATION: CATEGORICAL VARIABLES

The data in Table 3 refer to the mean of unemployment durations by observed characteristics (categorical). There are noticeable mean differences among the various types of degree programmes. It ranges from the lowest of 23.92 days (UTAR Information Technology/Computer Science) to the highest of 70.61 days (UUM International Business/Issues Management). By ethnicity, Chinese graduates have the lowest mean unemployment duration (38.31 days) compared to Malay graduates (67.31 days) and other ethnic groups (53.72 days). The other respondent characteristics and unemployment duration are shown in Table 3.

Table 3: Respondents' characteristics and unemployment duration: categorical variables

Categorical variables	Sample %	Mean: unemployment duration (days)
Types of degree:		
UUM Economics	9.33	55.27
UUM Public/ Development Management	4.89	55.58
UUM Business Admin	10.67	46.60
UUM Accounting	8.00	64.37
UUM IT	12.44	63.45
UUM Other degrees	7.11	48.30
UUM Human Resources/ Social Work	5.78	27.36
UUM International Bus/ Issues Mgt	5.33	70.61
UUM Finance	6.67	63.06
UUM Communication	4.00	54.46
UTAR Business Admin	7.56	43.44
UTAR Accounting	8.00	36.47
UTAR IT/Computer Science	5.33	23.92
UTAR Other degrees	4.44	37.82
Other variables:		
Father economically inactive	10.09	41.95
Mother economically inactive	58.02	47.41
English main communication language	7.14	69.63
STPM for univ. entry qual	59.91	50.42
Matriculation for univ. entry qual	13.06	69.39
Cert/Diploma for univ. entry qual	13.51	36.94
UEC for univ. entry qual	10.36	33.96
Other univ. entry qual	3.15	26.82
Universiti Tunku Abdul Rahman	25.00	32.49
Universiti Utara Malaysia	75.00	55.16
Training on job search/interview	29.73	56.89
Sharing job market info	87.44	48.80
Work during university vacations	56.25	46.64
Practicum/industrial training	46.26	47.13
Unearned income	28.57	40.65
Financial support	59.52	47.27
Male	28.00	48.57
Female	72.00	49.78
Chinese	58.22	38.31
Malay	34.22	67.31
Other ethnic groups	7.56	53.72
Home town: rural	58.00	48.71
Home town: urban	42.00	50.45
Car driving licence	77.78	43.83

Note:
1. See Appendix A1 for definition and measurement of variables.
2. Unemployment duration is a completed spell for those who are employed. It is an on-going spell for those who are unemployed

4.6 CHARACTERISTICS OF RESPONDENTS AND UNEMPLOYMENT DURATION: CONTINUOUS VARIABLES

The data in Table 4 relate to correlations between unemployment duration and observed characteristics (continuous or discrete). It is observed that six variables have correlations of more than 0.10 with unemployment duration. These variables are the number of job applications submitted (0.38), Chinese language proficiency (-0.30), financial difficulties while unemployed (0.28), Bahasa Melayu (Malay language) proficiency (0.21), family size (0.14), and mother's education level (0.13). These descriptive statistics results show that the burden of unemployment duration varies quite dramatically across different socio-demographic groups.

Table 4: Respondents' characteristics and unemployment duration: continuous/discrete variables

Continuous/discrete variables	Sample mean	Corr with unemployment duration
Father's education level	4.33	0.08
Mother's education level	3.97	0.13
Family size	6.32	0.14
Family working member	2.78	-0.09
English language proficiency	6.72	-0.08
Malay language proficiency	8.75	0.21
Chinese language proficiency	5.51	-0.30
Tamil language proficiency	0.69	0.04
Cumulative Grade Point Average	3.08	-0.08
Ratio of job seekers to job vacancies	0.37	-0.04
Job applications submitted	12.03	0.38
Expected wage	1652.68	-0.16
Lowest wage willing to work for	1352.71	-0.06
Self-expected unemployment duration	2.47	-0.08
Financial difficulties	2.63	0.28
Overall life happiness	5.01	-0.05
University life happiness	4.86	0.02
Age	23.33	0.05
Self-reported health condition	4.35	-0.05
Self-perceived marketability of degree studied	4.64	-0.01

Note: See Appendix A1 for definition and measurement of variables

5.0 ANALYSIS AND RESULTS II: COX PROPORTIONAL HAZARD MODEL

The Cox Proportional Hazard Model's regression results are presented in Table 6. The estimated model is acceptable with regard to goodness of fit tests. Table 5 shows the results of these goodness of fit tests.

Table 5 Goodness of fit tests: FT1

	P-value
1. Likelihood ratio test on jointly significant	0.0000
2. Restriction test on all insignificant variables	0.2430
3. Schoenfeld residual test (prop hazard assumption)	0.9696
4. Link test (model specification test)	0.2340
5. Shared frailty test (unobserved heterogeneity – θ)	0.4990
	Plots indicate:
6. Cumm baseline hazard plot (unobs heterogeneity)	No evidence of unobserved heterogeneity
7. Martingale residual plots (functional form test)	No evidence of inappropriate functional form

Note:
FT1: Full-time employment commensurate with qualification.

For the overall goodness-of-fit, the likelihood ratio (LR) test is found to be significant, with p-value of almost zero. Thus, the estimated model fits well statistically. The other tests results (restriction test on all insignificant variables; Schoenfeld residual test on proportional hazard assumption; link test on model specification; shared frailty test and duration dependency on unobserved heterogeneity; and Martingale residual plot to test on functional form) also suggest that statistically, the estimated Cox Proportional Hazard model has high goodness of fit.

Table 6 presents the results of the Cox Proportional Hazard Model on exit state FT1, full-time employment commensurate with qualification: the focus of this paper.

Table 6: Estimated Cox Proportional Hazard model: FT11

Variable	Hazard ratio	Std Error
Types of degree[4a]		
UUM Economics	0.0899	0.1115*
UUM Public/ Development Management	0.0089	0.0166**
UUM Business Admin	0.0590	0.0639***
UUM Accounting	0.2297	0.2501
UUM IT	0.1752	0.1748*
UUM Other degrees	0.0965	0.1420
UUM Human Resource/Social Work	2.4571	2.7662
UUM International Bus/Issues Mgt	0.1335	0.1472*
UUM Finance	0.1138	0.1354*
UTAR Business Admin	0.8327	0.8270
UTAR IT/Computer Sciences	0.9214	1.1366
UTAR Other degrees	1.0198	1.3876
Family background		
Father economically inactive	0.2286	0.1752*
Father's education level	1.0442	0.1466
Mother economically inactive	1.5854	0.6227
Mother's education level	0.9487	0.1878
Family size	0.5279	0.1051***
Family working member	1.5726	0.2919**
Language proficiency		
English as main communication language (informal)	0.6573	0.5972
English language proficiency	1.5469	0.2692**
Bahasa Melayu (Malay language) proficiency	0.9947	0.1162
Chinese language proficiency	0.8901	0.0902
Tamil language proficiency	0.8705	0.1286
Academic related		
Cumulative Grade Point Average	0.7394	0.6686
Matriculation for univ. entry qual[4b]	4.7846	6.2363
Cert./Diploma for univ. entry qual[4b]	3.4598	3.7322
UEC for univ. entry qual[4b]	4.1435	4.6094
Other univ. entry qual[4b]	0.1950	0.2993
Universiti Tunku Abdul Rahman[4c]	0.0743	0.1404
Job search / work related		
Ratio of job seekers to job vacancies	0.2578	0.7115
Job applications submitted	1.0108	0.0142
Expected wage	0.9998	0.0009
Lowest wage willing to work for	1.0007	0.0007
Self-expected unemployment duration	1.3584	0.2123**
Training on job search/interview	3.1723	1.6755**
Sharing job market info	2.5357	2.1568
Work during university vacations	4.4336	2.6151**
Practicum/industrial training	0.8057	0.5597
Self-reported Marketability of degree studies	1.3420	0.2725
Financial related		
Unearned income	0.9495	0.4171
Financial support	2.2933	0.9280**
Financial difficulties	0.2463	0.0983***
Financial difficulties2	1.2131	0.0856***
Happiness related		
Overall life happiness	1.7009	0.4588**
University life happiness	0.7005	0.1577
Social-demographic		
Age	0.9533	0.2153
Male	1.3619	0.6052
Malay[4d]	0.0208	0.0310***
Other ethnic groups[4d]	0.2581	0.4622
Self-reported health condition	1.1302	0.2558
Home town in rural	0.8656	0.4047
Car driving licence	1.7236	1.4158

Note:
1.   FT1: Full-time employment commensurate with qualification.
2.   *, **, and ***, significant at 10%, 5% and 1% levels, respectively.
3.   See Appendix 1 for explanation and measurement of variables.
4.   Comparison group for dummy variable of:
       a. Types of degree: UTAR Accounting; b. University entry qualification: STPM; c. Types of university: Universiti Utara Malaysia (UUM); d. Ethnicity: ethnic group of Chinese.
5.   Some variables are time-varying such as ratio of job seekers to job vacancies (see Appendix 1)

Effects of types of degree and family background variables

Job mismatch theory suggests that a mismatch of skills (as reflected by types of degree obtained) between supply and demand in the labour market causes unemployment. Quality of human capital invested (also can be reflected by types of degree obtained) is also likely to have significant influence on a graduate's unemployment duration. Types of degree is thus expected to be a significant determinant of graduate unemployment duration. Indeed, our results show that types of degree has a significant influence: in line with previous studies on Malaysian graduate unemployment.

It is expected that the family background variables would be significantly related to the graduate's unemployment duration. Results in Table 6 support this expectation: a graduate with an economically inactive father has a significantly lower exit rate compared to one whose father is economically active. In addition, family members who are working help in significantly improving the graduate's exit rate. Ceteris paribus, an increase of one working family member will increase the exit rate by more than fifty per cent (57.26%). In contrast, increasing family size will reduce exit rates. Thus, the important determinant that helps to improve exit rates is not the family size, but the number of family members who are working.

Effects of language proficiency and self-expected unemployment duration

Consistent with the findings from previous studies, the present study finds that English language proficiency has a positive and significant influence. In the ordinal scale of 0 being 'non-user' to 12 being 'expert-user', an increase of one unit in the scale (English language proficiency) will increase the exit rate by more than fifty per cent (54.69%), ceteris paribus. In contrast, the impact of proficiency in other languages, namely Malay, Chinese and Tamil, is found to be insignificant. This insignificant result might reflect that since English is widely used in the Malaysian private sector, the mastery of English is sufficient, at least in the labour market, for fresh graduates.

One might anticipate that graduates who expect themselves to experience long unemployment spells might intensify their job search efforts, lower their reservation wage and thus increase their probability of leaving unemployment. After statistically control the influence of reservation wage and job search efforts (number of job application submitted), we still found that a significant positive association between self-expected unemployment duration and probability of leaving unemployment status.

This suggests the positive impact of self-expected unemployment duration might reflect access to labour market information to form a realistic self-expected unemployment duration. Graduates with low self-expected unemployment duration (which is unrealistic and too optimistic) migth reflect their poor access to labour market information or poor social capital (which help to obtain a good quality job). This thus leads to the positive and significant impact of self-expected unemployment duration.

Effects of job search/interview training and work experience

Training for job search and interview helps graduates to search for a job and 'sell' themselves efficiently; whereas the work experience obtained during university vacations helps to equip them with the employability skills such as communication skills and familiarity with the working environment. Thus, it is not surprising that the estimation results revealed that work experience gained during university vacations and training in job search/interview techniques are significant determinants of the graduate's exit rate.

Effects of financial difficulties and financial support received

In the case of the variables pertaining to financial difficulties while unemployed, the estimated hazard ratio shows that there is a highly significant quadratic effect with a minimum point of 3.6268. Given the 7-point ordinal scale of 0 being 'no financial difficulties' to 6 being 'high financial difficulties', the increase in financial difficulties from the range of 0 to 3.6268 (in the range of 'no' to 'moderate' financial difficulties), reduces the exit rate. However, from the point of 3.6268 onwards, increase in financial difficulties will increase the exit rate. Apparently, in the range of moderate to high level of financial difficulties, the increase of financial difficulties has a positive impact on the exit rate.

This impact is significant and substantial because one unit increase in financial difficulties will more than double the exit rate. That means that only the high level financial difficulties will force the graduates to intensify their job search effort. This finding is consistent with previous findings that on approaching the exhaustion of unemployment insurance, the probability of exit from unemployment will increase sharply.

It is surprising that financial support received while unemployed has a significant positive impact on the exit rate. This appears to contradict previous findings on a negative effect of Unemployment Insurance (UI) on one's unemployment duration. However, it is important to note that the financial support is from graduates' family members, relatives or friends. In receiving this support, the graduates might get close monitoring from the supporter on their job search behaviour. This financial support also can be terminated at any time. Hence, given the previous finding on a sharp increase in the exit rate upon approaching the termination of UI, this positive impact of financial support is not a contrary finding.

Effects of overall life happiness and ethnicity

In estimating the effect of overall life happiness on unemployment duration, exogeneity was ensured because happiness was measured while the graduates were in their final year of studies before occurrence of unemployment duration.

The theoretical prediction of 'hypothesis of selection' (positive relationship between happiness and probability of leaving unemployment) is supported by the present paper. The results revealed that graduates who are happier in their overall life have a higher probability of leaving unemployment through obtaining FT1 (exit rate). In the 7-point ordinal scale of happiness measurement, with 1 being 'very unhappy' to 7 being 'very happy', an increase of one unit in the scale will increase the exit rate by more than seventy per cent (70.09%).

Consistent with previous findings, the empirical result in Table 6 shows that ethnicity is significantly associated with unemployment duration, so that compared to Chinese graduates, Malay graduates have a substantially lower probability of leaving unemployment through obtaining FT1 (exit rate). The Malay

graduates are estimated to have only less than three per cent (2.08%) of exit rate of the Chinese graduates.

It is important to note that compared to the previous studies, in the present one, the significant impact of ethnicity is found after the effects of other language proficiency including English and Chinese, and also other variables such as academic attainment and family backgrounds (which are believed to be less favourable to the Malay graduates) are statistically controlled for.

This finding might reflect discrimination against the Malay graduates in the labour market or just pick up some underlying low employability characteristics of the Malay graduates. However, it highlights that the Malay graduates are most vulnerable to prolonged unemployment.

6.0 CONCLUSION

This paper estimates the determinants of Malaysian graduate unemployment duration by incorporating the effects of language proficiencies, overall life happiness, and self-expected employability on the graduate's unemployment duration. The findings of present study support the 'hypothesis of selection'. It has been observed that graduates who are happy in their overall life have significantly shorter unemployment duration.

Results of the present study also substantiate the argument that poor English language proficiency is the main cause of graduate unemployment duration in Malaysia. On this ground, the Malaysian government's policy to use English language as medium of instruction for mathematical and science subjects in its education system, is heavily supported. Thus, it is recommended that this policy should be maintained in order to enhance graduate employability, although the Malaysian public in some quarters are against such policy.

However, other language proficiencies (including Chinese) were found to have no significant influence on graduate unemployment duration. This finding refutes the claims that mastery of other languages, in particular Chinese, would enhance graduate employability in Malaysia. Despite the claim that good Chinese language proficiency would be an added advantage for job applicants, the present paper found that it does not enhance graduate employability significantly. Therefore, it is suggested that English language proficiency courses should be the main focus under the government's Graduate Training Scheme to help unemployed graduates.

Results of the present paper also clearly illustrate the importance of having a realistic self-expectation on one's employability. Thus, it is suggested that the authorities should publish graduate labour market information such as the results of trace studies (on the employment outcomes of graduates) conducted by the public universities. This labour market information could help students to have a realistic expectation on their employability before they enter the labour market. This is of particular importance because the university education sector in Malaysia has grown rapidly since 1996. University education is moving away from its previous elite status to making tertiary education available to all (thus implying 'mass production' of university graduates). Thus, the graduate's expectation on his/her employability needs to be adjusted appropriately.

It is found that types of degree is one of the significant determinants. This finding is attributed partly to the different admission requirements for the different types of degree. For instance, the degree in accounting, demanding high scores as an admission requirement, attracts high calibre and high ability students. Thus, selection bias might not be ruled out. Nevertheless, it is also observed that the IT

graduates who once claimed high marketability in the early 1990s, have lesser marketability now, although the admission requirements among universities in Malaysia remain relatively unchanged for various degree programmes. Thus, to some extent, these findings support the argument that the problem of graduate unemployment arises because of a mismatch between the graduate qualification obtained and the job opportunities in the market.

The present paper also pinpoints that ethnic discrimination might exist in the graduate labour market in Malaysia. After statistically controlling for the influence of numerous variables (such as Chinese language proficiency), which are believed to be unfavourable to the Malay graduates, these Malay graduates are still found to be most vulnerable to prolonged unemployment. Future studies are suggested to undertake extensive investigation in this regard. However, this finding clearly suggests that the Malay graduates should be the target group to participate in the programmes aimed at reducing the duration of graduate unemployment in the country. Other significant determinants of graduate unemployment duration are job search/interview training, work experience, financial difficulties faced while unemployed, financial support received and family background.

Finally, our results reveal that there is a substantial number of unemployed graduates but with mean of unemployment duration that less than 3 months. This implies that although government statistics have consistently reported a high percentage of unemployed graduates, they might not be reflecting the true gravity of the graduate unemployment problem. It is suggested that in future graduate unemployment statistics should be complemented by the duration of unemployment to provide a comprehensive picture of graduate unemployment in Malaysia.

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Appendix 1

Definition and measurement of variables (unemployment duration)

Variable	Measurement
Types of degree	
UUM Economics	Dummy variable for UUM Bachelor of Economics (comparison group: UTAR Bachelor of Accounting)
UUM Public/ Development Management	Dummy variable for UUM Bachelor of Public Mgt and Development Mgt (comparison group: UTAR Bachelor of Accounting)
UUM Business Admin	Dummy variable for UUM Bachelor of Business Admin (comparison group: UTAR Bachelor of Accounting)
UUM Accounting	Dummy variable for UUM Bachelor of Accounting (comparison group: UTAR Bachelor of Accounting)
UUM IT	Dummy variable for UUM Bachelor of IT(comparison group: UTAR Bachelor of Accounting)
UUM Other degrees	Dummy variable for UUM Others degree: Tourism/Education/Technology Mgt/Decision Sciences (comparison group: UTAR Bachelor of Accounting)
UUM Human Resources/ Social Work	Dummy variable for UUM Bachelor of Human Resources Mgt/ Social Work Mgt (comparison group: UTAR Bachelor of Accounting)
UUM International Bus/ Issues Mgt	Dummy variable for UUM Bachelor of International Business/ Issues Mgt (comparison group: UTAR Bachelor of Accounting)
UUM Finance	Dummy variable for UUM Bachelor of Banking/Finance (comparison group: UTAR Bachelor of Accounting)
UUM Communication	Dummy variable for UUM Bachelor of Communication (comparison group: UTAR Bachelor of Accounting)
UTAR Business Admin	Dummy variable for UTAR Bachelor of Business Admin (comparison group: UTAR Bachelor of Accounting)
UTAR IT/ Computer Sciences	Dummy variable for UTAR Bachelor of Info Sys/Info Sys Engineering/Computer Sciences (comparison group: UTAR Bachelor of Accounting)
UTAR Other degrees	Dummy variable for UTAR Bachelor of Chinese Studies/Journalism /Public Relations (comparison group: UTAR Bachelor of Accounting)
Family background	
Father economically inactive	Dummy variable father's employment status economically inactive
Father's education level	Father's education level: 1=no formal schooling; 2=primary not completed; 3=primary completed; 4=secondary not completed; 5=secondary completed; 6=O level or equivalent; 7=A level & above
Mother economically inactive	Dummy variable mother's employment status economically inactive
Mother's education level	Mother's education level: 1=no formal schooling; 2=primary not completed; 3=primary completed; 4=secondary not completed; 5=secondary completed; 6=O level or equivalent; 7=A level & above
Family size	Family size
Family working member	Family working member

Language proficiency

English as main communication language (informal)	Dummy variable for use of English as main communication language among friends (informal usage)
English language proficiency	Self-perceived (Ordinal scale: 0 'non-user' to 12 'expert-user')
Bahasa Melayu (Malay language) proficiency	Self-perceived (Ordinal scale: 0 'non-user' to 12 'expert-user')
Chinese language proficiency	Self-perceived (Ordinal scale: 0 'non-user' to 12 'expert-user')
Tamil language proficiency	Self-perceived (Ordinal scale: 0 'non-user' to 12 'expert-user')

Academic-related

Academic attainment	Cumulative Grade Point Average (Continuous scale: 2 to 4)
Matriculation for univ. entry qual	Dummy variable for university entry qualification Matriculation[3] (comparison group of STPM[2])
Certificate/Diploma for univ. entry qual	Dummy variable for university entry qualification Diploma or Certificate[4] (comparison group of STPM[2])
UEC for univ. entry qual	Dummy variable for university entry qualification Unified Examination Certificate (UEC)[5] (comparison group of STPM[2])
Other univ. entry qual	Dummy variable for university entry qualification A-level/Pre-U/others[6] (comparison group of STPM[2])
Universiti Tunku Abdul Rahman	Dummy variable for types of university being UTAR (1 if UTAR and 0 if UUM)

Job search/work-related

Ratio of job seekers to job vacancies	Number of job seekers / number of job vacancies (In non-negative continuous number)
Job applications submitted	Number of job applications submitted (In non-negative discrete number)
Expected wage	Self-expected wage (RM per month)
Lowest wage willing to work for	Lowest wage willing to work for (RM per month)
Self-expected unemployment duration	Self-perceived unemployment duration before graduation (months)
Training on job search/interview	Dummy variable for attending training/course/seminar on job search/interview techniques
Sharing job market info	Dummy variable for sharing job market info among friends
Work during university vacations	Dummy variable for work during university vacations
Practicum/industrial training	Dummy variable for having practicum /industrial training
Self-reported Marketability of degree studies	Self-perceived marketability of degree studied (Ordinal scale: 1 'low marketability' to 7 'high marketability')

Financial-related

Unearned income	Dummy variable for receipt of unearned income while unemployed
Financial support	Dummy variable for receipt of financial support while unemployed
Financial difficulties	Financial difficulties faced while unemployed (Ordinal scale: 0 'no fin difficulties' to 6 'high fin difficulties')
Financial difficulties2	Squared financial difficulties

Happiness-related

Overall life happiness	Self-reported happiness in overall life during final year studies (Ordinal scale: 1 'very unhappy' to 7 'very happy')
University life happiness	Self-reported happiness in university life during final year studies (Ordinal scale: 1 'very unhappy' to 7 'very happy')

<u>Socio-demographic</u>

Age	Age in years
Male	Dummy variable for being male
Malay	
	Dummy variable for ethnic group Malay (comparison group: Chinese)
Other ethnic groups	Dummy variable for ethnic group Indian or others (comparison group: Chinese)
Self-reported health condition	Self-reported health condition (Ordinal scale: 0 'poor health condition' to 6 'excellent health condition')
Home town in rural	Dummy variable for home town other than big city or state capital
Car driving license	Dummy variable for having car driving license

Note:

Variables in italics: time-varying.

STPM: pre-university qualification equivalent to standard of UK A-level. Open examination and STPM normally takes 1 ½ years to complete.

Matriculation similar to foundation studies of university. Normally takes 2 semesters to complete.

Certificate and diploma awarded by polytechnics, colleges and other institution of higher learning.

UEC (Unified Examination Certificate) offered by United Chinese School Committees' Association of Malaysia. Accepted as university entry qualification by private higher education sector in Malaysia. Nevertheless, not recognized by Malaysia government and, thus, public university does not accept UEC as entry qualification.

Others, including A-level, foundation studies, and other pre-university equivalent studies.