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Occupational Transition and Country-of-Origin Effects in the Early Stage Occupational Assimilation of Immigrants: Some Evidence from Australia*

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Abstract

We examine the occupational attainment of recent immigrants at two years post migration in order to study their early stage assimilation into the labour market in Australia. Human capital endowments and country-of-origin effects are examined for six occupational groups (including unemployment). We also study transitions across occupations from source to host country. The empirical approach utilises the Ordered Generalised Extreme Value model which embodies differing utility functions across occupational outcomes, as well as accounting for any ordering in these outcomes. The results suggest that the transferability of knowledge and skills is affected by cultural and social backgrounds, and that non-Western immigrants are disproportionately channelled into inferior jobs post migration. The investigation of the country-of-origin effect on the skilled migrants' occupational transition process is especially apt in the context of skill shortages in many host countries.

JEL Classification: J24, J61;

Keywords: Immigrant, occupational assimilation, ordered discrete data, ordered generalised extreme value model, labour market outcomes.

1 Introduction

Immigration continues to be an important source of economic and demographic change in many countries around the world. With ageing populations and skill shortages across much of the developed world, and with the accession of many former Eastern European countries into the European Union, immigration is often seen as a potential means of addressing these concerns (see, for example, Productivity Commission, 2006). Therefore, understanding how immigrants fare in the labour market over time is central to assessing the immigrant settlement process and is of key interest to policy makers. Being a relatively young country with a history of continued immigration and a culturally diverse population, Australia appears to be an ideal case-study country with which to address issues of immigrant assimilation. Indeed, at June 2005, overseas-born residents comprised 4.9 million, or 24%, of the Australian population. During 2004-2005, Australia's population increased by 110,100 persons due to net overseas migration, representing 46% of Australia's population growth for the year, and the proportion of migrants of prime working-age is higher than that of resident population (ABS, 2006). Thus, focusing on the working-age recent immigrants to Australia, this paper investigates their labour market outcomes and occupational transitions.

The predominant theoretical framework of immigrant adjustment in the labour market of the receiving country is based on the international transferability of human capital (Chiswick, 1986). Duleep and Regets (1999) provide a formal theoretical model. In spite of a number of researchers have argued that occupational status captures both the pecuniary and non-pecuniary aspects of labour market outcomes and provides an indication of a broader representation of economic and social well-being (Nickell, 1982). The existing literature has mostly been devoted to earning's assimilation (see a survey paper, Borjas, 1994), and occupational assimilation has received less attention. There are a few Australian studies on immigrants' occupational attainment. However, the current existing studies fail to recognise that immigrants in different occupations face different transferability issues and language and culture barriers have different levels of impact on these occupational transition processes. For example, good command of English and understanding local culture are more important for a white collar clerk, and less relevant for a blue collar machine operator. These studies mainly fall into the following three categories. Firstly, studies that use a continuous occupation index as dependent variable are confined by the single dimensional information, a ranking based mostly on skill level and prestige of the occupation. This type of study can only reflect relative movement on that particular dimension and ignore other dimensions of information for specific types of jobs. For example, Evans's (1987) study on the effects of birthplace and English proficiency on labour market outcomes using the 1981 Australian

Census; and more recently, the multiple regression analysis of Chiswick et al. (2005) on the immigrants' occupational mobility based on the Longitudinal Survey of Immigrants to Australia (LSIA) 1993 Cohort. Secondly, studies that use an ordered probit approach assume that human capital endowments, English and culture have the same effects on the labour market outcomes, and the probabilities of choosing certain occupation are only distinguished by intercepts. Following this line, Miller (1987) highlight the concentration of immigrants from non-English speaking countries in low ranked occupations. Finally, using pooled dada set of LSIA 1993 and 1999 Cohorts, the studies of Junankar and Mahuteau (2005) and Mahuteau and Junankar (2008) investigate the probability of immigrants holding a "good job" both in objective (not worse than previous positions in home countries according to first digit occupation code) and subjective (satisfied with current jobs) terms. These studies focus on a very board relative comparison of home country and post migration occupations. Thus immigrants in very different types of job, such as chef and professor, can be mixed in the same category. Obviously, these studies are not suitable to examine the transferability of different types of occupations.

In present study, the ordered generalised extreme value (OGEV) model employed allows for both the flexibility in modelling separately the effects of human capital endowments and country-of-origin on the utility of each labour market outcome (unemployment and 5 discrete categories of occupations), and also the potential ordered correlation among the labour market outcomes via the unobservable factors. It nests the commonly used MNL model but is not restricted by the property of *Independence from Irrelevant Alternatives* (IIA) of the former. To examine immigrants' labour market assimilation in their early stage of settlement, we use data from the 1999 cohort of LSIA.[1]

Furthermore, , we explore the occupational transitions from home countries to Australia by different types of occupations. Green (1999) reveals that immigrants to Canada are very likely to stay unemployed or working in a less skilled job in the first 3 year post migration, before they manage to come back to their intended occupations. At the time the immigrants

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[1]There are two cohorts (1993 and 1999 Cohorts) of immigrants interviewed in LSIA. We notices that a couple of policy changes happened between these two cohorts: i) the waiting time for welfare entitlement change from six months to two years; ii) the selection criteria for skilled migration scheme are tighten; iii) intakes for family and refugee streams are reduced (DIMIA, 2002). Using wave 1 of these two Cohorts, Cobb-Clark (2003) find substantial improved employment outcomes for 1999 immigrants compared to 1993 immigrants. Unfortunately, occupations in 1993 and 1999 Cohorts are classified using different standards. Occupations in 1993 Cohort used the first edition of the Australian Standard Classification of Occupation, in which eight major groups represent eight skill levels; 1999 Cohort used the second edition of the Australian Standard Classification of Occupation, in which nine major groups are assigned to one of five broad skilled levels. Hence we can not pool the data from the two cohorts to investigate the policy effects and to have a bigger sample. As we only consider the LSIA 1999 Cohort data, evaluating the impact of policy changes between the LSIA 1993 and 1999 immigrants is not our objective in this study.

in our sample arrived, Australia was in shortage of skilled labour including professionals and tradesmen. The immigration polices were specifically directed at filling in such vacancies. Thus we would like to investigate whether these migrants have remained in their former occupational categories post migration, or what occupations they were more likely to have moved to. Moreover, do these transitions differ by country-of-origin? As observed from cross-country evidence (Bauer et al., 2000), the extent of human capital transferability between source and host countries is found to be dependent on the similarities of the two countries with regard to language, culture, labour market structure and institutional settings, as well as the type of skills. In this study, the investigation of the country-of-origin effect on the skilled immigrants' occupational transition process is especially useful in the context of skill shortages and of obvious importance to policy makers.

The paper is structured as follows. In Section 2, we outline the statistical model. This is followed in Section 3 by a description of data and variables. Section 4 presents the results and focus on human capital endowments, country-of-origin and occupational transitions. We conclude the paper in Section 5.

2   Statistical Model: OGEV

The approaches employed in modelling discrete occupational choices in the literature are predominately the ordered probit (OP) and multinomial logit (MNL) models. The former emphasizes the hierarchy of occupation (see for example, Le and Miller, 2001). With the use of a single latent occupational attainment variable, it is inflexible in assuming that an individual will move to the next, higher skilled, occupation as the latent dependent variable increases and passes respective threshold values. It thus can not distinguish the potentially different effects of the covariates on the attainment of different occupational categories. The MNL model is more extensively applied in the analysis of occupational attainment (see, for example, Schmidt and Strauss, 1975; Brown et al., 1980; Polachek, 1981). It is more flexible in specification with the estimation of a separate latent equation for each occupation, but it does not allow for the fact that some categories are more likely to be closely related due to closer positioning in the occupational categories. The assumption of independent error terms of different latent equations also implies the undesirable property of "Independence from Irrelevant Alternatives" (IIA), which implies that the odd ratio of any two choices is independent of the probabilities of other choices (Greene, 2003). Miller and Volker (1985) compare the MNL and OP approaches using data from the Social Mobility in Australian Project. They find substantial evidence of job hierarchies, but the MNL analysis exhibits a superior ability to predict occupational distributions. Here we use an ordered generalised

extreme value (OGEV) model that is flexible and also accommodates any potential ordering in the observed occupational categories. Small's (1987) OGEV model belongs to the class of the generalised extreme value (GEV) models advocated by McFadden (1978), and nests the MNL model as a special case. Assume that the indirect utility function for immigrant i having occupation j is given by

$$U_{ij} = V_{ij} + \varepsilon_{ij}, \quad i = 1, \ldots n; \ j = 1, \ldots J. \tag{1}$$

V_{ij} is assumed to be a linear (in the parameters) function of observed individual characteristics $\mathbf{x}_i$ such that $V_{ij} = \mathbf{x}_i' \beta_j$, and ε_{ij} is the random disturbance term. An immigrant is assumed to choose from the J occupations the one with the maximum utility; that is, $Y_i = j$ if $U_{ij} > U_{ik}$ ($k = 1, ..., J; k \neq j$) where Y_i denotes the occupational choice made by immigrant i. Equation (1) represents the class of Generalised Extreme Value (McFadden, 1978) model when the marginal distributions for ε_{ij} are assumed to be extreme value. As each occupation has its own latent equation with a distinctive set of parameters, the model allows differing effects of the characteristics for different occupational categories. This is particularly apt for designing policies aimed at targeting particular groups of occupations.

When ε_{ij} are assumed to independently follow a type I extreme value distribution, equation (1) leads to the familiar MNL model (Maddala, 1983). The OGEV model relaxes the restriction of independence between these unobservable characteristics. In particular, it allows for correlations between the errors of outcomes that are close to each other in the ordering. The magnitude of the correlation between any two choices is positively related to the proximity of the two choices. When $|j - k| > M$ for a pre-selected integer M and two choices j and k, $j \neq k$, the correlation is zero. Following Harris et al. (2006) and Brown et al. (2006), we consider a standard OGEV model with $M = 1$, allowing for the adjacent outcomes to be correlated. The resulting probabilities are given by

$$P_{ij} = \frac{\exp\left(\rho^{-1}\mathbf{x}_i'\beta_j\right)}{\sum_{r=1}^{J+1} \left(\exp\left(\rho^{-1}\mathbf{x}_i'\beta_{r-1}\right) + \exp\left(\rho^{-1}\mathbf{x}_i'\beta_r\right)\right)^{\rho}} \tag{2}$$

$$\times \ \left[\left(\exp\left(\rho^{-1}\mathbf{x}_i'\beta_{j-1}\right) + \exp\left(\rho^{-1}\mathbf{x}_i'\beta_j\right)\right)^{\rho-1} \right.$$
$$\left. + \ \left(\exp\left(\rho^{-1}\mathbf{x}_i'\beta_j\right) + \exp\left(\rho^{-1}\mathbf{x}_i'\beta_{j+1}\right)\right)^{\rho-1}\right],$$

where $\exp(\rho^{-1}\mathbf{x}_i'\beta_0) = \exp(\rho^{-1}\mathbf{x}_i'\beta_{J+1}) = 0$ and $0 < \rho \leq 1$. The model implies a correlation between outcomes that are near neighbours, which is inversely related to the parameter ρ. As $\rho \to 1$, OGEV probabilities converge to MNL ones, as such testing $\rho = 1$ serves as a test

for MNL versus OGEV.

3   Data and Variables

We use data from the Longitudinal Survey of Immigrants to Australia, 1999 Cohort, conducted by the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA). The population represented in the sample is all principal applicants of offshore-visa immigrants to Australia, who entered Australia between 1 September 1999 and 31 August 2000 and were interviewed twice over a period of about 18 months. The survey covers a wide range of information on immigrants, and the information used here is from both waves of the survey in 1999 Cohort. The sample were from immigrants living in metropolitan areas where the vast majority of new immigrants are concentrated, and the final LSIA 1999 Cohort sample involves 3,124 principal applicant arrivals. This represents around ten per cent of the total principal applicants who arrived in the one year survey period. As the data is collected 1–8 months post migration and span only 18 months, they provide information about the early settlement process rather than about long-run equilibrium behaviour. To focus our research on the immigrants' early stage occupational assimilation, we delete from our sample anyone who has longer than two years work experience in Australia before migration.[2] We also exclude those who are not in the labour force in the second wave survey. This resulted in an estimation sample of size $N = 1,541$.

In the LSIA 1999 Cohort data, occupations are recorded by a four-digit classification in line with the second edition of the Australian Standard Classification of Occupation (ASCO). The ASCO second edition defines nine major occupational groups according to two main criteria of skill level and skill specialisation, where in the case of two major occupational groups having the same skill level, they are differentiated from each other on the basis of skill specialisation (ABS, 1997). The definition of the nine occupational groups and their associated five skill levels are given in the first two columns of Table 1.

We consider six categories of occupational attainment in this study and define our dependent variable Y ($Y = 1, ..., 5$) in the last column of Table 1 accordingly. The lowest occupational category for people in the labour force is the unemployed. We then merge the nine occupational groups into five categories predominantly based on skill levels. Managers and professionals were merged, as were elementary service workers and labourers based on the same skill levels. One exception is for Skill Level 3 and 4. As we intend to examine

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[2]Thus we exclude migrants who had worked in Australia on a working visa before migration and who had already gone through the early stage migration assimilation process: 343 people have at least 1 month work experience in Australia, of which 112 had worked longer than two years in Australia before migration. These 112 respondents are deleted.

Table 1: Occupational Distribution of immigrants 16-64 Years of Age at Longitudinal Survey of Immigrants to Australian Cohort 2

Major Group	First digit ASCO	Skill level	Average Wage Rate	Y
Managers / Administrators	1	1	NA	5
Professionals	2	1	24.2	5
Associate Professionals	3	2	20.9	4
Tradespersons and Related Workers	4	3	17.1	3
Advanced Clerical and Service Workers	5	3	16.8	2
Intermediate Clerical, Sales and Service Workers	6	4	15.4	2
Intermediate Production and Transport Workers	7	4	16.8	3
Elementary Clerical, Sales and Service Workers	8	5	13.5	1
Labourers and Related Workers	9	5	13.9	1
The unemployed*	NA	NA	NA	0

NA : Not available.

the transferability of human capital to Australia by different country-of-origins, and the transferability of skills for clerical occupations is more dependent on, for example, language proficiency, culture and institutional setting than that for technical manual jobs, we group tradespersons and intermediate production and transport workers in one category, and advanced and intermediate clerical and service workers in another.[3]

Table 1 in the Appendix presents the numbers of immigrants in popular job types for each of the occupational categories both before and after migration. Overall, the numbers of higher skilled occupations have decreased while the numbers for the lower occupations have increased. So on the whole immigrants appear to have been channelled into inferior occupations post migration. In terms of individual job types, the numbers of general managers in the top occupational group, the marketing and advertising professionals, the office managers and customer service managers in the para-professional category, as well as secretaries and personal assistants in the clerk category have all decreased, indicating that the communication skills and social network in home countries are not transferred to the new country easily. At the same time, electricians, primary and secondary school teachers also apparently encounter difficulties in pursuing their career in Australia, probably owing to problems in qualification accreditation and entry barriers. These numbers suggest that skills may not be perfectly transferable across countries. How well the immigrants' skills are recognised may depend on the differences across labour market structures, as well as the system of education and occupational accreditation between the host and source countries. The major contribution of this study is to examine the influence of country-of-origin background on the

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[3]These categorisations are supported by the Cramer and Ridder (1991) test.

skill-transferability in the context of various occupations, and who have been relegated to less preferred occupational choices.

We now move to the explanatory variables used in the study for the individual occupational categories. All variables used in the model are defined in the Appendix. The theory of human capital provides a convenient framework for analysing labour market outcomes. Education attainment, labour market experience, language ability, and former occupation, together with some standard demographic variables such as age and gender, define an immigrant's human capital profile. Firstly, education is a proxy for general human capital, and it reflects competency-based initiatives in employment and entry requirements into certain occupations. Generally, learning skills gained through education increase the probability of working in higher occupation hierarchy. However, due to different schooling systems, home country education may not be readily transferable. Educational qualifications seem to be less transferable the more dissimilar the origin and destination countries (Khan, 1997). Miller's (1987) study based on the 1981 Australian census, finds a relatively minor influence of education on the occupational attainment of immigrants from non-English speaking countries, which can be regarded as evidence for the transferability notion.

Secondly, we use local experience (the sum of durations of all kinds of employment in Australia) as a covariate in the model to capture the time when the immigrants gain exposure to the new labour market[4]. In this process of "learning by doing", immigrants accumulate more information about the host labour market and the associated skill sets required. This aids the migrant in integrating their home country skills into their new labour market. Thirdly, occupational status one year before migration is used as a proxy for more narrowly defined task-specific skills, and it indicates labour market attachment immediately prior to migration[5]. Besides, as the labour market outcome examined here is acquired approximately 1.5 to 2.5 years following migration, correlations with past occupations can reflect occupational mobility.

Fourthly, language skills complement existing human capital by improving the transferability of skills, so it is often treated as part of an individual's stock of human capital.

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[4]In each wave questions are asked about the start and end date of current main job, current second job, most recent previous job and next recent previous job. Local working experience is calculated by summing the periods of above jobs and subtracting the overlapping periods.

[5]Endogeneity arises when two variables are affected by common factors. Because of the pre-determined nature of former-country-occupation, there is no general common component, such as social-economics factor, that affects former-country-occupation and post-migration-occupation in wave 2 (our dependent variable) at the same time. However, they may share some individual specific components. For example, a person born in a chef family and has talent in cooking may work as a chef before and after migration. Hence from former-country-occupation, inference is made about, how working in certain occupation in home country and possibly possessing specific propensity as well (not just working in certain home-country-occupation itself), would help an immigrant retain his/her occupation post migration.

Chiswick and Miller (1998) demonstrates that the ability to communicate in the host country's language is one of the most important forms of location-specific human capital, and that the acquisition of this form of human capital is crucial to the immigrants' labour market success. Additionally, age and gender are included in the model, which are the demographic factors deemed relevant to people's life-cycle career decision-making. As the immigrants in the "skilled visa" are *points tested* (in terms of age, English ability, education, and work experience) for entry into Australia, the impacts of these characteristics on the labour market performance indicates the abilities of these criteria to screen the potentially more economic beneficial immigrants[6].

According to the voluminous research on immigrant adjustment, the stock of an immigrant's human capital obtained in the home country may not be fully transferable to meet the requirement of the host country's labour market. Cultural background affects the transferability of human capital, which has been shown to be important in determining employment and unemployment propensities (Price, 2001a,b). In order to investigate how immigrants with different country-of-origin backgrounds fare in the Australian labour market, immigrants are classified into three broad groups in our study[7]. First, Western countries (North America, United Kingdom and Northwest Europe) have the least social distance from Australia, which is characterised by similarity in cultures, institutions and level of economic development. The study of Evans and Kelley (1991) finds that Anglophone and Northwest Europe immigrants do just as well as native Australians with similar education, labour-force experience, and demographic characteristics. Second, Asia became the main source of flow of immigrants to Australian after the Second World War. Although close to Australia geographically, Asians have significantly different cultures, religions and ethnicities. The remaining immigrants are from southern Europe, Latin America, Africa and less developed Oceania countries. Most of these countries are at a lower level of economic development than Australia. Thus the majority of the immigrants from this area had little experience of market economies, and their education is typically not comparable to the same level of that in Australia. Desirably, there are native English speakers in each of these three groups, which helps to separately identify any language effects.

Immigrants' skills acquired from former and local working experience may be treated differently by Australian employers according to their country-of-origin. Due to institutional and economic disparities, some skills and knowledge acquired abroad may have little value

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[6]To avoid the problem of multi-collinear, visa category is not included in the model. When we put visa category as extra explanatory variable, variables of English and former occupations become insignificant, which implies correlations between visa variable and other human capital endowments that are used as selection criteria for granting skilled visa.

[7]Further disaggregation was not possible due to small effective sample sizes.

Table 2: Sample Statistics: Immigrants 16-64 Years of Age at Longitudinal Survey of Immigrants to Australian Cohort 2, by country-of-origins

*	Western	Asia	Others	All
Demography				
Men	0.63	0.58	0.67	0.63
Age/10	3.51	3.43	3.40	3.44
Educational attainment				
Schooling or less	0.16	0.28	0.33	0.27
Vocational diploma/certificate	0.33	0.18	0.35	0.28
Bachelor degree	0.22	0.32	0.20	0.25
Postgraduate degree or higher	0.30	0.22	0.12	0.20
English Proficiency				
Not well	0.01	0.24	0.21	0.17
English well	0.27	0.53	0.51	0.45
English Only or English best	0.72	0.23	0.28	0.38
Labour force experience in Australia	1.38	1.14	1.06	1.18

to employers in the new country. In the finding of a study on earning assimilation, the return to foreign experience is generally insignificant (Friedberg, 2000). As we do not have data for work experience in the former country, we consider cross-terms between country-of-origin and age/local experience to allow for potential differing effects of work experience by country-of-origin. Age has been used extensively as a proxy for work experience in the literature. Given that the migrants' period of stay in Australia ranges narrowly from about 1.5 years to 2.5 years, age here can be treated as a proxy for former working experience.

Table 2 presents the mean values of covariates by country-of-origin. As LSIA 1999 Cohort was stratified by both visa-type and country-of-origin grouping, the within country-of-origin group means of the covariates are consistent with the population means for the 1999 immigrants. As suggested in Table 2, the three groups are quite similar with regard to gender and age profiles. Western immigrants have better English fluency and more of them have tertiary education. Moreover, Western immigrants' local experience is greater than that of non-Western immigrants, which implies that the latter encounter more difficulties when entering the Australian labour market.

Including former occupation as one of the explanatory variables enables the model to reflect the occupational dynamic. Table 3 presents the proportions of individual occupations within each country of origin both before and after migration. They show that former professionals/managers constitute the biggest proportion of immigrants for all three country-of-origin groups (Western 51%; Asia 45%; Other 35%). The figures also indicate that while the proportion of professionals/managers has decreased for all three groups after migration, the proportion of labourers has increased for all three groups. In particular, there is a much

Table 3: Occupational Dynamic of Immigrants 16-64 Years of Age at Longitudinal Survey of Immigrants to Australian Cohort 2

*	Western (n=405)		Asian (n=579)		Other (n=557)		Total Sample (n=1541)		
	Bef.	Aft.	Bef.	Aft.	Bef.	Aft.	Bef.	Aft.	Predicted
Students	2.47		12.61		5.75		7.46		
The Unemployed	2.47	2.96	7.08	10.34	13.82	17.41	8.31	10.96	10.71
Labourers	3.95	5.93	5.70	20.69	8.98	23.88	6.42	17.96	18.33
Clerks	15.56	21.48	13.82	17.24	9.34	12.75	12.65	16.73	16.74
Tradespersons/Operators	14.81	12.10	6.56	11.72	19.03	17.41	13.24	13.88	13.88
Para-professionals	10.12	10.37	9.50	9.83	8.26	6.82	9.21	8.88	8.81
Professionals/managers	50.62	47.16	44.73	30.17	34.83	21.72	42.70	31.58	31.53
Total	100	100	100	100	100	100	100	100	100

*Western: England(159), U.S.A.(64),Germany(42), Canada(38),Sweden(19), Ireland(13),Netherlands(13), Denmark(11)

Asian: Philippine(96), China(81),India(73), Vietnam(43),Indonesia(39), Malaysia(35),Hong Kong(30), Taiwan(30)

Other: South Africa(87), Fiji(69),Yugoslavia(41), Italy(28),Croatia(23), Lebanon(22),Bosnia and Herzegovina(21), Iraq(19)

higher relative increase in the labourer proportions of the Asian and Other group, than that for the Western group. While only 5.7% of the Asian migrants were labourers before migration, 20.7% of them are labourers in the first couple of years after migration.

In addition, the second cohort of the LSIA was undertaken to evaluate the effects of revised migrant selection criteria, as well as the effects of extending from six months to two years the waiting time for social security entitlement. Hence, with the exception of some humanitarian immigrants, the labour market outcomes examined in this study relate to the period without access to social security benefits.

4   Results

The estimated coefficients and their associated standard errors for five of the six random utility equations are given in Appendix Table 2; the normalisation is on the parameter vector corresponding to the unemployed. Firstly, the estimated coefficient for ρ is 0.234 which is statistically significantly different from both 1 and 0. Rejecting the null hypothesis of $\rho = 1$ suggests that correlation across the neighbouring occupational outcomes is indeed present in the data. An estimated value of 0.234 for ρ indicates an correlation coefficient between 0.354 ($\rho = 0.5$) and 0.427 ($\rho = 0.1$) for the error terms of the neighbouring labour market outcomes (Small 1987). In the final column of Table 3 we present model predicted probabilities for the various occupational categories, expressed as percentages and averaged over all individuals. These closely mimic the observed sample proportions in the data, suggesting that the model performs well.

While the coefficients of the model indicate the marginal impact of explanatory variables on the utility level of each of the occupational choices, it is the marginal impact on the ranking of the utilities across all occupations that determines the ultimate outcome. The marginal effects of individual explanatory factors on the probabilities of alternative occupational outcomes (evaluated as the average marginal effects over the full sample) together with their standard errors are given in Table 4 . We discuss these below the impacts of broad groups of explanatory variables.

4.1 Standard Labour Market Endowments (Gender, Education and English Proficiency)

We start with the gender effects in Table 4. The only significant effects appertaining to gender appear to be those relating to the Clerks and Tradespersons. Possibly due to the physical demands of these occupations and traditional job-sorting arguments, males have a 0.238 higher probability of being a Tradesperson relative to females, but a 0.258 lower probability of being a Clerk (which includes advanced clerical and service workers and intermediate clerical, sales and service workers), controlling for all other explanatory factors.

There appears to be some degree of human capital transferability with some significant education effects. Relative to the omitted category of no post-secondary education a vocational qualification marginally decreases the probability of unemployment (-0.004), whilst having a much more pronounced significant negative effect (-0.206) on the outcome of Labourers. The vocational qualification also, not surprisingly, boosts the probability of being a Clerk by some 16.7 percentage points and a Tradseperson by some 13.1 percentage points. Presumably acting as both an employer's screening device and a reflection of inherent ability, having a bachelor degree significantly reduces the probability that the migrant is a Labourer, whilst increasing that of being both a Clerk (by 0.195) and a Professional (by only 0.07). The significant Clerk effect is possibly a reflection of an early stage assimilation effect, whereby over-qualified migrants use such jobs as clerks as an entry point into the labour force. There is weak evidence that a postgraduate qualification increases the probability of Unemployment (a small but statistically significant effect however), as well as decreasing the probabilities of being both a Tradseperson or a Para-Professional. There is however, a large (0.218) and significant positive impact of postgraduate qualification on the probability of being a Professional, suggesting a degree of human capital transferability at the top end of the educational spectrum. Overall, vocational qualification holders seem to be better allied to jobs commensurate with their qualification and less likely to be unemployed. This phenomenon is inconsistent with the Australian labour force as a whole as indicated

Table 4: Average Marginal Effects Evaluated over the Full Sample

Variables	Unemployed	Labourers	Clerks	Trades-persons	Para-professionals	Professionals
Intercept	0.069**	0.773**	0.661*	-0.473	-0.851*	-0.180
	(0.027)	(0.301)	(0.383)	(0.454)	(0.460)	(0.424)
Demography						
Gender(Female)						
Male	0.001	-0.023	-0.258**	0.238**	0.057	-0.014
	(0.003)	(0.034)	(0.052)	(0.057)	(0.038)	(0.041)
Age	-0.026**	-0.242*	-0.361**	0.347	0.328	-0.046
	(0.012)	(0.131)	(0.179)	(0.218)	(0.221)	(0.211)
Age Square	0.003**	0.039**	0.032	-0.041	-0.051*	0.017
	(0.001)	(0.016)	(0.023)	(0.027)	(0.029)	(0.027)
Age $\times$ Asian	0.005	-0.070	0.102	-0.121*	0.010	0.075
	(0.004)	(0.057)	(0.067)	(0.070)	(0.059)	(0.059)
Age $\times$ Other	0.003	-0.055	0.106	-0.098	0.057	-0.013
	(0.004)	(0.055)	(0.069)	(0.073)	(0.061)	(0.060)
Education(schooling)						
Vocational diploma/certificate	-0.004**	-0.206**	0.167**	0.131*	-0.073	-0.015
	(0.005)	(0.046)	(0.057)	(0.046)	(0.044)	(0.059)
Bachelor degree	0.000	-0.180**	0.195**	0.001	-0.086	0.070**
	(0.004)	(0.050)	(0.060)	(0.059)	(0.050)	(0.063)
Postgraduate degree or higher	0.004*	-0.137	0.001	-0.035*	-0.050*	0.218**
	(0.005)	(0.056)	(0.073)	(0.081)	(0.063)	(0.070)
English proficiency(Not well)						
English well	-0.001	-0.145**	0.226**	-0.105**	-0.095	0.120
	(0.004)	(0.053)	(0.074)	(0.055)	(0.053)	(0.069)
English Only or English best	0.002	-0.280**	0.259**	-0.124**	0.031	0.111
	(0.005)	(0.067)	(0.090)	(0.067)	(0.057)	(0.072)
Australia Working Experience	-0.035**	-0.068	0.034	-0.150	0.119	0.100
	(0.011)	(0.096)	(0.102)	(0.115)	(0.100)	(0.087)
Australian experience $\times$ Asian	-0.019*	-0.004	-0.108	0.192	-0.192*	0.131
	(0.012)	(0.104)	(0.115)	(0.126)	(0.109)	(0.102)
Australian experience $\times$ Other	-0.018	-0.116	-0.075	0.071	0.085	0.054
	(0.012)	(0.105)	(0.117)	(0.130)	(0.118)	(0.110)
Occupation 1 year before migration	(Not working)					
Students	-0.002	-0.159*	0.008	-0.090**	0.171**	0.072
	(0.006)	(0.074)	(0.097)	(0.111)	(0.112)	(0.107)
Labourers	0.004	0.104	0.123**	-0.096	0.026	-0.160*
	(0.006)	(0.078)	(0.101)	(0.121)	(0.161)	(0.188)
Clerks/Salespersons	-0.003	-0.127	0.445**	-0.259**	0.078*	-0.134
	(0.005)	(0.067)	(0.092)	(0.116)	(0.107)	(0.099)
Tradespersons/Operators	-0.001	-0.015	-0.046	0.251**	-0.008	-0.181**
	(0.005)	(0.072)	(0.101)	(0.118)	(0.138)	(0.126)
Para-professionals	-0.005**	-0.174**	0.144**	-0.160**	0.298**	-0.103
	(0.007)	(0.078)	(0.089)	(0.102)	(0.111)	(0.105)
Managers/Professionals	-0.005**	-0.164**	-0.036	-0.232**	0.133*	0.305**
	(0.006)	(0.064)	(0.084)	(0.103)	(0.104)	(0.088)
Country of origin (Western)						
Asian	-0.003	0.383*	-0.305	0.367	0.148	-0.590**
	(0.016)	(0.229)	(0.261)	(0.270)	(0.234)	(0.236)
Other regions	0.009	0.525**	-0.373	0.396	-0.318	-0.239
	(0.017)	(0.231)	(0.273)	(0.292)	(0.258)	(0.250)

** and * indicate significant level of 5% and 10 respectively, and standard errors are in parentheses.

Table 5: Unemployment by Education Attainment for Person Aged 15-64, MAY 1999

Educational attainment	Unemployment rate (%)
Higher degree	1.9*
Postgraduate diploma	3.4
Bachelor degree	3.1
Undergraduate diploma	5.3
Associate diploma	5.2
Skilled vocational qualification	4.6
Basic vocational qualification	7.1
Completed highest level of school	7.7
Did not complete highest level of school	10.8
Still at school	20.5
Total	7.4

Note: * subject to sampling variability too high for most practical purpose.
Source: ABS(May 1999) Transition from Education to Work, 6227.0, Table 11.

in Table 5, where bachelor and higher degree holders have the lowest unemployment rates, suggesting a transferability problem of overseas tertiary education at least in the early stage of settlement.

In line with previous studies (see, for example, Chiswick and Miller, 1998; Evans, 1987; Chiswick et al., 2005; Junankar and Mahuteau, 2005), we find a quite strong "English-ability" effect. Relative to migrants with a 'not well' English ability, we find that better English speaking ability ('English well' and 'English best') decreases the probabilities of migrants being either a Tradesperson (-0.105 and -0.124) or a Labourer (-0.145 and -0.280), but has a large positive effect (0.226 and 0.259) on the probability of being a Clerk. This latter effect on Clerks is not surprising given that this occupation group involves predominately administrative roles requiring good local communication skills. However, for both of the two better English speaking variables, there are no statistically significant language effects at the top (Para-professionals and Professionals) or bottom (unemployed) ends of the skill-ranked occupation choice spectrum.

4.2   Country-of-Origin and Experience Effects

A further main focus of this study is to ascertain whether the transferability of human capital is affected by differences between source country and host country. These differences will relate to differing cultures, institutions and levels of economic development, and so on. Here we proxy these effects in aggregate by country-of-origin. Explicitly we include both

Table 6: Likelihood Ratio Test for Country-of-origin Effects

Unrestricted Model	Restricted Model	P-value
without Country-of-origin and cross-terms	with Country-of-origin without cross-terms	5.0716E-7
without Country-of-origin and cross-terms	with Country-of-origin and cross-term(Age)	1.6522E-5
without Country-of-origin and cross-terms	with Country-of-origin and cross-term(Local experience)	1.5551E-7
without Country-of-origin and cross-terms	with Country-of-origin and cross-terms	1.4654E-6
with Country-of-origin without cross-terms	with Country-of-origin and cross-terms	3.9023E-2

country-of-origin dummies and their interaction with age and local experience[8]. Thus, we allow country-of-origin effects to operate as "shift" variables as well as allow for the effects of both age and local experience to vary by country-of-origin. With regard to the country-of-origin dummy variables, there is evidence that, relative to the omitted category of Western migrants, Asian migrants are disadvantaged in terms of the top skilled Professional jobs, all other things, importantly English speaking effects, equal. The effect of being from "Other regions" is also negative for the top occupations here but it is statistically insignificant. On the other hand, both Asian and Other migrants have significantly higher probabilities of being in the Labourer category relative to Western migrants. Presumably these country-of-origin effects arise from the larger cultural and institutional divergencies of the source countries in the Asian and Other country groups as distinct from those in Australia.

Next, we present the age and local experience effects by three types of country-of-origin in Figures 1 and 2, separately for occupational categories. In Figure 1 we plot the predicted probabilities of migrants being in each of the six occupations by country-of-origin and age. Starting with the Unemployed graph in Figure 1.a, we see that the estimated probabilities of being unemployed are lowest at ages of around 30 to 40 for all three country-of-origin groups, and increase dramatically after this. This contrasts to the actual unemployment numbers in 1999 (Table 7) for the whole Australian population, where the 40-64 age group still enjoyed very low unemployment rates. Hence, it seems that uprooting from their home countries appears to be quite risky for more established mature migrants, with regard to unemployment probabilities. The probability of unemployment appears to be most severe for the Other group at all ages, except for very young labour participants where Westerners dominate. Asians have the lowest probability of being unemployed below the age of nearly fifty. Perhaps the relative high unemployment probabilities for young Westerners can be ascribed to a potentially higher notions of reservation wages, such that they are prepared to prolong their job-search periods. With regard to local experience for the Unemployed

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[8]Although individually, each country-of-origin dummy is insignificant, they are *jointly* significant using the Likelihood ratio criteria (Table 6); also the cross-terms with age and experience varied with regard to individual significance, but again they are jointly significant.
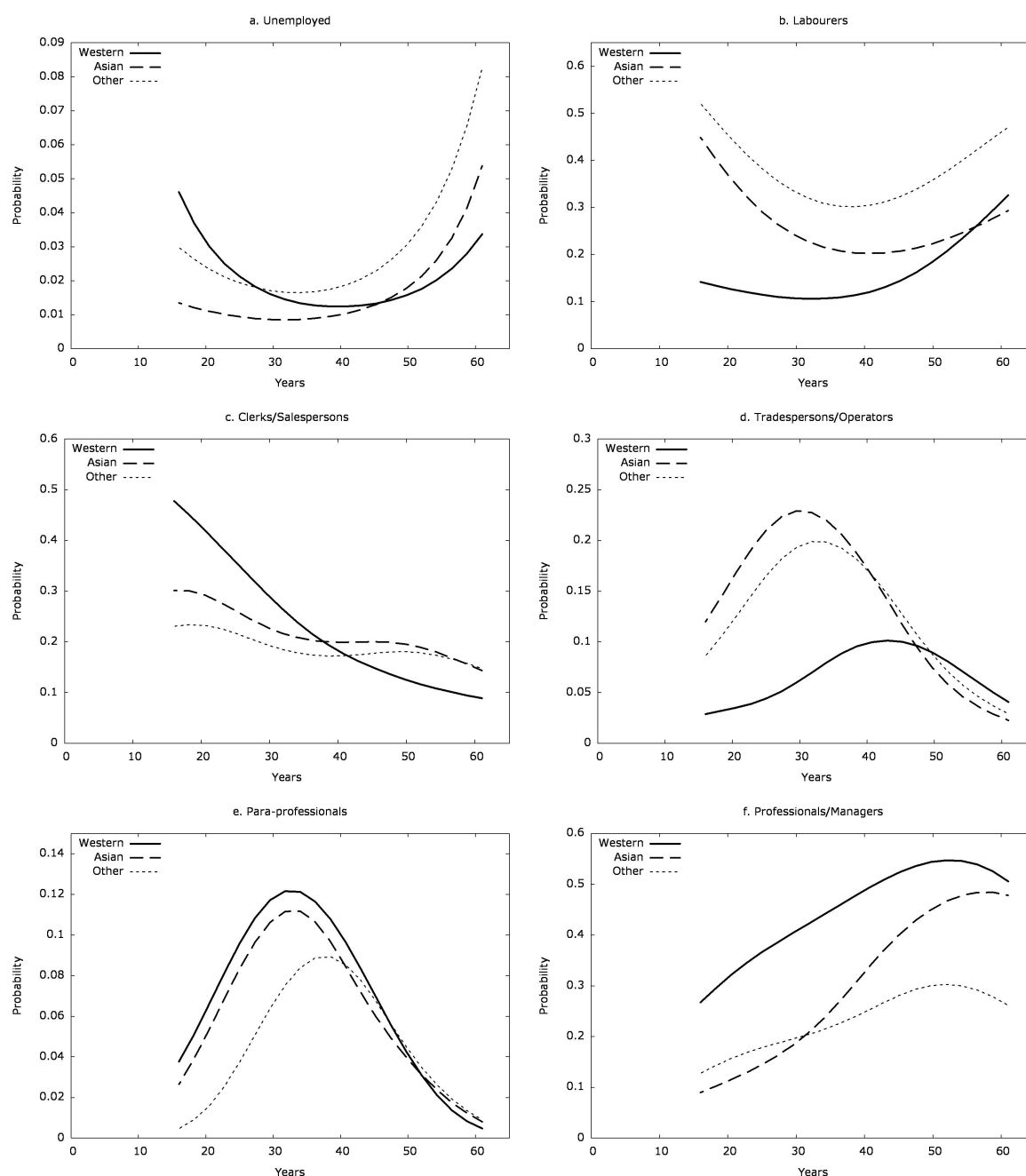
Figure 1: Age Effects by Country-of-origins: Average Predict Probabilities over the Full Sample

category in Figure 2.a, and controlling for age and the other characteristics, Other and Asian migrants with no, or little, local work experience have a very high probability of remaining unemployed.

Moving on to the lowest skill-ranked occupational outcome of Labourers in Figure 1.b,

Table 7: Unemployment by Age, November 1999	
Age group(years)	Unemployment rate (%)
15-19	17.4
20-24	8.8
25-34	5.8
35-44	5.1
45-54	4.1
55-59	5.6
60-64	4.1
Total	6.4

Source: ABS(November 1999) Labour Force, Australia, 6203.0, Table 24.

the probabilities of being labourers are uniformly dominated by Other migrants, followed by their Asian counterparts. The probabilities for Western migrants to be Labourers are uniformly significantly lower across all ages groups except for the very tip of the right tail. This suggests that Western migrants are unlikely to accept such work, even as temporary entry points into the labour market. This point is supported by the reversed picture in Figure 1.c. with regard to the Clerks category, where Western migrants dominate in terms of probabilities up to the ages of around 40, while the Asian and Other migrants have similar profiles for all ages. That is, after controlling for education, language skills and the like, it appears that Western immigrants find it relatively easy to step into a low-skilled office job with little experience, possibly as an easy entry point into the labour market. This spring-board effect also manifests itself in Figures 2.b and 2.c, where regardless of the source country effects, immigrants working in the categories of Labourers and Clerks appear to have very little local labour market experience. As local experience increases, the probabilities of remaining in these occupations quickly diminished, whilst those of the higher skilled occupations similarly increase. This suggests that labouring jobs (especially for Other) and clerical jobs (for Westerners) are used as a buffer-stock against the pressure of long-term unemployment, or conversely are chosen as a spring-board for a higher-skilled job in the future.

Turning to the Tradespersons category, we can see significant differences in the probabilities across the three source country groups (Figure 1.d). Again Asian and Other migrants have very similar age profiles, both peaking at around the age of 30 and uniformly dominating those of their Western counterparts until the ages of late 40's, after which migrants regardless country-of-origin have similar low probability of being Tradesperson due to the physical demanding nature of the job. Moreover, The relative disadvantage or less-willingness of being a Tradesperson for Western and Other migrants is also demonstrated by high probability of very short local experience (Figure 2.d).
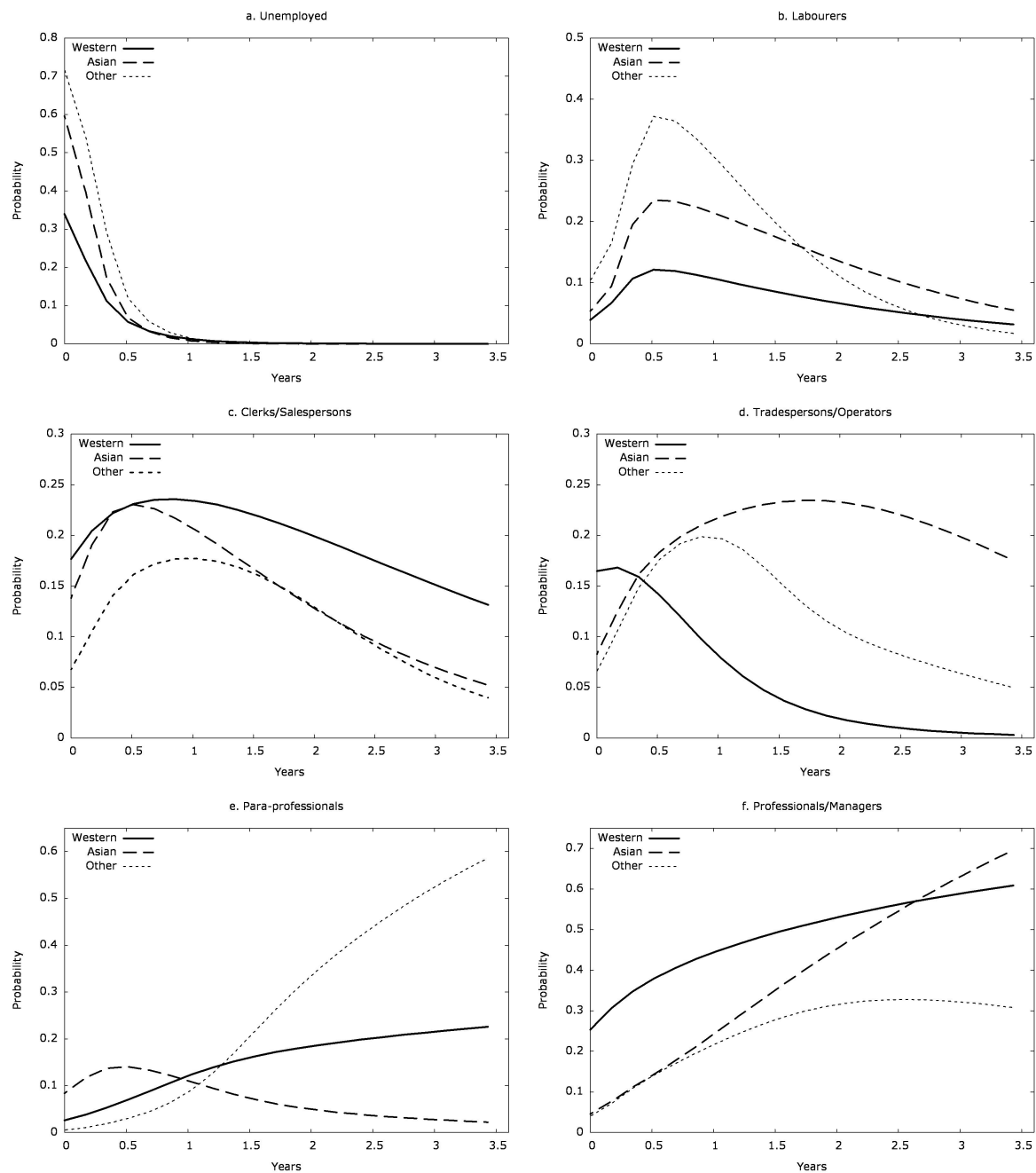
Figure 2: Local Labour Market Experience Effects by Country-of-origins: Average Predict Probabilities over the Full Sample

For Para-professionals, immigrants from Western and Asia countries are most likely to be about 30 years old, while those from Other countries are most likely to be in their 40s (Figure 1.e). In fact, Western and Asian migrants have similar age probability profiles for this occupation category, while the probability of being para-professionals for the Other group of countries is typically much lower until around the age of 40 where all of the curves

start to converge. A more detailed inspection of this category is illuminating: referring to the detailed job types within the Para-professional occupational group (Appendix Table 1), a significant number of new entrants became computing technicians (more likely to come from Asian and Western backgrounds), while the number of catering managers remains quire stable. As experienced practitioners in the catering sector, catering managers probably start working straightaway after migration (Figure 2.e), while computing technicians as new entrants, especially for those from Asia, need certain period of training.

For the top category of Professionals and Managers, overall the probabilities are dominated by Western migrants, then Asian (except for those younger than 30 where Other has a slightly higher probability than Asian), then Other. As shown in Figure 1.f and Figure 2.f, all of these probabilities generally vary in a similar way, which suggests that the probability of being a professional generally increases with age, peaking at around age 50, and they are more likely to enjoy a longer period of Australian labour market involvement (higher than 1.5 years). Given that all the migrants in this study are new arrivals in the first couple of years in Australia and that we have excluded individuals with longer than two years domestic work experience, this seems to suggest that the overseas experience (as partly proxied by age) is likely to be valuable in securing Australian professional jobs. Particularly notable is the sharp increase of the probability of professionals and managers for Asians after the age of 30. Young Asians are more likely to be working as labourers, or studying to be re-trained for the Australian labour market in the early period of settlement. Similarly, the sharp plunge in the probability in Figure 2.f of Asian migrants having a short term involvement in this category suggests that Asian migrants may be easily discouraged in the Australian labour market and self-select themselves into inferior positions.

In summary, it appears that even after controlling for education, gender and English proficiency, it appears that Western migrants are favoured in the higher end of labour market compared to their two counterparts. This picture is mirrored with respect to domestic work experience (Figures 2.a – 2.e), where typically the returns to experience are far greater for Western migrants with regard to the higher skilled occupations. Conversely for the lower skilled occupations (again, with the exception of Clerks), these probabilities are once more dominated by the remaining two categories (Asian and Other).

4.3   Occupational Transitions

According to the skilled vacancy index (SVI) published in December 2005, as shown in Figure 3, when the immigrants in this study arrived between 1999 and 2000, Australia was in great need of Professionals (SVI=127), Para-Professionals (SVI=132) and Tradesper-

sons (SVI=137.6).[9] Starting from late 2002, the shortage of tradesmen remained, or even worsened, while the other two professional occupations have become less in demand. It is interesting to speculate the extent to which migrants have helped to alleviate the shortage in these three occupational groups. In particular, controlling for other human capital endowments, how likely are the former professionals, para-professionals and tradesmen to remain in their respective occupational groups? If they have changed occupation types, what occupational groups are they likely to have moved to? How much have the differences in the cultural backgrounds of source countries impacted on the early stage occupational transition, and have new migrants from diverse source countries equally assimilated into the Australian labour force in terms of occupation levels?
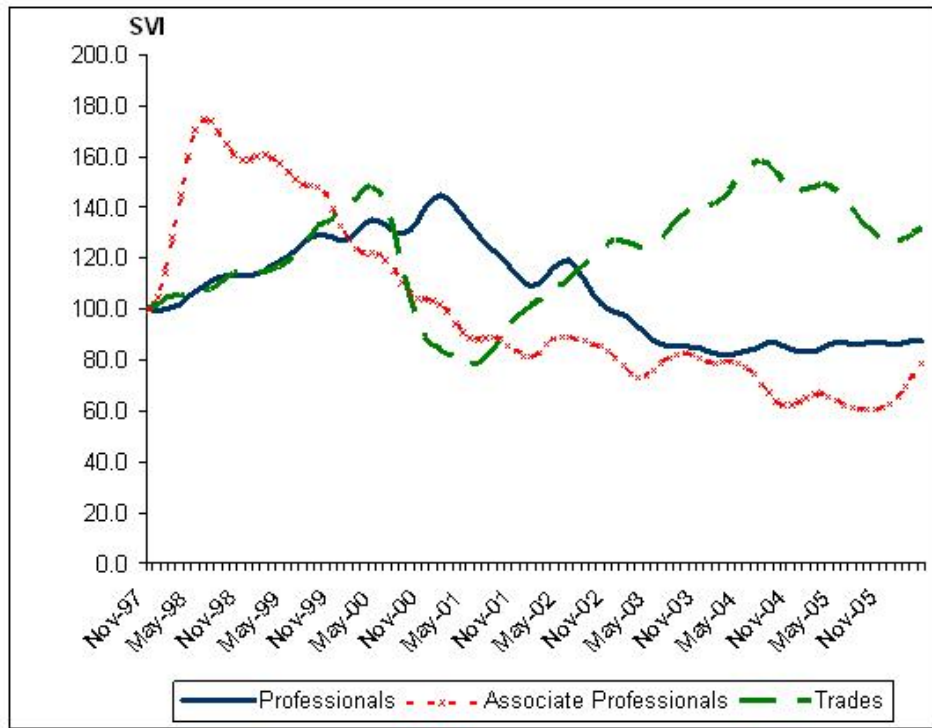
Figure 3: Vacancy Report, Department of Employment and Workplace Relations, December 2005

In the following, we conduct such an exercise to construct estimated *Transition Tables*. Specifically, we use the estimated parameters of the model to estimate the probability of being in each occupational outcome *after* recent migration to Australia over the full sample, conditional on the individual being in each of these outcomes in their source country, and the average predicted probabilities are reported in Table 8. To ascertain whether there are

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[9]The skilled vacancy index (SVI=100 in November 1997) is based on a count of skilled vacancies in the major metropolitan newspapers, and it released monthly by the Department of Employment and Workplace Relations.

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any significant differences across country-of-origin, this exercise is repeated separately for each region as well.

We start with the predicted occupational transition across all country-of-origins in the top panel of Table 8. Firstly, for a migrant who were Not Working pre-migration, there is a: 26% chance that he/she will be a Labourer; 23% a Tradesperson; and even 20% a Professional. As for former Labourers, they have a: 34% chance of remaining so; whilst a 24% and 16% chance of them finding a clerical and trade position, respectively. After migration, 38% of former Clerks are predicted to remain in the same occupation category; 21% will move down to Labourers; while 17% of them are predicted to upshift to Professionals. When former Tradesmen cannot find similar work in Australia (with a relatively low chance of only 38%), they have a 35% chance of slipping down the scale to Labourer. Former Para-professionals and Professionals have the lowest unemployment risk, but their probabilities of retention and upward shifts are still lower than 50%. Both groups suffer relatively high chances of sliding down the scale to either Labourers or Clerks.

Next we focus on the differences in the transition probabilities across the three country-of-origin groups. Staring with migrants who formerly were not working, we see that for Western migrants (Table 8 panel B), migrants not working in their source country during one year before migration period appear to fare well post-migration, with high probabilities of being either a Professional (29%) or a Tradesperson (21%), and with only a 11% chance of being unemployed. A previously-not-working Asian (Table 8 panel C) has a slightly higher chance of being unemployed (13%), but the greatest probabilities of being either a Tradesperson (28%) or a Labourer (27%). The picture is bleaker for a not-previously-working migrant from the Other regions, with a predicted retention probability of 16%, and again the greatest chance of being either a Labourer (32%) or a Tradesperson (24%). Overall, however, the labour market prospects of a person who was not working in their home country appears very favourable.[10]

Turning next to former Labourers, we see that the retention rates are 40%, 34% and 25% from highest to lowest for Other, Asian and Western groups respectively, with Clerks being the second highest in all cases with respective probabilities of: 25%; 23%; and 19% for Western, Asian and Other. Thus, Western labourers appear to have better chances of moving up the occupational ladder.

As for former clerks, the predicted retention probabilities are: 41%, 40% and 36% for Western, Asian and Other migrants, respectively. Although the next likely outcome for both Asian and Other migrants is a downward shift in the occupational ladder to Labourer (21% and 25%), there is a significant chance of an upward shift to Professionals for Clerks from

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[10]Of course, this may have something to do with the unobserved characteristics of these migrants.

Table 8: Occupational Transitions: Average Predicted Probabilities (%)

Former Occupations	Current Occupations						
	Unemployed	Labourers	Clerks	Tradespersons	Para-prof.s	Professionals	Total
Panel (A) – Full Sample							
Not working	14.31	26.39	13.74	23.08	2.64	19.84	100
Labourers	14.69	33.61	23.69	15.86	5.13	7.03	100
Clerks	11.72	21.18	37.79	3.92	8.14	17.24	100
Tradespersons	13.23	30.25	10.33	37.49	2.53	6.17	100
Para-professionals	8.33	15.73	23.65	14.10	20.57	17.62	100
Professionals	7.72	13.15	12.82	7.56	9.90	48.86	100
Students	10.53	19.73	16.19	9.08	12.41	32.06	100
Panel (B) – Western							
Not working	10.76	18.33	18.40	20.53	2.69	29.29	100
Labourers	11.89	25.34	31.33	14.33	6.53	10.58	100
Clerks	7.91	13.88	41.32	2.58	9.19	25.13	100
Tradespersons	10.13	23.92	15.81	37.63	2.92	9.58	100
Para-professionals	4.45	9.74	26.32	9.83	24.08	25.57	100
Professionals	3.25	6.50	12.70	4.33	9.63	63.60	100
Students	6.08	11.64	18.23	5.87	12.86	45.32	100
Panel (C) – Asian							
Not working	13.07	26.79	13.30	27.54	2.21	17.09	100
Labourers	13.36	34.31	22.61	19.77	3.95	6.00	100
Clerks	10.65	20.73	40.27	5.33	7.46	15.56	100
Tradespersons	11.93	30.37	8.75	41.77	2.22	4.97	100
Para-professionals	7.28	14.80	24.54	17.81	19.38	16.20	100
Professionals	6.71	12.38	14.04	9.18	11.15	46.53	100
Students	9.48	19.38	17.16	11.74	12.62	29.62	100
Panel (D) – Other							
Not working	16.02	31.64	11.34	23.70	2.93	14.37	100
Labourers	16.03	39.25	19.30	15.96	5.19	4.26	100
Clerks	13.37	25.49	36.00	4.06	8.62	12.45	100
Tradespersons	14.58	35.21	7.36	36.46	2.70	3.69	100
Para-professionals	9.97	19.39	22.48	15.04	20.71	12.40	100
Professionals	9.45	16.54	12.75	8.49	9.97	42.80	100
Students	12.35	24.32	15.13	9.85	13.04	25.31	100

Western countries with a transition probability of 25%.

After year 1998, skill migrants outnumbered family migrants, and have become the mainstream for Australian migration intake (ABS, 2006). Of clear policy relevance are the likely prospects for those migrants entering Australia as skilled migrants: mostly those with former occupations of Tradespersons, Para-Professionals and Professionals. As shown in Table 8, across-the-board probabilities of transitions from any of these three skilled occupations into unemployment are not high, with the exception of the unemployment probabilities for former Tradespersons.

For former Tradespersons the prospect of remaining so post-migration are: 42%, 38% and 36% for Asian, Western and Other migrants, respectively. In lieu of the shortages for skilled labour in Australia, combined with the reduced cultural and language barriers for Tradesperson occupations, the retention probabilities here are surprisingly low. This may be due to entry barriers for this occupation with difficulties in domestic accreditation. Due to the manual nature of this occupation, the next highest transition probability relate to a downward shift to Labourers (24%, 30% and 35% for Western, Asian and Other, respectively). However, Western former Tradesmen are also very likely to become Clerks (16%).

Turning next to former Para-Professionals, this occupation has the lowest retention probabilities for all three source country groups (24%, 19% and 21% for Western, Asia and Other, respectively). Due to the diversity within Para-Professional jobs, there may be close links with other occupations (less so Labourer though). Thus it is not surprising that the former Para-Professionals seem equally likely to shift to these occupations. In particular, there is a 15% and 20% chance a former Asian and Other Para-Professional to slip down into the Labourer category, respectively: significantly higher than that for former Western Para-Professional.

The highest skilled class corresponds are Professional and Managerial migrants. For those of Western origin, we see strong state-dependence with retention probabilities of some 64%. Thus, in total there is only a 34% chance of a downshift, with the most likely move being to the Clerks category (13%). Professionals from both Asia and Other are significantly less likely to remain so post-migration compared to their Western counterparts (with probabilities of 47% and 43%, respectively). This means that downshift probabilities are over 50% (53% and 57%). In the case of a downshift for these two groups of migrants, the transition probabilities to the lowest skilled class outcome of Labourer are fairly alarming (12% and 17% for Asian and Other, respectively).

In summary of these transition probabilities for the skilled migrants (who were more likely entered on the Skilled or Business class of visa) we estimate that probabilities of movement into the Unemployed category are very low, but retention rates are far from high.

Only migrants from Western countries have relatively better job prospects post-migration, with high retention probabilities for Professionals and high probabilities of both Clerks and Para-Professionals obtaining a Professional job. Moreover, when Western migrants do shift down, it is more likely to be to the Clerical group. For non-Western immigrants however, the chances of downward mobility appear to be most likely towards a manual job (Tradesperson or Labourer). Overall, it appears that, even after controlling for standard human capital endowments (English speaking proficiency and the like), Western migrants appear to assimilate more smoothly into the Australian workforce. This is most likely a result of a closer cultural affinity with Australian society, although there is also the possibility of workplace disadvantage.

5   Conclusions

This study explores the occupational assimilation of recent immigrants. We apply an infrequently utilised econometric model which simultaneously allows for the flexibility of heterogeneous occupational effects across covariates and also correlations across the observed occupational outcomes via unobservable factors. This approach appears preferable to the two commonly used alternatives of the ordered probit and multinomial logit (indeed, the latter was statistically rejected).

We conduct an in-depth analysis based on marginal effects and predicted probabilities, and find that indeed the major human capital endowments affect each labour market outcome differently. In particular, the estimated effects of age, education, English proficiency and former occupation provides empirical evidence for the validity of the points-test system for the Skilled Migration Scheme. In this scheme, the cut-off point for age is 45; English and work experience are given crucial points; and education and formal training play a decisive role in the occupational assessment for skilled migration purpose (DIMIA, 2007). In the present study, we find that Unemployment probabilities increase dramatically among migrants older than 40; English proficiency is crucial for getting a Professional and Clerk job and for averting the risk of slipping into the Labourer group; vocational education and postgraduate degrees are crucial for the Tradesperson and Professional categories, respectively; and overseas experience is valuable for the Professional outcome. In other words, this empirical evidence suggest that points-test system is indeed a useful policy tool in screening potential economic beneficial migrants, as these results tie-in closely with the characteristics utilised in the current points system.

In lieu of the fact that a great proportion of immigrants in LSIA 1999 Cohort are skilled migrants and that they entered Australia when Australia was undergoing a skill shortage, a

major focus of this research was also to investigate the extent to which human capital transferability is affected by diverse social, cultural and institutional backgrounds. By accommodating country-of-origin effects in this early assimilation stage, our analysis revealed that migrants from diverse source countries confront varying degrees of difficulties in their transition processes, and the retention rates for skilled occupations are relatively low. Invariably, non-Western migrants appear to be disadvantaged relative to their Western counterparts; they are less likely to be retained in higher level jobs or to move up but more likely to slip down the occupational scale. For example, the retention rate of Western Professionals was estimated to be more than 17 percentage points higher than that of their Non-Western counterparts, and the probabilities of Non-Western Professionals being relegating to Labourer are alarmingly high.

We also find that less competitive migrants are prone to downward shifts into inferior occupations apparently in order to gain entry into the Australian labour market. In particular, it is most likely that Western migrants use the Clerk group, and Non-Western migrants the Labourer one, as a buffer-stock against the pressure of long-term unemployment when welfare support is unavailable.

This latter finding possibly suggests that there may be a role for skill adaptation courses, competency based skill standards and a strengthening of affirmative action programmes for these identified country-of-origin migrants. Moreover, in contrast to the fact that the Australian economy is in need of skilled labour, we predicted that there is only a 38% chance that former Tradesmen remain so post-migration. On the other hand, we predicted that 30% will downward shift to the Labourer group, whilst 13% of them will be Unemployed. Thus a bridging program towards accreditation may be useful to help overseas qualified tradesmen return to their former occupations. Or conversely, that the compatibility (or transferability) of overseas trades with Australia Standard needs to be examined.

Appendix:

Description of Variables

   Dependent Variables:

   Y: Labour market outcomes; (people not in labour force are dropped out from the sample, to maintain ordering).

   Y=0 if unemployed (reference category).

   Y=1 if first digit ASCO code is 8 or 9, including elementary clerical, sales and service workers; and labourers and related workers.

   Y=2 if first digit ASCO code is 5 or 6, including advanced clerical and service workers; and intermediate clerical, sales and service workers.

   Y=3 if first digit ASCO code is 4 or 7, including tradespersons and related workers; and intermediate production and transport workers).

   Y=4 if first digit ASCO code is 3, including associate professionals.

   Y=5 if first digit ASCO code is 1 or 2, including managers/administrators and professionals.

   Independent Variables:

   Men: 1 for male; and 0 for female.

   Age: actual age divided by 10.

   Age Square: square of the above age variable.

   Age × Asian: cross term of continue variable age and dummy variable country-of-origin is Asia.

   Age × Other regions: cross term of continue variable age and dummy variable country-of-origin is the other regions outside western countries and Asia.

   Education:

   Schooling or less: 1 if no degree and finish 12-year schooling or less, 0 otherwise (reference group).

   Vocational diploma/certificate: 1 if the highest degree is a non-tertiary diploma or trade certificate, and 0 otherwise.

   Bachelor degree: 1 if the highest degree is a bachelor degree or equivalent, and 0 otherwise.

   Postgraduate degree or higher: 1 if the highest degree is a postgraduate degree or higher, and 0 otherwise.

   English Proficiency:

   English not well: 1 if English is not first language, and can not speak English well, and 0 otherwise (reference group).

English well: 1 if English is not first language, but speak English well, and 0 otherwise.

English Only or English best: 1 if English is the only speaking language or speak English best among other languages, and 0 otherwise.

Australian work experience:

Labour force experience in Australia: sum of duration of all kind of employments in Australia (measured in years, With maximum being 3.5 years).

Australian experience ×Asian: cross term of continue variable local labour force experience and dummy variable country-of-origin is Asia.

Australian experience × Other regions: cross term of continue variable local labour force experience and dummy variable country-of-origin is the other regions outside western countries and Asia.

Past occupation:

Not working: 1 one year before migration is unemployed or not in labour force, and 0 otherwise.(reference group:)

Students: 1 if one year before migration is a student, and 0 otherwise.

Labourers: if one year before migration worked in occupation which first digit ASCO code is 8(elementary clerical, sales and service workers) or 9(labourers and related workers), and 0 otherwise.

Clerks/Salespersons: 1 if one year before migration worked in occupation which first digit ASCO code is 5 (advanced clerical and service workers) or 6 (intermediate clerical, sales and service workers), and 0 otherwise.

Tradespersons/Operators: 1 if one year before migration worked in occupation which first digit ASCO code is 4 (tradespersons and related workers) or 5 (intermediate production and transport workers), and 0 otherwise.

Para-professionals: 1 if one year before migration worked in occupation which first digit ASCO code is 3 (associate professionals), and 0 otherwise.

Managers/Professionals: 1 if one year before migration worked in occupation which first digit ASCO code is 1 (managers/administrators) or 2 (professionals), and 0 otherwise.

Country of origin:

Western: 1 if country of origin is western countries (reference group).

Asian: 1 if country of origin is Asia, and 0 otherwise.

Other regions: 1 if country of origin is the other regions outside western countries and Asia, and 0 otherwise.

Table A. 1: **Occupational Concentration of immigrants 16-64 Years of Age at Longitudinal Survey of Immigrants to Australian Cohort 2**

ASCO	1 Year Before migration	1.5-2.5 Years After Migration
1	Managers / Administrators (-53)	
	General Managers(47),	Sales and Marketing Managers(37),
	Sales and Marketing Managers(39),	General Managers(27),
	Finance Managers(20),	Importers, Exporters and Wholesalers(26),
	Importers, Exporters and Wholesalers(16),	Finance Managers(17)
	Building and Construction Managers(11),	Others(31)
	Other Special Managers(11)	
	Others(47)	
	Total: 191	Total:138
2	Professionals (-118)	
	Computing Professionals(66),	Computing professionals(66),
	University Lecturers and Tutors(47),	University Lecturers and Tutors(49),
	Accountants(40),	Accountants(35),
	Secondary/Primary School Teachers(41),	Registered Nurses(25),
	Registered Nurses(21),	Organisation Analysts(10)
	Marketing and Advertising Professionals(16),	others(164)
	Designers and Illustrators(16),	
	Electrical and Electronics Engineers(15)	
	others(205)	
	Total: 467	Total: 349
3	Associate Professionals (-5)	
	Project and Program Administrators(28),	Computing Support Technicians(20),
	Shop Managers(25),	Project and Program administrators(19),
	Restaurant and Catering Managers(11),	Shop Managers(15),
	Chefs(11),Office Managers(8)	Chefs(15),
	Customer Service Managers (8)	Restaurant and Catering Managers(8)
	Others(62)	Others(60)
	Total: 142	Total: 137
4	Tradespersons and Related Workers (-23)	
	Motor Mechanics(21),	Motor Mechanics(13),
	Metal Fitters and Machinists(15),	Carpentry and Joinery Tradespersons(9),
	Electricians(12),	Structural Steel and Welding Tradesperson(9),
	Structural Steel and Welding Tradesperson(9),	Metal Fitters and Machinists(8),
	Carpentry and Joinery Tradespersons(9)	Painters and Decorators(8)
	Others(92)	Others(88)
	Total: 158	Total: 135

ASCO	1 Year Before migration	1.5-2.5 Years After Migration
5	Advanced Clerical and Service Workers (-9)	
	Secretaries and Personal Assistants(32),	Bookkeepers(15),
	Bookkeepers(9),	Secretaries and Personal Assistants(14)
	Others(8)	Others(11)
	Total: 49	Total: 40
6	Intermediate Clerical, Sales and Service Workers (+72)	
	Sales Representatives(13),	Waiters(29), General Clerks(19),
	Accounting Clerks(11),	Accounting Clerks(18), Sales Representatives(16),
	Stock and Purchasing Clerks(11),	Personal Care and Nursing Assistants(15),
	Travel and Tourism Agents(10),	Travel and Tourism Agents(13)
	General Clerks(8), Waiters(8),	Special Care workers(12),
	Receptionists(8)Bank Workers(8)	Keyboard Operators(11),
	Others(85)	Inquiry and Admissions Clerks(11)
		Others(74)
	Total: 146	Total: 218
7	Intermediate Production and Transport Workers (+33)	
	Truck Drivers(10),	Store persons(20),
	Sewing Machinists(5),	Other Intermediate Machine Operators(8),
	Engineering Production Workers(5)	Product Quality Controllers(7),Automobile Drivers(6),
	Others(26)	Delivery Drivers(5),Sewing Machinists(5)
		Others(28)
	Total: 46	Total: 79
8	Elementary Clerical, Sales and Service Workers (+30)	
	Sales Assistants(43)	Sales Assistants(48),
	Others(19)	Checkout Operators and Cashiers(8),
		Laundry Workers(8),Guards and Security Officers(7)
		Others(21)
	Total: 62	Total: 92
9	Labourers and Related Workers (+121)	
	Cleaners(11),	Cleaners(61), Kitchen hands(22),
	Farm Hands(6)	Product Assemblers(19),Hand Packers(17),
	Others(20)	Packagers and Container Fillers(16),
		Other Process Workers(11)
		Others(12)
	Total: 37	Total: 158
n/a	Not working (-75)	
	Unemployed(46),	Unemployed(168)
	Students (136), Home duties or refugees(61)	
	Total: 243	Total: 168

Table A. 2: Estimated Coefficients and Standard Errors of OGEV Model, Sample Size 1541

Variables	Labourers	Clerks	Tradespersons	Para-professionals	Professionals
Intercept	-2.536	-3.734*	-6.974**	-9.027**	-6.902**
	(1.851)	(2.012)	(2.158)	(2.329)	(2.291)
Demography					
Gender(Female)					
Male	-0.362*	-0.546**	0.555**	0.401*	0.121
	(0.193)	(0.217)	(0.246)	(0.239)	(0.235)
Age	1.093	1.347	3.037**	3.499**	2.359**
	(0.880)	(0.956)	(1.018)	(1.097)	(1.083)
Age Square	-0.126	-0.198*	-0.393**	-0.469**	-0.280**
	(0.104)	(0.113)	(0.123)	(0.133)	(0.131)
Age × Asian	-0.530*	-0.272	-0.611	-0.360	-0.172
	(0.314)	(0.349)	(0.377)	(0.392)	(0.372)
Age × Other	-0.373	-0.126	-0.416	-0.152	-0.270
	(0.306)	(0.347)	(0.372)	(0.395)	(0.380)
Education(schooling)					
Vocational diploma/certificate	0.421*	1.062**	1.097**	0.886**	1.013**
	(0.230)	(0.272)	(0.273)	(0.287)	(0.313)
Bachelor degree	-0.322	0.170	-0.112	-0.077	0.374
	(0.293)	(0.315)	(0.332)	(0.344)	(0.353)
Postgraduate degree or higher	-1.021**	-1.039**	-1.209**	-0.939**	0.114
	(0.382)	(0.395)	(0.411)	(0.424)	(0.412)
English proficiency(Not well)					
English well	0.084	0.930**	0.331	0.462	0.475
	(0.218)	(0.272)	(0.266)	(0.296)	(0.319)
English Only or English best	-1.038**	0.356	-0.337	-0.007	0.063
	(0.342)	(0.381)	(0.377)	(0.399)	(0.407)
Australia Working Experience	2.559**	2.715**	2.520**	3.163**	3.142**
	(0.669)	(0.672)	(0.692)	(0.726)	(0.690)
Australian experience× Asian	1.430	1.344	1.783*	1.101	1.725*
	(0.879)	(0.888)	(0.911)	(0.934)	(0.913)
Australian experience × Other	1.022	1.233	1.652**	1.855**	1.694**
	(0.795)	(0.807)	(0.831)	(0.873)	(0.853)
Occupation 1 year before migration	(Not working)				
Students	0.337	0.634	0.201	1.426**	1.352**
	(0.387)	(0.438)	(0.470)	(0.585)	(0.572)
Labourers	0.144	0.198	-0.362	-0.256	-1.133
	(0.360)	(0.421)	(0.442)	(0.645)	(0.748)
Clerks/Salespersons	0.291	0.978**	-0.478	0.602	0.326
	(0.306)	(0.359)	(0.414)	(0.531)	(0.501)
Tradespersons/Operators	0.186	0.001	0.483	-0.379	-1.111*
	(0.343)	(0.404)	(0.400)	(0.612)	(0.596)
Para-professionals	0.564	1.287**	0.929**	2.042**	1.217**
	(0.429)	(0.458)	(0.471)	(0.582)	(0.572)
Managers/Professionals	0.508	1.016**	0.672*	2.068**	2.494**
	(0.316)	(0.358)	(0.384)	(0.509)	(0.477)
Country of origin (Western)					
Asian	1.318	0.175	1.144	0.542	-1.176
	(1.147)	(1.283)	(1.393)	(1.471)	(1.425)
Other regions	0.756	-0.883	-0.127	-1.731	-1.581
	(1.123)	(1.292)	(1.381)	(1.518)	(1.474)
ρ	0.2344**				
	(0.069)				

** and * indicate significant level of 5% and 10 respectively, and standard errors are in parentheses;

Unemployed as the omitted reference category in the dependent variable.

Table A. 3: Estimated Coefficients and Standard Errors of Multinomial Logit Model, Sample Size 1541

Variables	Labourers	Clerks	Tradespersons	Para-professionals	Professionals
Intercept	-2.788	-3.550	-8.478**	-10.818**	-6.440**
	(2.881)	(2.951)	(3.100)	(3.646)	(3.006)
Demography					
Gender (Female)					
Men	-0.447	-1.063**	1.306**	0.211	-0.090
	(0.273)	(0.293)	(0.348)	(0.328)	(0.293)
Age	1.073	0.774	3.518**	4.001**	2.194
	(1.264)	(1.335)	(1.414)	(1.652)	(1.371)
Age Square	-0.148	-0.160	-0.443**	-0.588**	-0.291*
	(0.141)	(0.153)	(0.164)	(0.194)	(0.156)
Age Asia	-0.449	0.091	-0.783	-0.001	0.173
	(0.732)	(0.737)	(0.779)	(1.118)	(0.728)
Age Other regions	-0.265	0.286	-0.705	0.278	-0.003
	(0.582)	(0.570)	(0.614)	(0.833)	(0.521)
Education (Schooling)					
Vocational diploma/certificate	0.533	1.614**	1.293**	0.813*	1.275**
	(0.339)	(0.373)	(0.357)	(0.421)	(0.396)
Bachelor degree	-0.500	0.450	-0.497	-0.217	0.490
	(0.391)	(0.406)	(0.443)	(0.455)	(0.415)
Postgraduate degree or higher	-1.034**	-0.958*	-2.037**	-1.259**	0.188
	(0.473)	(0.494)	(0.599)	(0.535)	(0.474)
English Proficiency (Not well)					
English well	-0.064	1.617**	0.148	0.556	0.577
	(0.330)	(0.444)	(0.372)	(0.624)	(0.429)
English Only or English best	-1.562**	1.144*	-0.771	-0.011	0.109
	(0.635)	(0.677)	(0.670)	(1.009)	(0.696)
Australia Working Experience	3.353**	3.338**	2.908**	3.966**	3.787**
	(0.899)	(0.819)	(0.849)	(0.882)	(0.814)
Australian experience Asia	1.935*	1.657	2.638**	1.192	2.222**
	(1.127)	(1.074)	(1.105)	(1.131)	(1.066)
Australian experience Other regions	1.316	1.577	1.977**	2.354**	2.010**
	(1.035)	(1.001)	(1.006)	(1.090)	(0.997)
Occupation 1 year before migration(Not working)					
Students	0.554	1.121*	0.012	2.249**	1.630**
	(0.499)	(0.618)	(0.522)	(0.934)	(0.651)
Labourers	0.121	0.413	-0.586	0.739	-1.711*
	(0.488)	(0.615)	(0.556)	(0.964)	(0.931)
Clerks/Salespersons	0.235	1.611**	-1.176**	1.638*	0.324
	(0.458)	(0.539)	(0.597)	(0.882)	(0.607)
Tradespersons/Operators	0.374	-0.545	0.475	0.272	-1.630**
	(0.435)	(0.619)	(0.456)	(0.918)	(0.715)
Para-professionals	0.432	1.745**	0.625	3.274**	1.053
	(0.564)	(0.625)	(0.572)	(0.903)	(0.670)
Managers/Professionals	0.642	1.550**	0.312	2.977**	2.751**
	(0.463)	(0.547)	(0.498)	(0.865)	(0.574)
Country of origin (western countries)					
Asia	1.115	-1.263	1.326	-0.306	-2.664
	(2.560)	(2.560)	(2.705)	(3.745)	(2.583)
Other regions	0.473	-2.890	0.666	-3.831	-2.829
	(2.080)	(2.035)	(2.156)	(2.862)	(1.899)

** and * indicate significant level of 5% and 10 respectively, and standard errors are in parentheses;

Unemployed as the omitted reference category in the dependent variable.

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