Immigrant Overeducation: Evidence from Recent Arrivals to Australia.

Green, C*, Kler, P†.and Leeves, G‡

Abstract

Australian immigration policy, in common with the US and Canada, has increased the emphasis on skill based selection criteria. A key premise of this policy is that skilled immigrants are more employable and can add to the productive capacity of the economy. However, this effect will be diminished if immigrants are working in occupations that fail to utilise their skills. We examine the extent of overeducation for recently arrived immigrants to Australia. We find that they are more likely to be overeducated than the native population, even if they enter on skill based visas. Overeducation is greatest for immigrants from Non-English speaking backgrounds (NESB) and appears to generate lower returns to education. The incidence of overeducation is significantly reduced for all immigrants if they enter with visas that are a result of a job offer from an employer in the recipient country.

KEYWORDS: Human Capital, Rate of Return, Overeducation.

JEL CODE: J24, J61.

*Centre for Economic Policy Modelling, University of Queensland.

†Corresponding Author: Parvinder Kler, Centre for Economic Policy Modelling, Level 6 Colin Clark Building, University of Queensland, St Lucia, QLD, Australia, 4072. e-mail: p.kler@economics.uq.edu.au, fax: +61 7 3365 7299.

‡School of Economics, University of Queensland

1 INTRODUCTION

Recently in Australia, as in Canada and the U.S., immigration policy has decidedly shifted towards skill based immigration (Cobb-Clark 2000, Antecol, Cobb-Clark and Trejo 2003). In Australia, skilled immigration increased in the 1990's, whereas family based immigration declined (DIMIA 1999). A key premise of this change in policy focus is that skilled immigrants are more employable and have the potential to add to the productive capacity of the economy. It has been shown that the human capital endowments of immigrants to Australia has increased and their employment situation has improved relative to native born Australians in the last decade (Cobb-Clark 2003). However, the extent to which this improvement in employment will add to Australian productive capacity is not yet understood. In the case of Ireland, Barrett, FitzGerald and Nolan (2002) suggest that the long-term impact of increased skilled migration to Ireland in the 1990's could have contributed as much as a 4% increase in GNP over the decade. However, as Barrett, Bergin and Duffy (2005) point out, if immigrants experience an occupational gap, such that their skills are not fully employed, the productivity gain from increased skilled immigration could be reduced. They suggest that the occupational gap experienced by immigrants in Ireland may have reduced their contribution to GNP to nearer 3%. Thus, the underutilisation of immigrant skills could have significant macroeconomic effects. Furthermore, if better educated immigrant workers begin taking jobs in occupations requiring less education, this could influence wages and and employment in other sectors of the Australian labour market.

In this paper we address the issue of whether there is an immigrant occupational gap in Australia by examining the extent to which recently arrived immigrants' educational qualifications are matched to the jobs they hold in Australia. In particular, we analyse the incidence and returns to immigrant overeducation and compare this to the Australian labour force as a whole. Overeducation occurs when an individual has qualifications greater than those required for the job. Thus far there is little evidence on the extent of immigrant overeducation. Flatau, Petridis and Wood (1995) examined overeducation of Australian immigrants and found those from a non-English speaking background (NESB) experienced higher rates of overeducation when compared to immigrants from an English Speaking Background (ESB) and the native population. However, this study did not distinguish immigrants by the visa category under which they entered Australia. In this paper, we can examine whether the employment improvements that appear to have been associated with tighter entry critieria under the points based skills systems used in Australia can also improve the utilisation of immigrant's human capital.

In the U.S. Bratsberg and Terell (2002) noted that the returns to education of U.S. immigrants are in general lower for those from Asian[1] and African countries, compared to those from European countries. This follows earlier work that identified how black immigrants suffer lower rates of return to education than native blacks (Butcher 1994). Neither study distinguished between those who are appropriately educated and those who are overeducated. It is a stylised fact

[1] Japan being a notable exception.

3

that the returns to overeducation are positive but lower than that for education that is appropriate to the skill requirement of the job (Hartog 2000). This means lower overall returns to education for the overeducated (Battu, Belfield and Sloane 1999, 2000, Dolton and Vignoles 2000, Chevalier 2003, Rubb 2003 and Frenette 2004). There is some evidence from Australia and the United Kingdom that minority groups suffer higher incidences of overeducation and this translates to reduced returns to education (Flatau et al. 1995, Battu and Sloane 2002, Battu and Sloane 2004). Therefore, some of the observed differences in returns to education for U.S. immigrants could be the result of overeducation being more prevalent amongst immigrants from certain regions. Hence, we distinguish between the source region of immigrants to Australia and examine the extent of variation in overeducation incidence and returns to education across groups and compare this with the native population. Thus the paper will provide insights into how an occupational gap is related to selection criteria and the regional origin of immigrants.

The data set used in this survey, the Longitudinal Survey of Immigrant Australians (LSIA), covers the immediate (3 to 4 year) period following arrival in Australia. It was designed specifically to examine the experiences of immigrants. As a result it contains information not generally available in labour force or census data sources. Of particular interest for our purposes, it provides information such as entry visa category and some details on labour market experience in the former country.

To summarise our results; we find evidence of an occupational gap for recent

4

NESB immigrants to Australia. Despite the fact that they have on average higher qualification levels compared to the native population, they are substantially less likely to be in managerial or professional jobs and more likely to be in elementary service and labouring work. As a result, all immigrant groups from NESB backgrounds are more likely to be overeducated than the native population. Visa category of entry is an important determinant of overeducation for all immigrants. Immigrants, especially those from NESBs, also appear to suffer larger earnings penalties from overeducation than the native population. This coupled with their higher rates of overeducation indicate that they receive, on average, lower returns to education than the native population. Moreover, visa skill criteria do not appear to significantly reduce the incidence of overeducation unless they are linked to a job offer from an employer in the country.

The remainder of the paper is set out as follows. Section 2 provides background information on immigrants to Australia and outlines the data source. Section 3 outlines the econometric methodology. Section 4 discusses the results, whilst section 5 concludes.

2 BACKGROUND AND DATA

Under the immigration system at the time of the LSIA, immigrants entered Australia on one of five visa categories; these are Independent Skilled, Business/Employment Nominated Scheme (ENS)[2], Concessional Family, Preferen-

---

[2] The LSIA does not distinguish between these two visa groups.

tial Family and Humanitarian visas. Those who arrived on the Independent Skilled or ENS visas are assessed based on their skill level[3]. Immigrants with Business visas fulfil the requirements that they are expected to go into business shortly after arrival while those on ENS visas are nominated by Australian employers to fill skilled positions vacant in the domestic labour market. Independent Skilled visas are awarded to independent immigrants without family relationships where points are awarded for skills, education, age and English language ability. Concessional Family visa holders are skilled assessed but obtain points for having close relatives that are willing to sponsor and provide support during their first two years in Australia. Thus, their skill level need not be on par with those in the Independent Skilled visa category. Those on Humanitarian and Preferential Family visas are not skilled assessed and obtain their visas based on humanitarian reasons and family links, respectively. We distinguish the source region of immigrants by three broad categories, ESB, Asian NESB and Other NESB[4]. We also identify sub-groups of countries within these regions as far as numbers will allow. These sub-groups of countries have characteristics that are likely to influence immigrants returns to education, such as differences in the quality of educational systems (Bratsberg and Terell 2002).

The data covers the period 1994 to early 1999 and comparisons are made with the 1996 Census data on the native born population[5]. At this time the

---

[3]For more details see Miller (1999) and Teicher, Shah and Griffin (2002).

[4]This classification closely follows the English language proficiency criteria grouping used by Australian Department of Immigration, Multicultural and Indigenous Affairs (DIMIA 1996).

[5]Census data and estimates are reported for (a) overall working male population aged 15-64 and (b) prime-age working males aged 25-54.

Independent Skilled visas did not have minimum age, skill and English language criteria. These were introduced later in the decade and appeared to lead to increased levels of employment success amongst immigrants (Cobb-Clark 2003). However, our aim is to identify if an occupational gap exists and examine incidences and returns to education amongst immigrants groups relative to the native population. The 1996 census provides a comparison point that is near to the time period of the LSIA data.

The LSIA attempts to "document the settlement, including the labour market experiences, of a cohort of recently arrived, offshore-visaed immigrants to Australia" (Cobb-Clark, 2001: 467)[6]. As a result it contains information that is not generally available in labour force or census data sources. The LSIA looks at a cohort of immigrants to Australia that arrived between September 1993 and August 1995. This group was interviewed approximately five months (wave 1), 17 months (wave 2) and 41 months (wave 3) after arrival (Cobb-Clark 2001). However, some variation in the timing of interviews occurred, and as a result each individual's period of residence at time of interview differs. Participants are questioned on a wide range of issues including visa type, English language ability and country of origin, financial situation on arrival and employment in former country.

The scale of post-war migration to Australia has been large, with nearly 6 million individuals moving to Australia in the post-war period. Australian

---

[6]For an encompassing review of the dataset, see Cobb-Clark (2001). For a detailed look at the technical aspects of the LSIA see the user documentation by the Department of Immigration and Multicultural and Indegenous Affairs (DIMIA 2002).

immigration policy has changed markedly in the post war period, evolving from the White Australia Policy to one based on the separation of immigrants into family, skilled and humanitarian groups. The effect this has had on the composition of immigrants is reflected in the declining proportion of ESB immigrants; in the period 1959 to 1965, 76 per cent of permanent settler arrivals were ESB immigrants; this had declined to 46 per cent in the period covering 1975 to 1980, and decreased further to 28 per cent for the 1990 to 1995 period. (Teicher et al. 2002). The rise in the proportion of NESB immigrants into Australia has been the subject of earlier research. They have experienced a large earnings gap (relative to the native population) which does not appear to significantly narrow over time (McDonald and Worswick 1999) and suffer higher unemployment (Miller and Neo 1997).

Initially the LSIA covers 5192 primary applicants. Attrition rates decreased the sample to 4469 primary applicants in the second wave and 3752 in the third wave, a rate of 28% (Cobb-Clark 2001, DIMIA 2002)[7]. DIMIA (2002) could find no evidence of significant bias in relation to economic activity classification as a result of attrition from the sample. Furthermore, between waves 1 and 3 the average age of ESB and Asian NESB and Other NESB immigrants increased by approximately 3.4, 3.1 and 2.8 years, respectively. Hence, there appears to be little evidence of attrition of specific age groups of immigrants across the three categories. We focus on male primary applicants aged between 15 and

---

[7]New Zealand citizens, unilke other nationalities, do not have to apply to migrate to Australia and so are excluded from this sample.

64 years[8]. This reduces the initial sample size to 2879 individuals. Of these 1190 were wage or salary earners in wave 1, with corresponding figures of 1385 and 1317 in waves 2 and 3 respectively. We further exclude individuals holding multiple jobs and a handful of individuals due to incomplete responses for key variables, this provides us with an initial (wave 1) sample of 1069 (330 ESB, 363 Asian NESB, and 376 Other NESB).

INSERT TABLE 1

First we want to identify if an immigrant occupational gap exists in Australia. Table 1 presents data on the distribution of educational qualifications and occupations of both the immigrant and native population. ESB immigrants have the highest qualification level, with 50% of those in employment having a tertiary qualification or higher. However, the Asian NESB figure for tertiary qualified is comparable with the ESB figure at 48.9% while for Other NESB the figure is 38.3%. For all immigrant groups this compares favourably with the native population where those with tertiary qualifications account for only about 17% of those in employment. By contrast nearly 50% of the native population have only completed compulsory schooling; for Other NESB immigrants the comparable figure is 29% and for Asian NESB and ESB immigrants it is 20% and 7% respectively. If we compare the distribution across occupations, we observe that approximately 27% of the native population are in managerial and professional occupations and 15% in elementary service or labouring work. For immigrants from Asian and Other NESB backgrounds the figures are 33.4% and

---

[8]Immigrant women are often tied-movers who enter into occupations to supplement family income (Frank, 1978; Worswick, 1996).

29% for managerial and professional work and 20% and 24.5% for elementary service and labouring work. ESB figures are 56% in managerial and professional and 6.5% in elementary service and labouring work. Thus, at first glance, it does appear that in the case of NESB immigrants there is an occupational gap, but it is less clear that ESB migrants experience an occupational gap compared to the native population.

Table 2 presents sample averages of the characteristics of the three immigrant groups[9]. A full description of all variables is provided in the appendix (Table A2). Briefly, a greater proportion of ESB immigrants enter as Business/ENS visa holders compared to NESB immigrants, and they have higher average years of education and are on average older. Other NESB immigrants were most likely to enter under non-skilled assessed visas, while Asian NESB immigrants are most likely to enter under either Concessional Family or Independent Skilled visas. ESB immigrants were substantially more likely to have visited Australia before settlement, to have a car and to have funds on arrival. Only a small proportion of NESB immigrants reported English as their primary language.

---

[9] For comparison sample averages for all male immigrants aged 15-64 are included as appendix Table A1.

3 METHODOLOGY

3.1 Incidence of Overeducation

To measure overeducation we use job analysis data to determine the occupational requirements of jobs[10]. For each immigrant the occupation code of their jobs was recorded using the 1996 Australian Standard Classification of Occupation (ASCO) codes (ABS 1997), which is similar to the Dictionary of Occupational Titles (DOT) in the United States. ASCO provides a detailed list of minimum required qualifications to undertake a particular job. This information can be compared to the education qualifications of the immigrant, and if these qualifications exceed the job requirements as stated this individual is defined as being overeducated ($O_i = 1$), otherwise they are not overeducated ($O_i = 0$).

A measure of the extent of overeducation can also be derived using this approach. This is done by decomposing an employed individual's education into that level which is required for the job (according to ASCO), and the amount of education that is surplus to the requirements of the job. For instance, consider the case of an immigrant who has a degree level qualification (in effect 15 years of schooling) but is employed in a job which only requires high school level education (12 years of schooling). In this case, the required schooling is 12 years, whilst the surplus education is 3 years (individuals education level minus the job requirements). These measures are used later in the earnings regressions to calculate the wage premium paid to surplus education.

---

[10] Also known as the objective measure of overeducation. See Hartog (2000) for more details.

For any period t the underlying probability of being overeducated.(O_{it}^*) is unobservable, instead we observe a dummy variable (O_{it}) defined as:

$$O_{it} = 1 \text{ if } O_{it}^* > 0$$

$$O_{it} = 0 \text{ otherwise}$$

The probability of an immigrant being overeducated can be viewed as a function of personal characteristics (X_i) and also the visa category (V_i).

$$\Pr(O_{it}^*) = \beta_0 + \beta_1 X_i + \beta_2 V_i + v_{it}, t = 1, 2, 3 \tag{1}$$

Equation (1) is estimated using a random effects probit, where the error term consists of two components such that:

$$v_{it} = \varepsilon_{it} + \sigma_i$$

ε_{it} is a standard stochastic error term and σ_i is a random effects variable. An assumption underlying the random effects model is that the individual specific component of the error term is uncorrelated with the independent variables. An alternative which overcomes this assumption is fixed effects estimation whereby a time-invariant control is included for each individual. However, in the situation where there is a limited dependant variable, the number of cross-sectional units is large, but there are few time periods this can lead to problems with degrees of freedom and may lead to inconsistent estimates of parameters (Maddala 1987). Additionally, in a fixed effects approach, estimates of all time invariant covariates are subsumed in the individual specific effect. As a result the impact of

12

visa-category and source country on overeducation would be indeterminate. In the empirical work, we compare the random effects results to those from a pooled OLS regression.

Whilst some of the covariates used are standard (for instance English language skills and marital status), the novel nature of the LSIA allows us to include a number of less typical covariates. These are briefly discussed below. We can identify whether the immigrant was employed in his source country and whether that job was a managerial and/or professional job. In addition, we include a variable 'No Funds on Arrival'. Immigrants who face liquidity constraints may be forced to accept jobs for which they are overeducated. Likewise, immigrants without access to a privately owned motor vehicle may also be financially constrained [11]. Hence, we include a variable - No Car. A control is also included for whether the individual had visited Australia prior to immigration (Never Visited Australia), which may provide an indication of knowledge of the Australian labour market or previous contact with Australian employers.

Immigrants enter with qualifications from a large variety of educational system and some of these will be of the same standard to the equivalent qualification in Australia. Others may nominally be of the same standard but be of a lower content and/or quality (Friedberg 2000). Assessment may improve the recognition of qualifications in the Australian labour market. Not all immigrants who entered under Independent Skilled visas were required to submit their qualifications for assessment by Australian authorities. As a result, we have individuals

---

[11]Employment prospects for ethnic minorities in the UK appear to be closely related to access to transport (Battu and Sloane 2002, 2004).

with assessed and non-assessed qualifications across all visa categories. In our sample, Asian immigrants (40%) were slightly more likely to have had their qualifications assessed than ESB immigrants (36%) or Other NESB immigrants (27%). The proportions by visa category who have their qualifications assessed are similar across immigrant groups, with those on Independent Skilled visas having the highest proportions (approximately 70%) and those on Preferential Family and Humanitarian visas the lowest (13%). In the subsequent empirical work we control for individuals who have had their qualifications assessed.

3.2 Earnings

Earnings are estimated using a standard human capital framework (Battu et al. 1999, Battu et al. 2000, Rubb 2003, Frenette 2004):

$$\ln Y_{it} = \beta_0 + \beta_1 Sr_{it} + \beta_2 Ss_{it} + \beta_3 X_i + v_{it}, t = 1, 2, 3 \qquad (2)$$

We estimate equation (2) by random effects OLS, where the error term consists of two components such that:

$$v_{it} = \varepsilon_{it} + \sigma_i$$

$ln\ Y_{it}$ is the natural log of weekly wages from employment for the *ith* individual at period t. In the LSIA wages are reported as a categorical variable[12]. From this data we computed midpoint estimates of weekly wages. In unreported

---

[12] These wage categories are 1-57, 58-96, 97-154, 155-230, 231-308, 309-385, 386-481, 482-577, 578-673, 674-769, 770-961, 962 and more. Hours worked are only available as a categorical variable. As a result, we cannot accurately compute hourly wages.

estimations, no significant difference was found between covariate estimates generated by OLS and those generated by grouped data maximum likelihood estimation (Stewart 1983). As a result, we report only the OLS estimates.

The coefficient β_1 measures the return to required education (Sr) whilst β_2 measures the returns to surplus education (Ss). On the basis of existing research we expect positive returns to both required and surplus schooling, but also expect that $\beta_2 < \beta_1$ (Cohn and Khan 1995, Hartog 2000). X_i is a vector of individual covariates, which includes some of those used in equation 1 but also includes a variable identifying weeks since arrival. We do not observe the actual length of time in employment for each immigrant only time since arrival in Australia.

4 Results

4.1 Preliminary Evidence

INSERT TABLE 3

Table 3 presents the incidence of overeducation across each LSIA wave by source region and visa category. ESB immigrants are the best matched, whilst Asian NESB immigrants have the highest rate of overeducation. Some variation in the incidence of overeducation is apparent across the waves. ESB immigrants initially experience a rise in the rate of overeducation, but this rise is more than reversed by wave 3. For both NESB groups, the rate of overeducation amongst those who are employed appears to rise over the sample period.

Immigrant overeducation rates appear very high when compared to the native population, where the rate was 7.5%[13]. This lower rate is affected by the much larger proportion of individuals in the census who have only minimum school qualifications and so cannot be overeducated[14]. For further evidence, we can compare immigrants with tertiary qualifications (degree and higher) with the same group from the native population. In this case, the difference becomes less marked. The census figure for male employees with graduate qualifications was 21%, whilst the figures for graduate immigrants ranged from 12% for ESB, to 40% for Other NESB and 38% for Asian NESB immigrants. Thus, NESB immigrants with tertiary education were subject to higher rates of overeducation than the native population. Earlier we noted that there are a greater proportion of NESB immigrants with tertiary qualifications.

The table also illustrates that visa categories affect the incidence of overeducation. For all immigrants, those on Business/ENS visas have the lowest incidence of overeducation. Concessional Family visas are associated with the highest rates of overeducation for NESB immigrants; the incidence of overeducation for Asian NESB immigrants on Concessional Family visas is particularly large (54%). *A priori* expectations are that those on visas that are not assessed for skills would have higher rates of overeducation. ENS visa holders are employer nominated so the finding that Business/ENS visa holders attract low

---

[13] In a previous study, using a different measure of overeducation, Flatau et al. (1995) found the incidence of overeducation for the Australian born working population to be 11% in 1990-91. Hence, the incidence of overeducation amongst Australian born workers in the early and mid-1990s were lower than in findings in other countries.

[14] In the ASCO job requirements no occupation requires lower than school level qualifications.

rates of overeducation is not surprising. Interestingly, Independent Skilled visa holders have substantial rates of overeducation for all groups.

INSERT TABLE 4

Looking at the average weekly wages in Table 4, it is clear that ESB immigrants earn markedly more than their NESB counterparts. Moreover, NESB immigrants' weekly wages do not catch up with ESB immigrants over the three year period, consistent with earlier evidence on relative wages of immigrants from these regions (McDonald and Worswick 1999). When compared to native earnings, ESB immigrants earn more and NESB immigrants earn less. Again it is interesting to compare earnings of tertiary qualified workers to see if the skill premium differs across immigrants and native population. We observe in the lower section of Table 4 that the gap between native and immigrant earnings of tertiary qualified employees is larger compared to the earnings gap between native and immigrants as a whole. However, the earnings of tertiary educated NESB immigrants increased rather more than tertiary educated ESB immigrants over the same period.

4.2 Determinants of Overeducation

INSERT TABLE 5

Table 5 presents the probit estimates of equation (1) for immigrants from the three regions. To aid interpretation the covariate estimates are reported as marginal effects. As suggested by Table 3, all of the visa categories (excepting Asian NESBs on Humanitarian visas) are associated with a significantly

17

greater incidence of overeducation when compared to the omitted category of Business/ENS visa. However, after introducing controls for immigrant characteristics the relative differences between visa categories change. For instance, the impact on overeducation of being an Asian NESB immigrant on an Independent Skilled visa appears to be lower than that suggested by the unconditional means. This group may be under-represented with respect to the characteristics that increase the risk of overeducation. Conversely, Other NESB immigrants on Humanitarian visas seem at greater risk of overeducation once characteristics are controlled for.

The effects of age differ between ESB and NESB groups. For the former overeducation decreases with age at a diminishing rate. In contrast, overeducation increases with age at a diminishing rate for NESB immigrants. This could be consistent with the hypothesis that there are greater difficulties for the latter group in getting their experience recognised in the Australian labour market. Canadian and American immigrants appear to face the least likelihood of being overeducated of any country group, which could be indicative of the relative resourcing of educational systems. Being in a managerial or professional job prior to emigrating reduces the risk of overeducation, though this is not significant for Other NESB immigrants. Looking at the other covariates, lack of funds on arrival only appears to affect the incidence of overeducation for Asian NESB immigrants. No access to a private motor vehicle has at most a marginal positive impact on overeducation incidence for Other NESB immigrants. Speaking a primary language other than English only appears to significantly

affect overeducation for Asian NESB immigrants. Part time NESB workers are more likely to be overeducated.

The impact of qualification assessment on overeducation appears perverse for Other NESB immigrants. To investigate this further we distinguish between those who had their qualification assessment completed before the initial interview and those who completed their assessment at a later stage. The rationale for this distinction is that immigrants who are experiencing labour market difficulties are more likely to pursue later assessment. For example, two-thirds of Other NESB immigrants in our sample who did not pursue assessment stated that this was because they did not require assessment for the purposes of employment [15]. Equation (1) was re-estimated with separate covariates for qualification assessment prior to first interview and assessment after first interview. There is no statistically significant relationship between assessment prior to the first interview and overeducation, whilst the relationship between post immigration assessment and overeducation is 0.05 but not quite significant (T-$Stat = 1.54$). Of course, this result may merely reflect endogeneity between overeducation and qualification assessment. In this case, individuals who have a greater incidence of overeducation are more likely to subsequently seek assessment. Whilst there is some correlation an immigrant having their qualification assessed and being overeducated in the previous period, it is not particularly large (correlation coefficient = 0.09).

Finally, estimation by pooled OLS (not reported) produced very similar re-

---

[15] Specifically, they answered that qualification assessment was not required becuase the qualification readily accepted by employer or it was not necessary to get the job (DIMIA 2002).

sults. In particular, the impact of visa categories, age and managerial/professional work in former country on overeducation was unaltered.

4.3 Earnings

INSERT TABLE 6

Table 6 presents the estimates of the log weekly wage equations. Columns two to four present estimates for immigrants and estimates of education returns for the native population are presented at the bottom of the table[16]. For all immigrants the return to required education is positive, with ESB immigrants experiencing higher return compared to native born Australians. The Asian NESB figure is comparable to the native born returns with Other NESB immigrants enjoying the lowest returns. Surplus education earns a premium above the required level but the rate of return is less than that for required education. This is consistent with the stylised facts of overeducation (Hartog 2000, Rubb 2003, Kler 2005). Thus, an overeducated worker earns less for a given set of qualifications than someone who is appropriately qualified for their position. Returns to both required and surplus education are lowest for Other NESB immigrants. The returns to surplus education appear largest for the native population, although this is only marginally higher than for ESB immigrants. A lower return to surplus education implies a penalty, in terms of returns to education, for being in a job for which an individual is overeducated. Recall

---

[16] Covariates used in the census equations include potential experience and its squared term, and identifiers for NESB, Aboriginal and Torres Straits Islander background (indigenous population), marital status, state of residence, sector of employment, field of tertiary study, part-time employment and overtime hours.

that NESB immigrants have substantially higher rates of overeducation than both ESB immigrants and the native born population. When combined with the lower return to surplus education this suggests that NESB immigrants skills receive a poorer return in Australia than ESB immigrants and the native population. This appears to be borne out by the overall earnings figures in Table 4. Hence the occupational gap means a reduced return to human capital and so the contribution from better qualified immigrants to productive capacity is reduced.

Looking at the other covariates we find that having a managerial or professional job prior to emigrating clearly aids individuals both through avoiding overeducation, as we saw earlier, and in obtaining higher earnings. However, the gain from prior work experience can be offset in the case of NESB immigrants for whom English is not their primary language. Age effects for ESB and Other NESB immigrants display a typical age-earnings concave profile, though the former group exhibits stronger earnings returns to age. However, Asian NESB immigrant earnings are not significantly affected by age, which could imply that prior experience is not valued in the same way for this group in Australia. By contrast, weeks since arrival in Australia is positively associated with weekly wages for all immigrant groups. Pooled OLS regression estimates (not reported) produced the same pattern of significance as the results presented in Table 6, with the exception that for Asian NESB immigrants having a managerial or professional job in the source country where this variable became insignificant.

4.4 Sensitivity Tests

In this section we present regression results for immigrants who entered on Independent Skilled visas. There are two reasons to select this group. Firstly, we are interested in how skilled immigrants impact on local labour markets and contribute to productivity. Secondly, it is well known that estimates of returns to education could be downwardly biased if there is a positive sorting in the immigration process (Butcher 1994). This occurs if the immigration process self-selects such that immigrants have better unobservable characteristics and skills than the overall population of the source country. Moreover, any bias, if present, intensifies with lower levels of schooling. Those who enter under Independent Skilled visas are selected in part based on their qualifications and as a result have higher average schooling levels. As a result, we would expect estimates of ther returns to education should suffer from less bias than other immigrant visa groups.

In Table 7 we present estimates for the determinants of overeducation in the second column for this group. The major difference in these results and those in Table 5 is that age has no effect on incidence of overeducation for Independent Skilled visa holders. This is an outcome of the selection criteria, where age can count against an immigrant by earning fewer points. The age distribution for this group ranges from 22 - 49 years. Hence, there is a truncation in the distribution that diminishes the impact of age. As before, coming from Europe or North America reduces the chance of being overeducated, as does holding a managerial or professional job in the former country.

For the earnings regression (column 3) we note that required schooling estimates are comparable to those of the native population (prime age) (Table 6). However, the return to surplus education is insignificant. This seems to suggest that there is a considerable penalty for overeducation for this group. To investigate this further we disaggregated Independent Skilled visa immigrants into the three regional groups and ran separate regressions. For Asian NESB immigrants the surplus education coefficient was positive (0.03) and significant at the 5% level. For ESB and Other NESB the surplus education coefficient was small (0.02, 0.005) and insignificant. Thus, it is these latter two groups who suffer the large penalty in the form of no return to surplus education.

5 Conclusion

This paper examined the extent to which immigrants entering Australia utilised their qualifications in the labour market. There was evidence of an occupational gap for NESB immigrants. They were better educated than the native born population but were relatively less likely to be found in managerial and professional occupations and were over represented in unskilled work. This occupational gap translated into higher overeducation rates for NESB immigrants, between 80% to 100% higher than those experienced by ESB immigrants. Additionally, even NESB immigrants with tertiary qualifications experienced higher rates of overeducation than the native population. Moreover, NESB immigrants experienced lower returns to both required and surplus education than ESB immigrants.

Interestingly, roughly 30% who entered under Independent Skilled visas were overeducated irrespective of country of origin. Thus, skill based immigration policies appear to create an under-utilisation of skills, even though it appears to have lead to an improvement in immigrant employment in Australia (Cobb-Clark 2003). Hence, there may be some shortfall in the productivity gain that could be expected from these policies. Moreover, in common with earlier research investigating returns to immigrant education in the U.S. (Bratsberg and Terell 2002) it was found that coming from a European or North American background leads to better outcomes in terms of increased returns to education and this seems linked to the reduced incidence of overeducation that Independent Skilled visa holders from these countries experience. Countries that develop immigration policies based upon skill criteria, who attract immigrants from heterogenous backgrounds, should not expect that the productivity potential of these immigrants will be fully utilised unless their entry is linked to a job offer from an employer in the country. Hence, expansion of visa schemes where potential immigrants are nominated by employers in the recipient country are a means of increasing skill utilisation in the early phase of immigration.

6   Appendix

INSERT TABLE A1

INSERT TABLE A2

REFERENCES

Antecol, H., Cobb-Clark, D. A., & Trejo, S. J. (2003). Immigration policy and the skills of migrants to Australia, Canada, and the United States. *Journal of Human Resources* 16 (4), 192-218.

Australian Bureau of Statistics (1997). *Australian standard classification of occupations.* 2nd Edition, Cat. No. 1220.0. Canberra, AGPS.

Barrett, A., FitzGerald, J., & Nolan, B. (2002). Earnings inequality, returns to education and immigration into Ireland. *Labour Economics* 9, 665-680.

Barrett, A., Bergin, A., & Duffy, D. (2005). *The labour market characteristics and labour market impacts of immigrants in Ireland.* IZA Discussion Paper No. 1553, Bonn, IZA.

Battu, H., Belfield, C. R., & Sloane, P. J. (1999). Overeducation among graduates: A cohort view. *Education Economics* 7, 21-38.

Battu, H., Belfield, C. R., & Sloane, P. J. (2000). How well can we measure overeducation and its effects? *National Institute Economic Review* 171, 82-93.

Battu, H., & Sloane, P. J. (2002). To what extent are ethnic minorities in Britain overeducated?. *International Journal of Manpower 23*, 192-208.

Battu, H., & Sloane, P. J. (2004). Overeducation and ethnic minorities in Britain. *Manchester School* 72, 535-559.

Bratsberg, B., & Terrell, D. (2002). School quality and returns to education of U.S. immigrants. *Economic Inquiry* 40, 177-198.

Butcher, K. F. (1994). Black immigrants in the United States: A comparison with native Blacks and other immigrants. *Industrial and Labor Relations Review* 47, 265-284.

Chevalier, A. (2003). Measuring over-education. *Economica* 70, 509-531.

Cobb-Clark, D. A. (2000). Do selection criteria make a difference? Visa category and the labour market status of immigrants to Australia. *Economic Record* 76, 15-31.

Cobb-Clark, D. A. (2001). The longitudinal survey of immigrants to Australia. *Australian Economic Review* 34, 467-77.

Cobb-Clark, D. A. (2003). Public policy and the labor market adjustment of new immigrants to Australia. *Journal of Population Economics* 16, 655-681.

Cohn, E. & Khan, S.P. (1995) The wage effects of overschooling revisited. *Labour Economics* 2 (1), 67-76.

Department of Immigration and Multicultural and Indigenous Affairs (1996). *Classification of countries into English proficiency groups.* Canberra, AGPS.

Department of Immigration and Multicultural and Indigenous Affairs (1999). *Settler arrivals 1998-1999.* Canberra, AGPS.

Department of Immigration and Multicultural and Indigenous Affairs (2002). *Longitudinal survey of immigrants to Australia (LSIA)* User documentation.

26

Dolton, P. J., & Vignoles, A. (2000). The incidence and effects of overeducation in the UK graduate labour market. *Economics of Education Review* 19 (2), 179-98.

Flatau, P., Petridis, R., & Wood, G. (1995). *Immigrants and invisible underemployment.* Canberra, AGPS.

Frank, R. H. (1978). Why women earn less: The theory and estimation of differential overqualification. *American Economic Review* 68, 360-72.

Frenette, M. (2004). The overqualified Canadian graduate: the role of the academic program in the incidence, persistence, and economic returns to overqualification. *Economics of Education Review* 23 (1), 29-45.

Friedberg, R. M. (2000). You can't take it with you? Immigrant assimilation and the portability of human capital. *Journal of Labour Economics* 18, 221-251.

Hartog, J. (2000). Over-education and earnings: where are we, where should we go? *Economics of Education Review* 19 (2), 131-47.

Kler, P. (2005). Graduate overeducation in Australia: A comparison of the mean and objective methods. *Education Economics* 13 (1), 47-72.

Maddala, G. (1987) Limited dependent variable models using panel data. *Jounral of Human Resouces* 22, 307-338.

McDonald, J. T., & Worswick, C. (1999). The earnings of immigrant men in Australia: Assimilation, cohort effects, and macroeconomic conditions. *Economic Record* 75, 49-62.

Miller, P. W. (1999). Immigration policy and immigrant quality: The Australian points system. *American Economic Association Papers and Proceedings* 89, 192-197.

Miller, P. W., & Neo, L. (1997). Immigrant unemployment: The Australian experience. *International Migration* 35, 155-185.

Rubb, S. (2003). Overeducation: a short or long run phenomenon for individuals? *Economics of Education Review* 22 (4), 389-394.

Stewart, M. (1983). On least squares estimation when the dependent variable is grouped. *Review of Economic Studies* 50,. 737-53.

Teicher, J., Shah, C., & Griffin, G. (2002). Australian immigration: the triumph of economics over prejudice?. *International Journal of Manpower* 23, 209-236.

Worswick, C. (1996). Immigrant families in the Canadian labour market. *Canadian Public Policy* 22,. 378-396.

Table 1: Qualification and Occupation Structure - Employed Males[17]

	Immigrant			Native Born	
	ESB	Asian	Other	Prime-Age	Overall
	Qualification				
Masters and Ph.Ds.	24.00%	14.64%	14.49%	2.73%	2.26%
Post-Graduate Diplomas	7.58%	4.28%	5.68%	2.33%	1.85%
Degrees	18.37%	28.70%	18.14%	12.99%	11.62%
Diplomas and Vocational Qual.	26.64%	18.50%	20.83%	37.54%	34.10%
No Post-School Qual.	6.89%	20.23%	28.99%	44.41%	50.17%
	Occupation				
Management	15.73%	6.25%	4.52%	13.44%	11.49%
Professional	40.07%	27.145	24.33%	17.36%	15.37%
Associate Professional	7.58%	4.28%	4.52%	13.81%	12.42%
Trade	18.83%	23.60%	23.38%	19.21%	21.32%
Advanced Services	0.11%		0.07%	0.97%	1.01%
Intermediate Services	7.12%	5.59%	5.39%	10.06%	10.26%
Intermediate Production	4.13%	13.40%	13.40%	13.12%	13.32%
Elementary Services	3.79%	4.03%	4.59%	4.28%	5.52%
Labourer	2.76%	15.79%	19.81%	7.75%	9.30%

---

[17] *Source: LSIA, 1996 Census.*

Table 2: Summary Statistics - Employed Males

Variables	ESB	ASIAN	OTHER
Age	34.52	32.99	31.37
Years of Schooling	14.67	13.86	13.57
Qualifications Assessed	0.36	0.40	0.27
Australian Qualifications	0.01	0.10	0.03
Not Married	0.28	0.31	0.29
Never Visited Australia	0.25	0.59	0.52
No Funds on Arrival	0.07	0.25	0.24
No Car	0.10	0.28	0.26
Mgmt / Prof.Jobs in FC	0.47	0.36	0.35
Primary Language - Not English	-	0.78	0.80
Visa - Humanitarian	-	0.04	0.06
Visa - Preferential Family	0.14	0.20	0.43
Visa - Concessional Family	0.22	0.28	0.16
Visa - Independent Skilled	0.26	0.31	0.22
Visa - Business/ENS	0.38	0.17	0.14
Individuals	330	363	376

Table 3: Incidences of Male Overeducation[18]

	Immigrant			Native-Born	
	ESB	Asian	Other	Prime-Age	Overall
Wave 1	21.21%	31.96%	30.85%		
Wave 2	27.57%	38.69%	33.00%		
Wave 3	19.17%	38.68%	34.60%		
Census 96				7.29%	7.42%
Visa Category					
Bus/ENS	6.73%	11.61%	11.53%		
Ind Skilled	31.17%	33.51%	30.515		
Conc Family	32.61%	53.48%	44.44%		
Pref Family	34.88%	38.57%	35.96%		
Humanitarian		22.34%	36.31%		

Table 4: Average Weekly Wages - Male Wage and Salary Earners[19]

	Immigrant			Native Born	
	ESB	Asian	Other	Prime-Age	Overall
Wave 1	$778.93	$536.30	$547.68		
Wave 2	$819.34	$569.97	$564.70		
Wave 3	$886.16	$637.85	$640.26		
Census 96				$736.65	$666.58
Tertiary Educated					
Wave 1	$901.55	$659.78	$694.65		
Wave 2	$924.93	$686.34	$719.68		
Wave 3	$975.56	$761.83	$761.52		
Census 96				$1,020.11	$977.14

---

[19] *Source: LSIA, 1996 Census.*

Table 5: Determinants of Male Immigrant Overeducation[20]

Variables	ESB	ASIAN	OTHER
Unemployment Rate	0.001 (0.01)	-0.017** (0.07)	0.009 (0.01)
Part-Time	0.035 (0.07)	0.061*** (0.03)	0.092* (0.04)
Qualification Assessed	-0.006 (0.04)	0.004 (0.03)	0.071* (0.03)
Australian Qualifications	-0.064 (0.14)	-0.068 (0.04)	0.062 (0.07)
Not Married	0.067 (0.04)	0.082* (0.02)	-0.031 (0.03)
Never Visited Australia	-0.016 (0.04)	-0.011 (0.03)	0.017 (0.04)
No Funds on Arrival	0.041 (0.08)	0.133* (0.03)	-0.057*** (0.03)
No Car	-0.018 (0.05)	0.027 (0.03)	0.058*** (0.03)
Mgmt / Prof.Jobs in FC	-0.130* (0.04)	-0.094* (0.03)	-0.008 (0.03)
Age	-0.036** (0.02)	0.037* (0.01)	0.033** (0.01)
Age Squared	0.0004** (0.0002)	-0.0004** (0.0002)	-0.0004** (0.0002)
Primary Language - Not English	-	0.096* (0.02)	0.034 (0.03)
Canadian or American	-0.112** (0.05)	-	-
South African or Zimbabwean	-0.070 (0.04)	-	-
North East Asian	-	-0.052 (0.03)	-
Central or South Asian	-	-0.009 (0.03)	-
European	-	-	-0.030 (0.04)
Rest of Other NESB Immigrants	-	-	0.041 (0.04)
Visa - Humanitarian	-	0.003 (0.06)	0.509* (0.06)
Visa - Preferential Family	0.185* (0.07)	0.312* (0.06)	0.430* (0.05)
Visa - Concessional Family	0.221* (0.06)	0.361* (0.05)	0.497* (0.06)
Visa - Independent Skilled	0.166* (0.06)	0.265* (0.05)	0.347* (0.08)
ρ	0.72 (0.06)	0.89 (0.03)	0.95 (0.01)
Obs.	871	1216	1373
Individuals	386	596	735
Wald chi²	46.92	84.24	58.63
Prob > chi²	0.0001	0	0
Prob (chibar)	0	0	0
Log-likelihood	-348.68	-571.15	-600.81

---

[20]Estimates are marginal effects reported at the sample means.

* 1% level of significance, ** 5% level of significance,*** 10% level of significance. Standard errors in parentheses.

Omitted categories are Working Full-time, Qualifications Not Assessed, Foreign Obtained Qualifications, Married, Visited Australia Prior to Immigrating, Had Funds on Arrival, Have Access to a Private Motor Vehicle, Not Employed in a Managerial or Professional Job in Former Country, Primary Language - English and Visa - Business/ENS. For regional dummies, coming from the UK and Ireland, South East Asia, and from North Africa and the Middle East are the omitted cases for ESB, Asian NESB and Other NESB immigrants, respectively.

Variables	Immigrants		
	ESB	ASIAN	OTHER
Required Schooling	0.115* (0.01)	0.104* (0.01)	0.085* (0.01)
Surplus Schooling	0.0519* (0.01)	0.049* (0.01)	0.024** (0.01)
Weeks Since Arrival	0.0007* (0.00)	0.0014* (0.000)	0.0012* (0.00)
Part-Time	-0.324* (0.05)	-0.544* (0.04)	-0.870* (0.04)
Not Married	-0.064*** (0.03)	-0.080** (0.04)	0.068** (0.03)
Never Visited Australia	-0.084* (0.03)	-0.087** (0.04)	-0.108* (0.03)
No Funds on Arrival	-0.102*** (0.06)	-0.072*** (0.04)	-0.110* (0.03)
No Car	0.001 (0.04)	-0.052*** (0.03)	-0.028 (0.03)
Mgmt / Prof.Jobs in FC	0.091* (0.03)	0.078** (0.04)	0.098* (0.04)
Age	0.050* (0.01)	-0.023 (0.02)	0.026*** (0.01)
Age Squared	-0.0006* (0.0002)	0.0002 (0.0002)	-0.0003*** (0.0002)
Primary Language - Not English	-	-0.101* (0.04)	-0.106* (0.04)
Canadian or American	-0.004 (0.04)	-	-
South African or Zimbabwean	-0.038 (0.04)	-	-
North East Asian	-	0.004 (0.04)	-
Central or South Asian	-	0.072 (0.04)	-
European	-	-	0.091** (0.04)
Rest of Other NESB Immigrants	-	-	0.030 (0.04)
ρ	0.57	0.60	0.51
Obs.	871	1216	1373
Individuals	386	596	735
Wald chi^2	415.57	750.33	1211.68
Prob > chi^2	0	0	0
R^2	0.43	0.44	0.52
	Native		
	Prime-Age	Overall	
Required Schooling	0.099* (0.00)	0.100* (0.00)	
Surplus Schooling	0.052* (0.00)	0.062* (0.00)	

---

[21]Estimates are marginal effects reported at the sample means.

* 1% level of significance, ** 5% level of significance,*** 10% level of significance. Standard errors in parentheses.

Omitted categories are Working Full-time, Qualifications Not Assessed, Foreign Obtained Qualifications, Married, Visited Australia Prior to Immigrating, Had Funds on Arrival, Have Access to a Private Motor Vehicle, Not Employed in a Managerial or Professional Job in Former Country, Primary Language - English and Visa - Business/ENS. For regional dummies, coming from the UK and Ireland, South East Asia, and from North Africa and the Middle East are the omitted cases for ESB, Asian NESB and Other NESB immigrants, respectively.

Table 7: Determinants of Male Immigrant Overeducation and Earnings - Independent Skilled Visa Holders [23]

Variables	Overeducation	Earnings
Unemployment Rate	-0.004 (0.01)	
Required Schooling		0.107* (0.01)
Surplus Schooling		0.018 (0.01)
Weeks since arrival		0.001* (0.00)
Part-Time	0.120*** (0.06)	-0.632* (0.05)
Australian Qualifications	-0.123*** (0.07)	
Not Married	0.135*** (0.07)	-0.036 (0.03)
Never Visited Australia	0.037 (0.05)	-0.099* (0.03)
No Funds on Arrival	0.0542 (0.06)	-0.035 (0.04)
No Car	0.027 (0.04)	-0.041 (0.03)
Mgmt / Prof.Jobs in FC	-0.158* (0.05)	0.086* (0.03)
Age	0.056 (0.04)	0.059*** (0.03)
Age Squared	-0.0009 (0.0006)	-0.0008*** (0.0004)
Primary Language - Not English	0.109** (0.05)	-0.065*** (0.04)
Canadian or American	-0.207* (0.06)	0.147 (0.09)
South African or Zimbabwean	-0.148*** (0.08)	-0.0265 (0.08)
South East Asian	-0.014 (0.08)	0.005 (0.06)
North East Asian	-0.017** (0.07)	-0.114* (0.06)
Central or South Asian	0.037 (0.08)	-0.086 (0.05)
North African or Middle Eastern	-0.039 (0.10)	-0.167* (0.07)
European	-0.150** (0.06)	-0.0391 (0.06)
Rest of Other NESB Immigrants	0.012 (0.07)	-0.110 (0.06)
ρ	0.84 (0.04)	0.46(0.00)
Obs.	911	911
Individuals	431	431
Wald chi^2	42.93	605.42
Prob > chi^2	0.00	0.00
Prob (chibar)	0	
Log-likelihood	-421.98	
R^2		0.45

---

[23] Estimates are marginal effects reported at the sample means.

  * 1% level of significance, ** 5% level of significance,*** 10% level of significance. Standard errors in parentheses.

  Omitted categories are Working Full-time, Married, Visited Australia Prior to Immigrating, Had Funds on Arrival, Have Access to a Private Motor Vehicle, Not Employed in a Managerial or Professional Job in Former Country, Primary Language - English and coming from the United Kingdom or Ireland.

TABLE A1 - Summary Statistics - Males Aged 15-64

Variables	ESB	ASIAN	OTHER
Age	35.87	34.89	33.04
Years of Schooling	14.53	13.39	13.20
Qualifications Assessed	0.36	0.33	0.24
Australian Qualifications	0.02	0.08	0.02
Not Married	0.28	0.29	0.29
Never Visited Australia	0.23	0.59	0.68
No Funds on Arrival	0.06	0.32	0.40
No Car	0.09	0.31	0.40
Mgmt / Prof.Jobs in FC	0.44	0.34	0.25
Primary Language - Not English	-	0.84	0.91
Visa - Humanitarian	-	0.15	0.26
Visa - Preferential Family	0.17	0.19	0.37
Visa - Concessional Family	0.22	0.26	0.15
Visa - Independent Skilled	0.25	0.24	0.16
Visa - Business/ENS	0.35	0.16	0.06
Individuals	457	978	1253

TABLE A2 - Variable Definitions

Variables	Description
Age	Continuous variable for age of immigrant.
Years of Schooling	Number of years of study undertaken to obtain educational qualifications
Required Education	Level of education required to do a job as indicated by ASCO codes
Surplus Education	Additional years of education of jobholder over what is required to do their job
Visa Category	
Business/ENS	Individual entered under a business or employer nominated scheme visa
Humanitarian	Individual entered under a humanitarian visa
Preferential Family	Individual entered under a preferential family visa
Concessional Family	Individual entered under a concessional family visa
Independent Skilled	Individual entered under an independent skilled visa
Unemployment Rate	Monthly unemployment rate for the State the immigrant was living in at time of each interview
Weeks since Arrival	Length of time the immigrant has been residing in Australia at time of interview.
Qualification Assessed	Individual has had their foreign obtained qualification assessed
Australian Qualifications	Individual had obtained an Australian qualification
Never Visited Australia	Individual had not previously visited prior to immigrating
No Funds on Arrival	Individual arrived with no funds
No Car	Individual has access to a privately owned motor vehicle
Mgmt / Prof.Jobs in FC	Individual employed in Managerial/Professional level in former country
	within the 12 months prior to immigration
Not Married	Individual was not married
Primary Language - Not English	Main language spoken at home not English.