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Abstract

Although many countries are now using skilled migration to offset declining fertility and increased longevity, there is thin empirical evidence concerning the effects of alternative approaches to managing the skilled migrant intake. This study focusses on the effects on migrant labour market outcomes of Australia's recent shift from a points-based "supply driven" model that favoured independent General Skilled Migrants, to a "hybrid model" that balances supply driven migration against Employer Sponsored "demand driven" migration. We find that the shift to a hybrid model of skilled migration resulted in substantively improved rates of employment amongst skilled migrants without an accompanying deterioration in the average distribution of occupational outcomes.

JEL classification: J15, J61, J24

Keywords: Skilled migration, Australia, migrant employment outcomes, Difference-in-Differences

1. Introduction

Skilled immigration is increasingly being used by OECD countries to off-set the effects of declining fertility and increased longevity (e.g. http://stats.oecd.org). This motivates interest in the factors that determine how well skilled migrants integrate into recipient labour markets. There is broad agreement in the associated literature that language skills, levels of education, recognition of qualifications, and social skills all have an important influence on how well immigrants fare in the receiving country's labour market (e.g. Miller and Neo, 2003, Cobb-Clark, 2003, Cobb-Clark *et al*., 2005). There is also broad agreement that migrants entering under a skills orientated stream differ significantly from, and experience more favourable labour market outcomes to, those entering under other streams (e.g. Antecol *et al*., 2003, Cobb-Clark, 2000, Miller, 1999). In comparison, the implications of alternative approaches for managing skilled immigration have received little attention. This study extends the existing evidence base by evaluating the effects of recent changes to Australian skilled migration policy on the short-run labour market outcomes of migrants.

An influential report by the International Organization for Migration (IOM, 2002) distinguishes between two models of skilled migration. The supply-driven model – often associated with Canada, Australia and New Zealand – uses points-tests to screen in favour of prospective migrants with desirable characteristics who put themselves forward for consideration. In contrast, the demand-driven model – associated with the US – relies upon employers to identify skilled migrants who are likely to contribute positively to the receiving economy. Although this binary categorisation helped to cut through much of the complexity that characterises skilled migration policy in practice, it has become increasingly inadequate in context of contemporary policy reforms.

Recent shifts in policy suggest that the US, Canada, and Australia are now all converging towards a "hybrid" model of skilled migration (e.g. Papademetriou *et al*., 2008). In the US, there is growing interest in the introduction of a points-based scheme, in response to evidence that the Australian and Canadian systems have successfully screened in favour of highly skilled migrants (e.g. Koslowski, 2013, p. 28). In Canada, greater emphasis is being placed on the short-term employment outcomes of migrants in response to growing evidence that many of its skilled migrants have struggled to find employment commensurate with their skills (e.g. Sweetman and Warman, 2013, Aydemir, 2011). In Australia, there has been a general shift "away from 'supply driven' independent skilled migration towards 'demand-driven' outcomes, in the form of employer and government-sponsored skilled migration" (p. 4, Phillips and Spinks, 2012). This shift is designed to better meet the short-term

labour market needs of employers, including "soft skills" that are difficult to quantify (e.g. Collett and Zuleeg, 2009).

As the above paragraph suggests, much of the pressure for contemporary reform of skilled migration policy has been based on broad statistical comparisons of the relative performance of migrants between countries or through time. An important limitation of the existing evidence base, however, is that little is known about what effects historical reforms to skilled migration policy have had (e.g. Koslowski, 2013, Lowell, 2005). This limitation of the existing evidence base motivates the current study.

Here we consider the effects of recent reforms to Australian skilled migration policy on the short-run employment outcomes of skilled migrants. We consider reforms implemented between 2005 and 2009/10, which tightened the conditions for independent skilled visas, and promoted employer sponsored migration, transforming Australia's system of skilled migration from a supply-driven to a hybrid model. The Government has credited these reforms as having substantially improved labour market outcomes of recent immigrants (e.g., Bowen, 2010, 2012). Our analysis considers the empirical support for these claims, using harmonised data derived from two complementary surveys of migrants to Australia.

We find that rates of employment within the first year of visa take-up amongst selected skilled migrants increased by between 11 and 13 percentage points, with a standard deviation of 1.5 percentage points. Approximately 5 percentage points of this effect is attributable to a simple shift between (independent) supply and (employer sponsored) demand-driven skilled migratory streams, with the remainder accounted for by changes in the criteria used to select successful visa applicants. Importantly, we find that this improvement in employment rates did not come at the cost of a lower occupational distribution amongst skilled migrants on average.

The remainder of the paper is structured as follows. Section 2 describes the policy context, and details the reforms considered for analysis. The data that we use are described in Section 3, and empirical results are reported in Section 4. Section 5 concludes.

2. Policy Change in Context

2.1 Historical background

There were intense fears in Australia during World War II that seven million people were too few to defend a landmass of 7.5 million square kilometres (cf. 9.8 million km^2 in the US, and 10.2 million km^2

in continental Europe). This led to the establishment in 1945 of Australia's ministry for immigration, which sought to encourage domestic support for immigrants under the slogan "populate or perish".[1] The primary objective of expanding the Australian population – initially for defence purposes, and later to increase industrial capacity – has continued through to the present day, during which time 8.1 million permanent migrants have arrived in the country.[2] Data reported for 2011 by the OECD (the most recent series available) indicate that Australia had the third highest proportion of residents born overseas (26.6 per cent), slightly behind Switzerland (27.3 per cent), and more substantively behind Luxembourg (42.1 per cent). In comparison, the share of foreign born nationals was 20.7 per cent in Canada, 13.0 per cent in the United States, and was lowest amongst 28 OECD countries in Poland at 1.8 per cent.[3]

Permanent immigration to Australia is primarily administered under the Migration Programme. There are two major streams to the Migration Programme: the Skill Stream is for people with skills that are likely to contribute to the Australian economy; and the Family Stream permits reunion of immediate family members.[4] The only other pathway to permanent residence in Australia is through the Humanitarian Programme for refugees.[5]

Since the mid-1980's, Australian immigration policy has placed an increasing emphasis on the suitability of prospective immigrants for the local labour market. Between 1985 and 2012, the share of all visa outcomes that were administered under the Skill Stream of the Migration Programme more than quadrupled, from 15 to 63 per cent.[6] This increase was primarily at the expense of the

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[1] The slogan "populate or perish" is attributed to former prime minister William Morris (Billy) Hughes (1862-1952), and was taken up by Arthur Calwell (1896-1973), Australia's first minister for immigration.

[2] Permanent and Settler arrivals between October 1945 and June 2012 reported by the Department of Immigration and Citizenship (DIAC), *Historical Migration Statistics*, Tables 1.1, 1.2, 1.3, 1.4 and 2.1.

[3] Table A.4. Stocks of foreign-born population in OECD countries and the Russian Federation, *International Migration Outlook 2013*, OECD.

[4] There is also a Special Eligibility Stream for small groups including former Australian residents and people subject to resolution of status.

[5] We do not address illegal immigration in this study.

[6] The discussion here focusses exclusively on migratory pathways to permanent residency, and therefore excludes Visitor and Temporary Visas (including the Skilled Temporary 457 visa subclass). This selection is motivated by data reported in official publications, and by the data considered for analysis. We also refer to "visa outcomes", which are defined as the number of visas granted in a given year, less visas revoked and temporary visas not granted permanent residency. Note that visa outcomes include both Primary Applicants, upon whose characteristics a visa application predominantly depends, and their dependents. In general, there

Family Stream – traditionally the most prominent migratory pathway – which declined from 64 per cent of all visa outcomes in 1985 to 29 per cent in 2012.[7] The substantive increase in the relative size of the Skill Stream between 1985 and 2012 was driven by both the economic cycle and policy reforms.

The proportion of migrants entering Australia via the Skill Stream tends to increase with the economic cycle, as does the total number of the migrant intake. In 1984/85, Australia reached the trough of a deep recession that began in 1982/83. This recession coincided with historically low visa outcomes and migrant arrivals. From this low-ebb, the total number of visa outcomes increased from 69,000 (in the year to June 1985), to 136,000 in the year to June 1989. During the same period, the share of all outcomes administered via the Skill Stream increased from 15 to 38 per cent. Both the number of visa outcomes and the proportion of visas granted via the Skill Stream closely tracked the economic cycle until 1996, following the economy up during the boom of 1989, and down during the recession of 1990/91.

On 3 July 1996 the Australian Minister for Immigration and Multicultural Affairs announced that "Skilled migrants make a particular contribution to Australia's economic development and their representation will be increased".[8] Following this announcement, the proportion of all visas granted via the Skill Stream jumped from 24 per cent in the year to June 1996 to 41 per cent in 1997. This increase in the share of the Skill Stream was in spite of a fall of 14,000 in the total number of visa outcomes during the same period.

The 3 July 1996 announcement marked a sustained and profound re-orientation of Australian immigration policy towards a larger migrant intake, with a strong emphasis on economic migration. From 1996, permanent additions to the Australian population climbed fairly steadily, from 99,000 (in the year to June 1996) to an historical high of 190,000 in 2006/7, a rate of migrant arrival not

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is a larger proportion of dependents included in the outcomes reported for the Skill Stream than the Family Stream.

[7] Tables 3.2 and 4.1, *Historical Migration Statistics*, DIAC. Although the share of visa outcomes administered through the Humanitarian Programme also fell substantively between 1985 and 2012, the absolute numbers of visa outcomes of the Humanitarian Programme was relatively stable during the period, fluctuating within a band of between 10,000 and 16,000 per year.

[8] P. Ruddock, *Migration programme revamped to benefit Australia*, media release, 3 July 1996, viewed 13 May 2014, and cited by Phillips and Spinks (2012): http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22media%2Fpressrel%2FO3Z20%22

matched outside of two brief peaks in 1949/50 and 1969/70.[9] Since then, the number of permanent additions to Australia has continued to grow, and exceeds 245,000 in the most recently available data (2011/12). The vast majority of this increase in Australia's migrant intake was administered through the Skill Stream.

Repeated Governments have stated that the primary objective of the recent expansion of Australia's Migration Programme is to offset the economic pressures of population aging and below-replacement fertility rates[10]. The shift in favour of the Skill Stream is designed to support this objective, by promoting "migrants with high level vocationally specific skills who can quickly find employment in their occupation" (Birrell *et al*., 2006, p. 162). The methods used to select skilled migrants have consequently been the subject of intense policy debate, to which we now turn.

2.2 Management of skilled migration to Australia

The Skill Stream of the Migration Programme is predominantly comprised of two visa categories, which are distinguished by whether or not an applicant is sponsored by an Australian employer. Employer Sponsored visa applicants require an employer to commit to employ them full time for a minimum period, in a legitimate position that requires a skilled worker.[11] Skilled individuals who do not benefit from employer sponsorship can apply to migrate independently to Australia through the General Skilled Migration (GSM) category.[12] GSM visa applicants are assessed on the basis of a points test that takes into account a range of characteristics, including the applicant's age, education, skills, occupation, experience, and language ability.

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[9] Permanent additions to the Australia population is a different concept to the visa outcomes. Permanent additions are comprised of persons who while already in Australia on a temporary basis are granted permanent residence status, and persons who arrive from overseas and are entitled to stay permanently in Australia; reported in Table 2.1, *Historical Migration Statistics*, DIAC. Data prior to 1996 refer to permanent and settler arrivals.

[10] See, e.g., comment by James Fox, First Assistant Secretary, Migration and Temporary Entry Division, reported in Birrell *et al.* (2006), p. 10, and the Ministerial "Forward" to annual editions of *Australia's Migration Trends* (*Population Flows* prior to 2011/12), reported by the Department of Immigration and Border Protection.

[11] The minimum period was reduced from three years to two years from 1 July 2012 for employers currently sponsoring someone on a 457 visa (representing the majority of employer-nominated migrants).

[12] There are two further visa categories within the Skill Stream. Business Skills visas accounted for 6 per cent of all visas granted through the Skill Stream in 2011/12. These are designed for individuals who have a desire and capacity to contribute to the Australian labour market through their entrepreneurial effort and/or by making a financial investment. Distinguished Talent visas account for less than 0.5 per cent of visas granted at any time in the available time series, and are designed for people who have an internationally recognised reputation of outstanding achievement in sport, the arts, or a profession.

The management of skilled migration to Australia determines the number of migrants entering through constituent visa categories, and is administered via two policy levers. The first of these is the definition of the eligibility rules for individual visa subclasses. A less obvious, but just as important policy lever is the way that applications for visas are processed. This second aspect of the system is deliberately designed to favour some visa subclasses by reducing processing times, and permitting higher numbers of visas granted in any year.

Employer Sponsored visas receive the highest priority for processing. The number of Employer Sponsored visas granted during any year is un-capped, and therefore depends upon the number of eligible applicants and processing times. In contrast, GSM visas are associated with a lower priority for processing. Furthermore, the number of GSM visas granted during any year is managed to meet planning numbers for the entire Skill Stream that are issued by Government as part of the federal budget (ending 30 June).[13] This approach to processing implies interesting trade-offs between Skill Stream visa categories. Given a fixed planning number for the Skill Stream, relaxing the eligibility criteria for Employer Sponsored visas will generally imply a compensating tightening of visas issued through the GSM category. Alternatively, increasing the planning number for the Skill Stream in context of invariant demand for Employer Sponsored visas implies an expansion of the GSM visas category. As these details are publicly available, they are also likely to affect the demand for alternative skilled visa subclasses amongst prospective applicants.

Australian immigration policy has altered substantively during the last two decades, in terms of both the regulations governing specific visa subclasses and the constraints imposed on the processing of alternative visa categories. A useful approach for cutting through the complexity of the detailed policy reforms is to focus upon historical variation observed for the numbers and types of visa outcomes. Annual visa outcomes reported for the Migration Programme during the period 1995/96 to 2011/12 are displayed in Figure 2.1.

Figure 2.1 sheds additional light on the substantial expansion of the Migration Programme since the mid 1990's, and the extent to which this expansion has been managed through the Skill Stream. The figure reveals that the sharpest shift in the mix between the Family Stream and Skill Stream occurred in the three years from 1995/96 to 1997/98, following the official announcement of a change in policy in July 1996. The share of the Skill Stream continued a gradual increase until 2005/06, by

[13] The practice of issuing planning numbers for immigration as part of the budget process was introduced in 2007/08.

which time it accounted for two thirds of all outcomes administered through the Migration Programme.

Figure 2.1 also indicates that between 1995/96 and 2005/06, the vast majority of the expansion of the Skill Stream was administered through the GSM category. In 1995/96 visa outcomes in the GSM category accounted for just over half of all outcomes administered under the Skill Stream, a fraction that climbed to just under 80 per cent in 2005/06. This disproportionate share of the GSM category is the reason why Australian skilled migration could reasonably be described as "supply-driven" at that time.

An important shift in policy is evident from 2005/06, manifested in two features of the data displayed in Figure 2.1. First, the Family Stream has grown broadly in line with the Skill Stream during the seven years to 2011/12, so that the relative decline of the Family Stream between 1995/98 and 2005/06 appears to have come to an end. The Family Stream now accounts for approximately one in every three visa outcomes administered through the Migration Programme. Secondly, there is a sharp shift evident within the Skill Stream in favour of Employer Sponsored visas. The proportion of all Skill Stream outcomes administered through the GSM category fell from approximately 80 per cent in 2005/06 to 50 per cent since 2009/10, with most of the shift into Employer Sponsored visas. Contemporary data consequently suggest that Australian skilled migration is now appropriately referred to as a "hybrid" system.

The Global Financial Crisis appears to have been an important catalyst that accelerated the transition in favour of Employer Sponsored migration referred to above. On 17 December 2008, the Minister for Immigration and Citizenship announced Government "concerns that the permanent Skilled Migration program was not delivering the right skills to the right areas and there was an increasing use of the temporary skilled migration program (Subclass 457 visa) by employers to meet their needs."[14] Reforms were subsequently implemented to fast-track Employer Sponsored permanent migration visas, and GSM visas for applicants with skills identified as in particularly short supply.

The shift of the Skill Stream in favour of Employer Sponsored migrants has been achieved by altering policy in relation to both GSM and Employer Sponsored visa subclasses. One important and open-ended feature of reforms to skilled migration policy is the identification of occupations that qualify

[14] C. Evans, *Migration program gives priority to those with skills most needed*, media release 17 December 2008, viewed 15 January 2014, http://www.minister.immi.gov.au/media/media-releases/2008/ce08123.htm

for skilled migration to Australia. These occupations are defined by official lists[15], and are under constant review to ensure that they reflect evolving public priorities and labour market needs.

Beyond lists of eligible occupations, however, GSM and Employer Sponsored visas have been subject to appreciably different sets of policy initiatives. In the case of GSM visas, attention has focussed on the specification of the points test used to identify eligible migrants. In March 2006, Birrell *et al*. (2006) published a review commissioned by the Government "to examine Australia's selection processes for skilled migrants". The review recommended that GSM selection criteria should place greater emphasis on English language proficiency and relevant work experience. These recommendations were accepted by the Government, and associated changes to policy became effective from 1 September 2007.[16] The increased emphasis on language and experience at the expense of education implied that a higher proportion of foreign students studying at Australian education institutions were made ineligible to apply for permanent residency immediately after their graduation. An 18 month temporary working (485) visa was also introduced in 2007 to give these individuals the opportunity to gain the language skills and employment experience they needed to apply for permanent residency.[17] This shift in favour of a multi-stage migration process is also a common trend throughout the Australian Migration Programme, where the proportion of all visas granted to on-shore applicants has increased from 33 to 57 per cent in the ten years to 2012/13.[18]

In contrast, policy initiatives in relation to Employer Sponsored visas have generally focussed on facilitating the matching process between prospective sponsors and interested migrants. As noted

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[15] Independent GSMs currently require skills in occupations defined by the Skilled Occupation List (SOL). Employer and State Sponsored migrants can have skills in occupations defined by either the SOL or the Consolidated Sponsored Occupation List (CSOL).

[16] See, e.g., Forward by Amanda Vanstone, Minister for Immigration and Citizenship, to *Population Flows: Immigration Aspects 2007*. The points test was adjusted to benefit applicants with advanced Australian tertiary qualifications, Australian skilled work experience and strong English language skills. The required English language level was lifted from a score of 5 (vocational) to 6 (competent) on the International English Language Testing System (IELTS) scale for all applicants, except those with recognised trade skills (who required an IELTS score of 5). A substantial fraction of prospective migrants now fail to meet the revised English language requirements (see, e.g. Hawthorne, 2012). Furthermore MODL points were limited to applicants with relevant work experience, and work experience requirements were standardised across all off-shore GSM visa subclasses.

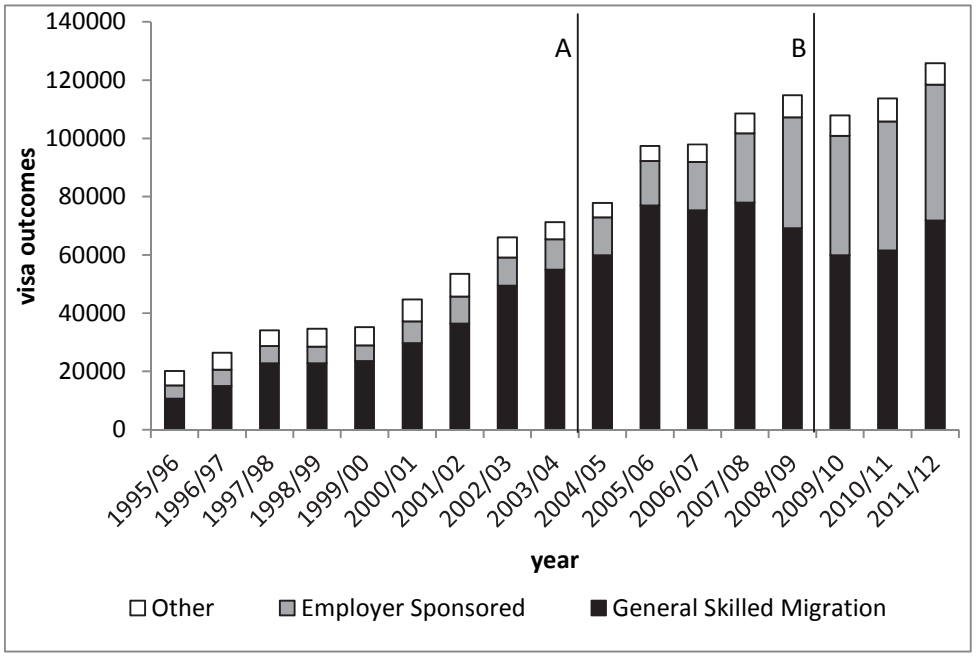
[17] Visa subclass 485 has (since March 2013) been turned into a temporary work visa valid for up to 4 years, and is no longer a direct pathway to permanent residency.

[18] Source DIBP Migration Programme Outcome Data.

by the Minister for Immigration and Citizenship as part of the 2006 Government budget announcement, for example:[19]

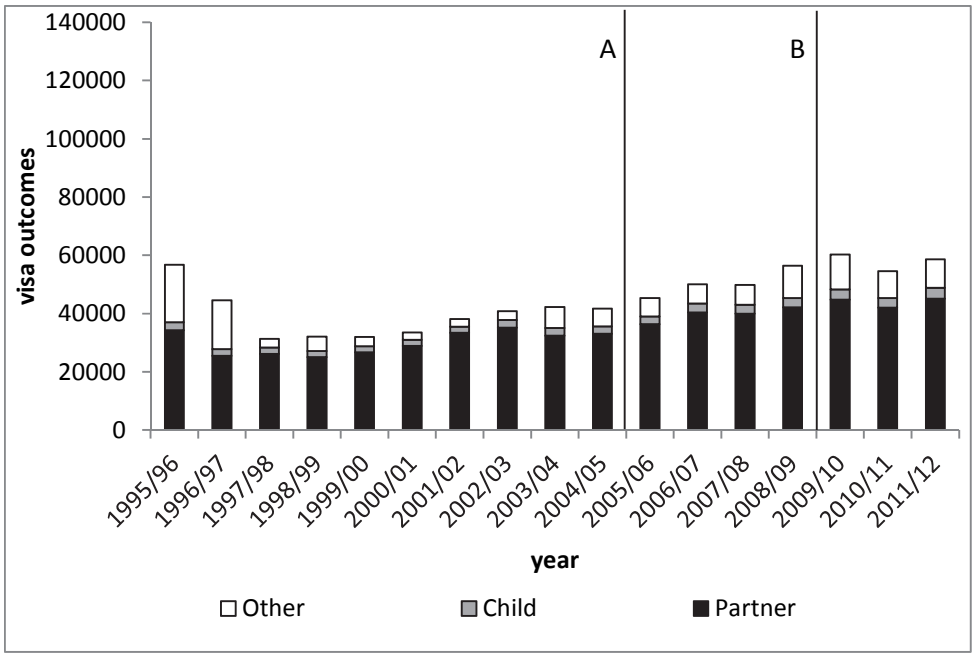
"This year we have worked extremely hard to increase the proportion of skilled migrants sponsored by employers or States and regions. We have done this by matching skilled migrants with employers through a number of avenues including skills expos, both onshore and offshore; the availability of Regional Outreach Officers; and for the first time this year Industry Outreach Officers, who we have seconded to key industry groups, to support employers."

The most substantive innovation during recent years has been the introduction of SkillSelect in July 2012, an online pre-screening programme for GSM and Business migrants. Prospective migrants for selected visa subclasses must now submit an expression of interest through SkillSelect before they are invited to submit a formal visa application. This system is designed to give the Australian government greater control over the number and composition of visa applicants, and is a targeted response to the lengthening processing queues that had been observed during the preceding decade.



Panel A: Skill Stream

[19] A. Vanstone, 1 May 2006, *Government successfully matching skilled workers to employers*. Viewed 21/07/2014 through the Australian Parliamentary website.



Panel B: Family Stream

Source: Table 2.1 *Australia's Migration Trends 2011/12*, and Table 2.3 *Population Flows: Immigration Aspects 2004*, Department of Immigration and Citizenship.

Notes: A: approximate timing of Longitudinal Survey of Immigrants to Australia 3, wave 1
B: approximate timing of Continuous Survey of Australia's Migrants, cohorts 1 and 2, wave 1
"visa outcomes" defined in Section 2.1
Other (Skill Stream) comprised of Business Skills and Distinguished Talents visa subclasses
Other (Family Stream) comprised of Parent and non-dependent child visa subclasses

Figure 2.1: Migration Programme outcomes by visa category, 1995/96 to 2011/12

The set of reforms that have transformed the Australian system of skilled migration from a supply-driven to a hybrid model were primarily motivated by the desire to achieve improved labour market outcomes of skilled migrants. When these reforms were implemented, however, it was unclear what impact they would have. It seems reasonable to expect that shifting emphasis toward migrants with a sponsoring employer should have increased rates of employment amongst Skill Stream migrants. But what would the scale of the associated effects be? Would promoting Employer Sponsored migrants result in a deterioration in the quality (and possibly the persistence) of the jobs held by these people? How would tightening language and experience requirements at the expense of education affect employment outcomes amongst individuals entering through the points system? These important questions remain largely unanswered, and are the focus of the empirical analysis reported below.

3. Data and Empirical Method

No single data source offers the information that we require. Our study is made possible by harmonising variables described by two complementary data sources for Australian migrants: the *Longitudinal Survey of Immigrants to Australia 3* (LSIA 3), and the (recently available) *Continuous Survey of Australia's Migrants* (CSAM, which was only recently made available).

LSIA 3 and CSAM were selected for our analysis for three reasons. First, both surveys were conducted by the Department of Immigration and Citizenship[20] and are almost identical. For example, these two surveys employed the same sampling and data collection methodologies, and achieved comparable response rates. Initial samples in both surveys were drawn from the same immigrant data base, as discussed below. Although the LSIA 3 questionnaire is slightly longer than that of CSAM, the questions asked in both surveys are also very similar. These substantive similarities ensure high levels of comparability between the data reported by LSIA 3 and CSAM, and enabled a close harmonisation in the definition and construction of the variables considered for analysis.

Secondly, relative to other publicly available micro-data sources for Australia (e.g. ABS 6250.0, *Characteristics of Recent Migrants*), LSIA 3 and CSAM include larger samples of migrants, and greater

[20] We refer to the department responsible for managing immigration to Australia throughout this paper as the "Department of Immigration and Citizenship", or more succinctly "the Department". However, immigration to Australia was managed by the "Department of Immigration and Multicultural and Indigenous Affairs" from 26/11/2001 to 26/01/2006, the "Department of Immigration and Multicultural Affairs" from 27/01/2006 to 29/01/2007, the "Department of Immigration and Citizenship" from 30/01/2007 to 17/09/2013, and the "Department of Immigration and Border Protection" from 18/09/2013 to the time of writing.

detail concerning important variables of interest, such as the timing of an individual's arrival in Australia or the granting of their visa, and their visa subclass.

Thirdly, LSIA 3 describes the circumstances of migrants in 2005, and CSAM reports data from 2009. Australian skilled migration policy altered substantively during the period between these two surveys, shifting towards a "hybrid" model as discussed in Section 2.2.

3.1 Sample selection and survey methodology

Both LSIA 3 and CSAM adopt visa Primary Applicants as the basic unit of analysis. Primary Applicants are the individuals upon whose characteristics a visa application is chiefly assessed. The sample frames for both LSIA 3 and CSAM were drawn from the Settlement Database maintained by the Department of Immigration and Citizenship.[21] The sample populations for both surveys were limited to Primary Applicants for permanent or provisional visas managed under the Migration Programme, who were at least 18 years of age, had an identifiable country of birth, were not New Zealand citizens, and did not have a "special eligibility" visa.[22] Although both surveys only administered questionnaires to Primary Applicants, there are a small number of questions in each survey where Primary Applicants were asked to provide responses on behalf of other members of the household.

The two surveys contacted Primary Applicants who were granted an on-shore visa or arrived in Australia on an off-shore visa within the preceding six months. The sample for LSIA 3 was first surveyed between August and October 2005 and comprises Primary Applicants who were granted an on-shore visa or arrived in Australia on an off-shore visa between December 2004 and March 2005. Data for CSAM were collected for 5 independent cohorts of immigrants, separated by 6 month intervals, between September 2009 and September 2011. We consider data only for the first two of these cohorts, as the initial questionnaire was altered slightly for cohorts 3, 4 and 5, complicating comparisons with LSIA 3.[23] Cohort 1 of CSAM was first surveyed in September 2009 and reports data for Primary Applicants who arrived in Australia or were granted an on-shore visa between January and May 2009. Cohort 2 was first surveyed in March 2010 and reports data for Primary Applicants

[21] The Settlement Database has been maintained by the Department of Social Services since early 2014.

[22] Special eligibility visas are issued to people who meet specific criteria, or to resolve the status of certain groups of persons who have been allowed to remain in Australia as long-term temporary residents on humanitarian grounds.

[23] Additionally the sample size of Family Stream respondents is approximately 1100 in both cohorts 1 and 2, and drops substantially to approximately 700 in cohorts 3, 4 and 5.

who were granted an on-shore visa or arrived in Australia on an off-shore visa between July and November 2009.[24] The approximate timings of the sample windows for the respective surveys are indicated by vertical lines displayed in Figure 2.1.

Both LSIA 3 and CSAM include a panel dimension, with an initial survey administered as a written questionnaire that respondents completed and mailed back, and a follow-up survey conducted by telephone interview. Individuals with limited English language ability could obtain access to interpreter services by contacting a toll free number for the initial written surveys, and the follow-up telephone interviews were conducted in a language that was selected using information gained through the initial survey. The follow-up survey was administered 12 months after the initial questionnaire in LSIA 3, and six months after the initial questionnaire in CSAM. The difference in the period between the initial and follow-up surveys reported by LSIA 3 and CSAM limits our interest to responses to the initial questionnaire. Some data from the follow-up surveys are, however, used to impute missing information in the initial questionnaires.

LSIA 3 achieved a completed response rate of 49 per cent and reports data for 9865 respondents to the initial survey. The initial questionnaires for CSAM achieved a similar response rate of 47 per cent. Cohorts 1 and 2 of CSAM together report data for 7217 respondents.

3.2 Construction of variables and comparative statistics

The same questionnaires were administered to Primary Applicants in cohorts 1 and 2 of CSAM, which – although very similar – are not identical to those of LSIA 3. Both CSAM and LSIA 3 report a range of variables for Primary Applicants, including their demographic circumstances, education, employment status, receipt of government benefits, and housing arrangements. The initial questionnaire of LSIA 3 comprises more enumerated questions than asked in CSAM (43 relative to 35), and covers a more diverse range of topics (e.g. sources of visa information accessed, employment experience gained overseas, existing social networks). In contrast, CSAM provides additional detail relative to LSIA 3 concerning the employment arrangements of the partners of Primary Applicants.

Analysis started with the publicly released sample reported for LSIA 3, and the raw data reported for CSAM[25], from which we calculated a harmonised set of variables for analysis. Some questions asked

[24] See Smith *et al*. (2012).

[25] We were given access to the raw data reported by CSAM.

by the two surveys were identical, facilitating derivation of harmonised data. In cases where the two surveys reported data for different, but related characteristics, care was taken to recover common subsets of data reported by the two surveys. Additionally in some cases missing observations were imputed from related questions. Furthermore, survey non-response to questions could sometimes be imputed from responses to related question. For example, missing information to the question "do you have a partner?' could be imputed, if the respondent later in the survey stated that their partner was working. Very few observations – usually less than 1 percent – were imputed in this way. A complete list of the common sub-set of harmonised characteristics constructed from LSIA 3 and CSAM data is reported in Appendix A.

Our analysis considers data for individuals aged 18 to 54. Applicants for Skill Stream visas must be under age 50 unless exempt. Our age restriction omits 0.9 per cent of Employer Sponsored and GSM migrants in the pooled LSIA 3 / CSAM data.[26] Additionally, our empirical analysis focusses only on migrants within the Family, independent GSM, and Employer Sponsored visas subclasses. Summary statistics for the harmonised variables of the population subgroups considered for analysis are reported in Table 3.1.

All of the variables reported in Table 3.1, except for the sample sizes reported at the bottom of the table, are dummy variables that take the value 1 if an individual falls into the respective category and 0 otherwise. Hence, the means reported in the table describe population shares. At the top of the table (under the heading "dependent variables") are statistics that describe our primary focus of interest: the (short-term) employment rates and occupational categories of Primary Applicants of permanent or provisional visas granted for Australia. The remainder of the variables reported in the table (under the heading "covariates") are used to help explain these labour market outcomes.

The characteristics described by covariates for Primary Applicants of visas granted through the Family Stream are strikingly similar between LSIA 3 and CSAM. Only one covariate reports a disparity between the two data sources larger than 5 percentage points (residence in NSW, 7.2 percentage points). The average absolute difference in incidence across all covariates listed in Table 3.1 for Family Stream migrants is 2.1 percentage points.[27] This finding is consistent with the fact that policy

[26] For the entire sample of LSIA and most of CSAM, the threshold age for Skilled Migration was 45. This age threshold was lifted to 50 in July 2011.

[27] The absolute proportional change averaged over of all characteristics reported in Table 3.1 that comprise at least 10 per cent of the population in LSIA 3 is 6.2 per cent.

concerning the granting of the Family Stream visas did not alter substantively over the associated time period. This stability in average characteristics across time further suggests that the harmonised data are reasonably comparable between LSIA 3 and CSAM. This second conclusion is important because it implies that measurable differences between the data reported by LSIA 3 and CSAM can be interpreted meaningfully.

The distribution of occupations amongst Primary Applicants granted visas through the Family Stream is also similar between the two surveys. Within the seven occupational categories identified in the harmonised data, Family Stream migrants are reported to find employment predominantly either as 'professionals' or 'labourers' in both surveys. The proportion of these occupations is slightly higher in 2009/10 (CSAM), relative to 2005 (LSIA 3), where labourers account for just over one in every four, and professionals one in every five of employed Family Stream migrants.

The largest difference observed between 2005 and 2009/10 statistics for Family Stream migrants relates to the proportions of migrants at work, which fell by 7 percentage points, from 57 per cent in the 2005 data to 50 per cent in 2009/10. This fall coincides with a sharp deterioration in consumer sentiment that followed the financial crisis of 2008. The "current conditions index" of the Westpac-Melbourne Institute Survey of Consumer Sentiment, for example, averaged 120.6 between December 2004 and March 2005 (the sample window for migrants reported in LSIA 3), compared with 93.4 between January and May 2009 (cohort 1 of CSAM; average employment rate for Family Stream migrants of 46 per cent), and 108.2 between July and November 2009 (cohort 2 of CSAM; average employment rate of 53 per cent).[28]

Compared with the 7 percentage point decline reported for the employment rate of Family Stream migrants, the proportion of GSMs employed increased by 7 percentage points from 2005 to 2009/10. There is also a trend towards higher occupations in 2009/10 for GSMs. This provides our first indication that policy reforms introduced as part of the shift in skilled migration policy may have resulted in more favourable employment outcomes amongst GSMs, at least when measured relative to migrants through the Family Stream.

Furthermore, in contrast to results for migrants through the Family Stream, the covariate statistics reported for GSMs indicate substantial differences in average migrant characteristics between 2005

[28] An index of 100 indicates neutrality of sentiment responses. The main "consumer sentiment index" reported by the same survey averaged 116.4 during the sampling window for LSIA 3, 88.6 for cohort 1 of CSAM, and bounced back to 116.4 for cohort 2 of CSAM.

and 2009/10. Relative to 2005, the sample of Primary Applicants granted GSM visas in 2009/10 displays a stronger bias in favour of older people granted offshore visas from English speaking countries, who speak English very well, with partners and dependent children.[29] It is reasonable to suppose that there is a relationship between the higher share of GSM migrants in 2009/10 who report migrating with children, and the substantively higher share who state that their "main reason for migrating" was to provide a "better future for (their) family" (in sharp contrast to the stability of associated responses of Family Stream migrants). The growth in off-shore visas granted to GSMs is interesting because it runs against a broad trend in favour of on-shore visas granted through the Migration Programme (see Section 2.2). There is also a decline in the share of respondents with third level education, whose highest degree was obtained in Australia.[30]

These differences in the characteristics of Primary Applicants who were granted GSM visas mirror changes in policy between 2005 and 2009. As noted in Section 2.2, the points system used to determine eligibility for a GSM visa was rebalanced in favour of English language skills and relevant labour market experience, at the expense of higher education qualifications (from an Australian institution). The reduced emphasis on education meant that fewer (young) foreign students were eligible for permanent residency immediately after their graduation, reducing on-shore visa grants and possibly increasing the average age and reducing educational attainment amongst GSMs.[31] There was also a shift in emphasis within the GSM visa class in favour of state / territory sponsored migrants, who are predominantly off-shore visa applicants (see, e.g., Table 2.1, *Australia's Migration Trends 2011/12*). Nevertheless, other changes occurred between 2005 and 2009 – notably the advent of the global financial crisis – so that it is unclear how much of the variation identified here is attributable to skilled migration policy alone.

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[29] The harmonized variable for children reported here is constrained by variations in questions reported by the two surveys, to focus exclusively on the dependent children of Primary Applicants, who migrated with, and continue to live in the same household as the Primary Applicant. The reported results are not sensitive to adopting a variable definition that takes into account all of the information reported by each survey to identify whether a Primary Applicant is likely to be living with a dependent child in general – including public subsidies (LSIA 3 and CSAM), dependents of visa applicants (LSIA 3 and CSAM), and current living arrangement (LSIA 3).

[30] These statistics are not directly comparable with those reported in the Department of Immigration and Citizenship's annual report (*Australia's Migration Trends 2011-12*), because the current data report statistics for Primary Applicants only, and not all migrants as generally listed in annual reports.

[31] It is possible that some of the individuals reported in CSAM held one of the new temporary working (485) visas prior to being granted a permanent residency visa (and entering the CSAM sample frame). Note that as the new temporary working visa matures, it may be that the average educational attainment of GSMs will rise to levels similar to those observed in 2005.

Table 3.1: Population averages for Primary Applicants of Family Stream and Skill Stream visas aged 18-54, by visa category and survey

	Family Stream		General Skilled Migrant		Employer Sponsored	
	LSIA 3 2005	CSAM 2009-10	LSIA 3 2005	CSAM 2009-10	LSIA 3 2005	CSAM 2009-10
DEPENDENT VARIABLES						
at work	0.567	0.495	0.818	0.890	0.991	0.954
occupation (of those at work)						
higher occupations						
manager	0.068	0.066	0.042	0.050	0.148	0.130
professional	0.178	0.197	0.392	0.455	0.549	0.477
other occupations						
technical and trades	0.133	0.109	0.108	0.175	0.133	0.188
community and personal	0.113	0.125	0.058	0.060	0.054	0.090
clerical and administration	0.151	0.136	0.184	0.093	0.070	0.037
sales	0.109	0.079	0.120	0.045	0.030	0.014
machine operator and labourers	0.248	0.288	0.097	0.121	0.017	0.065
COVARIATES						
proportion women	0.669	0.693	0.442	0.376	0.301	0.294
age bands						
18-34	0.691	0.696	0.785	0.618	0.351	0.324
35-49	0.309	0.304	0.215	0.382	0.649	0.676
has a partner	0.961	0.954	0.512	0.682	0.787	0.823
has partner at work in Aus	0.773	0.771	0.271	0.413	0.450	0.489
has children who migrated	0.167	0.169	0.211	0.371	0.459	0.583
country of birth						
English speaking	0.178	0.169	0.109	0.289	0.532	0.398
East Asia	0.156	0.181	0.273	0.172	0.085	0.137
South Asia	0.092	0.137	0.221	0.270	0.076	0.119
South East Asia	0.241	0.255	0.260	0.127	0.096	0.157
Middle East	0.099	0.063	0.015	0.026	0.020	0.012
speaks English very well	0.447	0.433	0.630	0.751	0.837	0.761
qualifications						
no post school qualification	0.340	0.345	0.054	0.055	0.083	0.122
first degree or higher	0.362	0.400	0.803	0.700	0.630	0.546
highest qual obtained in Aus	0.096	0.139	0.609	0.441	0.082	0.228
main reason for migrating						
better future for family	0.123	0.109	0.268	0.497	0.219	0.400
join family	0.753	0.789	0.058	0.026	0.023	0.018
work opportunities	0.035	0.017	0.298	0.170	0.470	0.356
state of residence						
NSW	0.432	0.361	0.408	0.223	0.379	0.243
QLD	0.122	0.141	0.095	0.118	0.118	0.191
SA	0.044	0.052	0.036	0.120	0.118	0.079
VIC	0.286	0.307	0.341	0.312	0.207	0.225
WA	0.087	0.110	0.092	0.200	0.129	0.207
onshore visa	0.397	0.373	0.607	0.394	0.802	0.768
sample size	5323	1966	2933	2274	854	1713

Source: LSIA 3 – initial wave of the *Longitudinal Survey of Immigrants to Australia 3*

CSAM – pooled data from initial waves of cohorts 1 and 2 of the *Continuous Survey of Australia's Migrants*

Notes: All means statistics calculated using reported survey weights

There is evidence of a slight decline in employment outcomes amongst Employer Sponsored migrants, in contrast to the general improvements reported for GSMs. This deterioration can be attributed to the fact that 99 per cent of Employer Sponsored migrants reported being employed in 2005, leaving almost no margin for improvement in later years. The same, however, cannot be said for the distribution of occupations amongst Employer Sponsored migrants in paid employment, which also displays some deterioration between 2005 and 2009/10. The proportion of Employer Sponsored migrants employed in technical, trades, and personal occupations rises by approximately the same margin as the proportion employed as managers and professionals falls; and there is a similar re-weighting of Employer Sponsored migrants from clerical, administration, and sales occupations to machine operators and labourers.[32] A consequence of these respective shifts is that the disparities between the employment outcomes reported for GSM and Employer Sponsored migrants generally fell between 2005 and 2009/10.

Further evidence of a convergence in outcomes of GSM and Employer Sponsored migrants from 2005 to 2009/10 is evident throughout the list of characteristics reported in the lower portion of Table 3.1. Relative to 2005, there is a smaller difference between GSM and Employer Sponsored migrants in 2009/10 for demographics (sex, age, relationship status, and children), country of origin, Australian educational qualifications, and geographic residence.[33] A potential explanation for the set of observations is that many foreign students graduating from Australian education institutions, who would have applied for a GSM visa in 2005, chose instead to apply for an Employer Sponsored visa in 2009/10. This explanation is consistent with coincident changes to immigration policy, as discussed above.

Comparisons between the sample sizes that are reported at the bottom of Table 3.1 and national aggregates are complicated by the fact that our samples reported for 2005 and 2009/10 focus exclusively on Primary Applicants, whereas national aggregates typically include associated dependents. Nevertheless, it is useful to consider how the raw samples compare, if only to provide

[32] Note that the proportional shifts in employment shares are less than the increase in the total number of Employer Sponsored migrants, suggesting that the total number of Employer Sponsored migrants employed as managers and professionals increased between 2005 and 2009.

[33] The most substantive departure from this general trend is described by the statistics for the proportion of onshore visa applications. The reduction in on-shore visa outcomes amongst GSMs reflects associated shifts in policy as discussed above. In contrast, Employer Sponsored visas have consistently been granted most commonly to individuals who are already in Australia on a Temporary Long Stay 457 visa (see, e.g. Figure 1.4, *Population flows: Immigration aspects 2009-2010*).

an imperfect yardstick for interpreting the empirical analysis reported in Section 4. A key issue in this regard concerns the contribution to the Skill Stream made by the GSM and Employer Sponsored visa categories. Table 3.1 indicates that the GSM sample accounted for 77 per cent of all GSM and Employer Sponsored Primary Applicants reported by LSIA 3, and for 57 per cent of the sample reported by cohorts 1 and 2 of CSAM. These proportions are close to those implied by data reported in Table 2.1 of *Australia's Migration Trends 2011/12*, which reports that GSMs accounted for 83 per cent of all GSM and Employer Sponsored visa outcomes in 2005/06, and 59 per cent of outcomes in 2009/10.

3.3 Empirical approach

We use a standard difference-in-differences (DiD) strategy to estimate the effects of reforms to skilled migration policy implemented between 2005 and 2009 on the short-run labour market outcomes of migrants to Australia.[34] This approach allows us to distinguish changes in Skill Stream employment outcomes that are likely to be attributable to changes in migration policy from other coincident changes in migrant circumstances (including changes to the underlying economy). This is done by comparing changes observed for employment outcomes of skilled migrants who were subject to policy change (treatment group) against changes observed for family migrants who were not subject to substantive policy change (control group).

Our treatment group includes GSMs in isolation and pooled with Employer Sponsored migrants. Our control group is comprised of Family Stream migrants. Pre-treatment outcomes are described by data observed in 2005, and data observed in 2009/10 describes circumstances following changes to skilled migration policy (the treatment). We consider two binary employment outcomes: "at work" and "working in a higher occupation".

A simple representation of the DiD empirical specification is given by:

$$y_{i,t} = \beta_0 + \beta_1 . g_i + \beta_2 . post_t + \beta_3 . g_i . post_t + u_{i,t} \quad (1)$$

where $y_{i,t}$ denotes the employment outcome of individual *i* in period *t*, g_i is an indicator variable taking the value 1 for individuals in the treated population and 0 otherwise, $post_t$ is an indicator variable equal to 1 in the period following exposure to the treatment and 0 otherwise, $u_{i,t}$ is the

[34] For a text-book discussion of the Difference-in-Differences approach, see e.g. Angrist and Pischke (2009), section 5.2.

residual, and the β terms are coefficients to be estimated. Additional covariates can be added to the right-hand side of equation (1) to control for temporal variation in the underlying characteristics of the treatment and control populations.

The parameter β_1 accounts for step differences in employment outcomes between Family Stream and Skill Stream migrants that may have existed in the pre-treatment time period. β_2 accounts for changes in employment outcomes from the pre-treatment period to the post-treatment period, which are assumed to be the same for Family Stream and Skill Stream migrants in the absence of any changes that affect one stream but not the other. β_2 consequently represents the impact of changes, for example, to labour market conditions that affect migrants without distinguishing by visa subclass. β_3 captures the impact of factors that vary through time between migrants in the Skill and Family Streams, and is our primary focus of interest.

β_3 is expected to reflect the impact of changes in Skill Stream migration policy. Implicit in this interpretation is the assumption that Skill Stream and Family Stream migrants were subject to similar shifts in circumstances governing employment outcomes, other than those shifts directly attributable to changes in skilled migration policy.

The form of equation (1) is referred to as "saturated" in the sense that every possible combination of the considered explanatory variables is accommodated on the right-hand-side of the regression: there are four possible combinations of pre/post treatment time periods and control / treated population subgroups, and four coefficients to estimate. In our context, equation (1) describes a "linear probability model" that can be estimated using Ordinary Least Squares and estimated coefficients represent simple probabilities. In other words, β_3 can be interpreted as the effect on the probability of being employed of the policy changes implemented between 2005 and 2009/10.

It is unclear, however, whether the linear probability model is appropriate in the current context. The bounded nature of a probability can cause problems when additional explanatory variables are included in the regression. This issue is likely to be limited in out context by the fact that most of our covariates (described in the lower portion of Table 3.1) are also binary variables (e.g. Wooldrige, 2002, section 15.2). This issue is, however, compounded by the large differences between the proportions of the populations "at work" reported for the Family Stream (control group) and Skill Stream (treatment group) in 2005.

The basic identifying assumption made by the linear probability variant of the DiD specification defined by equation (1) is that temporal variation between 2005 and 2009/10 in the probability of

employment of Skill Stream and Family Stream Primary Applicants would be the same in the absence of the policy changes made to the Skill Stream. As the employment rates for Skill Stream migrants in 2005 were substantively closer to the upper bound of 1.0 than Family Stream migrants, it seems plausible that rates of employment amongst Family Stream migrants were more sensitive to contemporaneous fluctuations in the underlying economic environment than those of Skill Stream migrants.[35] Similar considerations affect the choice of model specification when considering instead the proportion of employees working in higher occupations. This motivates our decision to estimate a probit transformation of equation (1), which allows for differential volatility of employment outcomes through time between Skill Stream and Family Stream migrants.[36] We nevertheless report results derived using the linear probability model as part of our sensitivity analysis.

A DiD empirical approach has the added advantage of accommodating non-random survey response that may affect the data reported by LSIA 3 and CSAM. The initial response rates achieved for LSIA 3 and CSAM are not conspicuously lower than those achieved by general population surveys in which participation is voluntary.[37] Nevertheless, there is some cause for concern regarding the representative nature of the data that are reported by these surveys. As the technical report for CSAM acknowledges, although interpreter services were provided as part of each survey's roll-out, "migrants from Non-English speaking backgrounds may have found the form difficult to complete" (Smith *et al.*, 2012, p.21). In this regard, it is important to note that LSIA3 and CSAM employed identical sample and survey methods, so that any non-random response is likely to affect both surveys in a similar way. By focussing on differences taken over comparable survey instruments, we identify effects that can be meaningfully interpreted as the impact on a consistent migrant subgroup of reforms to skilled migration policy, even if this "migrant subgroup" is unrepresentative of all migrants to Australia in some respects.

One last methodological point is worth discussing before we present our empirical results. Table 3.1 indicates that approximately 80 per cent of GSMs and 99 per cent of Employer Sponsored migrants were reported as employed in 2005. These high rates of employment raise the question of whether

[35] This would be particularly likely in context of a substantive improvement of the labour market context.

[36] As noted by Puhani (2008), the identifying assumptions of the DiD estimation strategy are less intuitive for the probit model than the linear probability model.

[37] The response rate achieved for the Australian Survey of Income and Housing 2010/11, for example, was 67 per cent (including out of scope households), and for the UK Living Cost and Food Survey 2010 was 50 per cent.

there was much scope for improvement following the considered policy reforms. Our analysis of employment rates is motivated by three key observations.

First, a key objective of changes implemented to the eligibility criteria of GSM visas was to improve the match between migrant characteristics and the needs of Australian employers. With one in five GSMs indicated as not employed in 2005, there appears sufficient scope for some improvement to have been achieved in this regard.

Secondly, as noted in the preceding subsection, a sharp deterioration in consumer sentiment was observed between 2005 and 2009. This deterioration may have dampened short-term employment prospects, which is consistent with the reduced rates of employment reported for Family Stream migrants during the same period. If true, then this same effect will have widened the scope for policy to have improved employment rates amongst Skill Stream migrants between 2005 and 2009.

Finally, the high rates of employment observed amongst Skill Stream migrants prior to the shift in policy will act, if at all, to constrain estimates of any improvement in employment rates resulting from the policy shift. Any such estimates can therefore be interpreted as a conservative evaluation.

4. Empirical Results

Our analysis explores the influence of policy on two key employment outcomes that are usefully interpreted as extensive and intensive margins, controlling for a range of alternative individual-specific characteristics. On the extensive margin, we focus on rates of paid employment amongst migrants reported in 2005 and 2009/10. This analysis helps us to quantify the impact of reforms to skill migration policy on employment rates. On the intensive margin, we focus on rates of employment in higher occupations amongst the employed population subgroup. This analysis helps us to determine whether promoting Employer Sponsored migration has resulted in a deterioration in the quality of the jobs held by skilled migrants. This might be the case, for example, if tightening of conditions for independent GSM visa subclasses drove prospective migrants with poorer language/education/experience skills into the Employer Sponsored visa category. Discussion is framed around a series of nested regressions that are designed to draw out how changes to the selection criteria for GSM visa subclasses influenced employment outcomes, contributing to the screening literature following Miller (1999).

4.1 Analysis of rates of employment

Selected results for the analysis of employment rates are reported in Table 4.1.[38] The very top of the table provides average employment rates and associated sample sizes. The remainder of the table is divided into four quadrants. The left-hand panel reports statistics for Difference in Differences (DiD) regressions where the treatment population is comprised of GSM and Employer Sponsored migrants. The right-hand panel focuses exclusively on GSM outcomes. In both cases, Family Stream migrants are taken as the control population. The bottom panel of Table 4.1 reports estimates for the linear probability specification, while the remainder of the table reports results for the probit specification.

We focus primarily on the estimated treatment effects, which are highlighted in bold in Table 4.1Table. The treatment effect is defined as the estimated change in probability of employment amongst Skill Stream migrants that is distinct from associated changes in the probability of employment observed for Family Stream migrants, or from variation in the covariates considered for the respective regression specification. As discussed in Section 3.3, we interpret these treatment effects as the consequence of changes to Skill Stream migration policy implemented between 2005 and 2009.

For the linear probability model, the treatment effect is the same for all individuals, and is equal to the estimated coefficient on the interaction term between the time dummy and the Skill Stream dummy (parameter β_3 in equation (1)) – hereafter referred to as the "interaction term". For the probit model, the sign and statistical significance of the treatment effect are identical to those of the estimated interaction term. The treatment effect implied by the probit model, however, varies depending upon individual specific characteristics. It is reported in the table as an average prediction taken over all members of the respective treatment population reported by CSAM data (see Puhani, 2012, for further details).

Four nested regression specifications are reported in Table 4.1Table, with higher numbered specifications augmenting the set of covariates. Specification 1 reports estimation results for equation (1) described in Section 3.3, which includes the fewest number of explanatory variables possible for a DiD analysis. Specification 2 adds covariates for English language proficiency and age, where age is used here as a proxy for experience. These characteristics are interesting because they were made more prominent in the selection criteria for GSMs between 2005 and 2009 (see Section

[38] A full set of regression results are reported in Appendix B.

2.2). Specification 3 adds covariates for education, which provides a nice counter-point to specification 2 as education was made less prominent in the selection criteria for GSMs. Specification 4 adds a broad range of covariates beyond those immediately affected by changes in Skill Stream migration policy, but which may influence employment outcomes.

Together, the results reported in Table 4.1Table suggest that the shift in Australian skilled migration policy between 2005 and 2009 resulted in significantly higher rates of employment amongst Skill Stream migrants in 2009/10. Point estimates indicate increases in average rates of employment in the order of 10 percentage points for GSM and Employer Sponsored migrants, subject to standard deviations of approximately 1.5 percentage points. These results are really quite substantial, especially given that employment rates amongst GSMs and Employer Sponsored migrants were in excess of 80 per cent in the 2005 data (see Table 3.1).

Extending the treatment population to include Employer Sponsored migrants tends to dampen the estimated treatment effects (the only exception being for regression specification 4 of the linear probability model), but otherwise leaves the pattern of treatment effects across regression specifications unchanged. This dampening appears to contradict the shift in emphasis of skilled migration in favour of Employer Sponsored migrants, who must obtain an offer of employment prior to submitting their visa application. It is, however, a consequence of the disproportionate improvement in employment rates amongst GSMs.

As noted previously, approximately one in every four visas issued through GSM and Employer Sponsored categories was re-allocated from the GSM to the Employer Sponsored category between 2005 and 2009. Furthermore, the employment rate observed for GSMs in 2005 is approximately 0.8, whereas for Employer Sponsored migrants it is close to 1.0. Hence, all else being equal, the shift in weight toward demand-driven Employer Sponsored visas should have increased employment rates by around 5 percentage points (= 0.2 x 0.25). As the treatment effects calculated for GSMs are significantly greater than 5 percentage points, augmenting the regression sample to include Employer Sponsored migrants dampens the magnitude of the estimated treatment effects.

Comparing the treatment effects for the probit model with those for the linear probability model reveals a similar pattern across alternative regression specifications, with the estimates calculated using the probit model lower throughout. As noted in Section 3.3, this outcome is expected given the non-linear transformation imposed by the probit model and the higher rates of employment observed for Skill Stream migrants in both 2005 and 2009/10, relative to Family Stream migrants.

The differences between the treatment effects calculated using the probit and linear probability models are quite small, however, and for "GSMs only" are within 1.5 standard deviations of the respective point estimates.

Shifting between alternatives reported for the treatment population (GSMs and Employer Sponsored / GSMs only) and regression models (probit / linear probability) consequently affects the scale of the estimated treatment effects without altering the general pattern of results across the four considered regression specifications: the largest treatment effects are reported in the bottom right-hand side panel (GSMs only / linear probability model); and the smallest treatment effects are reported in the top left-hand side panel (GSM and Employer Sponsored migrants / probit). We consequently focus our discussion of each of the four regression specifications (numbered 1 to 4) with reference to statistics calculated for "GSMs only" via the probit model.

Three measures of fit are also reported for each regression in Table 4.1Table: the per cent of all individuals who have their employment status correctly predicted by the respective regression model, and a dis-aggregation into the employed and not-employed sub-samples. Someone's predicted employment status is evaluated by calculating their probability of employment implied by the respective regression model, and comparing this against a threshold value of 50%.

The aggregate statistics reported for the full population indicate that expanding the set of regression covariates improves the model's fit to the observed survey data, from 67 per cent correctly predicted in regression specification 1 up to 78 per cent correctly predicted in specification 4. The most substantial improvement in correct predictions is achieved when introducing age and English language proficiency into the base model specification (from specification 1 to 2), highlighting the importance of these characteristics in helping to explain migrant employment outcomes. The improved fit is achieved by increasing the proportion of correct employment predictions amongst individuals who were not employed.

Estimated coefficients for the interaction term do not vary significantly between the four regression specifications at any reasonable confidence interval for the probit regressions, and are not significant at the 5% confidence interval for the linear probability regressions[39]. Nevertheless, the pattern of variation reported for these coefficients between the four regression specifications (and the associated treatment effects) is interesting.

[39] though they are significant at the 10% confidence interval for the linear probability model.

Regression specification 1 provides a raw measure of the aggregate effect of policy change, assuming that all differences in temporal variation between the characteristics of Family and Skill Stream migrants that influence employment outcomes are attributable to policy change. Specification 2 introduces controls to account for the effects of English language proficiency and experience (proxied by age), which were assigned greater significance in the evaluation of GSM visas between 2005 and 2009. Estimates calculated using the probit model for GSMs indicate that allowing for observed changes in English language and age reduces the (unexplained) treatment effect from 12.4 per cent to 9.8 per cent. This is because English language and age increase amongst GSMs, relative to Family Stream migrants, helping to explain some of the temporal divergence between the two population subgroups. The results reported here consequently suggest that accounting for the influence of policy on English language and experience can explain approximately one fifth of the total effect on employment rates of the changes in skilled migration policy.

The corollary of placing greater emphasis on language skills and experience, is that less emphasis was placed on education in the evaluation of GSM visas between 2005 and 2009. Introducing educational controls in regression specification 3 off-sets the influence of age and language described above, resulting in an increase of the treatment effect from 9.8 to 10.6 per cent. Hence, the measurable aspects of reforms to GSM visa eligibility appear to explain approximately 14 per cent (= (0.1237-0.1060)/0.1237) of the total effect of changes to skilled migration policy on GSM employment rates.

Introducing a broad range of alternative explanatory variables for employment in regression specification 4 generally results in higher treatment effects, relative to specification 3. In the case of the probit models, the associated effects are quite muted (less than 0.5 percentage points), though more substantial effects are reported for the linear probability models. The reason for this is that a number of characteristics that are positively associated with the likelihood of employment – including the proportion migrating without dependent children, migrating for work opportunities, or migrating on an on-shore visa - declined amongst Skill Stream migrants between 2005 and 2009, relative to Family Stream migrants. Some of these changes may have been unintended consequences of associated reforms: a higher age consequent on putting greater emphasis on experience tends to be associated with the existence of dependent children and migration for family reasons rather than for work.

The set of covariates that we include for analysis consequently explain only a fraction of the aggregate treatment effect reported for employment outcomes of Skill Stream migrants observed between 2005 and 2009. In part, this is a reflection of the limited set of harmonised characteristics

that are available for analysis. It is also, however, a clear indication of how important nuanced (and reliably measurable) factors that extend beyond standardised language tests and measures of experience are for administering migration policy. Establishment of effective routes to permanent residence, occupational restrictions that are tailored to local labour market conditions, and processes that distinguish useful qualifications and experience are all vitally important to ensuring that a country admits those migrants who are likely to "hit the ground running" from a labour market perspective after being granted permanent residence.

4.2 Analysis of occupational outcomes

Our empirical analysis of occupational outcomes mirrors that reported for employment rates. Here, however, we focus exclusively on Primary Applicants who were reported to be in paid employment. Furthermore, to facilitate interpretation of results we consider two occupational groups, with the higher occupational group including "managers" and "professionals" only. The treatment effect is consequently defined as the estimated change in probability of employment in a higher occupation for employed Skill Stream migrants, which is distinct from changes in the probability of employment in a higher occupation observed for employed Family Stream migrants (or from variation in the covariates considered for the respective regression).

Empirical results for the incidence of higher occupations are presented in Table 4.2Table in the same format as Table 4.1Table. Many of the estimated statistics reported in Table 4.2Table display close similarities with those reported in Table 4.1Table. The current discussion consequently focusses upon key issues of interest and important deviations from the results discussed in Section 4.1.

Estimates reported for the treatment effects indicate that the probability of being employed in a higher occupation increased significantly for employed Skill Stream migrants between 2005 and 2009 as a consequence of changes to skilled migration policy. The scale of the effects reported for higher occupations is, however, appreciably smaller than the effects reported for employment rates in Table 4.1Table, and several estimates are not significant at the 5 per cent confidence interval. However, expanding the definition of higher occupations to include "technical and trades" together with managers and professionals (not reported here) produces treatment effects that are highly significant and of comparable magnitudes to the effects reported for employment rates. This sensitivity to the inclusion of technical and trades occupations is to be expected, given the statistics reported in Table 3.1. Table 3.1 indicates that the proportion of Family Stream migrants employed in technical and trades occupations fell by 2 percentage points between 2005 and 2009, whereas it

increased by 7 percentage points for GSMs, and increased by 6 percentage points for Employer Sponsored migrants.

Comparing the treatment effects estimated using a probit model against those estimated using a linear probability model reveals negligible differences between the two approaches, a result that is insensitive to the expanded definition considered for higher occupations. This result is consistent with the smaller disparity between the proportions of (employed) Skill Stream migrants and Family Stream migrants working in higher occupations than the disparity observed for employment rates.

Comparing the treatment effects reported in the left and right panels of Table 4.2Table reveals larger (positive) effects estimated for GSMs taken in isolation, than for GSM and Employer Sponsored migrants taken together. Furthermore, all of the treatment effects estimated for GSMs only, other than those for regression specification 2 (discussed below), are statistically significant at the 5 per cent confidence interval. These results are consistent with the occupational distributions reported in Table 3.1, which indicate an increase of 7 percentage points in the proportion of employed GSMs working as managers or professionals compared with a decrease of 9 percentage points for Employer Sponsored migrants. Our results consequently suggest that changes to skilled migration policy achieved improved occupational outcomes amongst (restricted) GSMs, but left occupational outcomes amongst the Skill Stream as a whole largely unchanged.

Taken together with the results reported in Section 4.1, our analysis suggests that changes to skilled migration policy resulted in improved employment rates during our period of analysis without compromising the distribution of occupations amongst skilled migrants on average. Put another way, we are unable to reject the hypothesis that the reforms to skilled migration policy that were implemented between 2005 and 2009, which tightened the eligibility criteria for GSM visas and promoted Employer Sponsored migration, motivated lower skilled migrants to apply through the Employer Sponsored category. Indeed, this was the motivation for introduction of the 485 temporary working visa for overseas students. The key lesson here is that outsourcing migrant selection to employers may not ensure that migrants with the best skills are selected unless the eligibility criteria for Employer Sponsored migrants is also carefully managed. Recent Australian evidence in support of this conclusion is reported by Birrell and Healy (2014), and is exemplified by pronounced differences in the skill composition of migrants selected by, for example, the Canadian and US immigration systems (e.g. Borjas, 1993). Some policy reform in this direction is starting to be implemented in Australia; for example, the 485 visa subclass has ceased to be recognised as pathway

to permanent residence since March 2013. It is probable that more policy adjustment in this vein will be warranted in the medium term.

Focussing on differences in treatment effects reported for the nested regression specifications, the same general pattern holds for occupational outcomes: a decline when English language proficiency and age/experience are included (specification 1 to specification 2); an increase when education qualifications are included (specification 3); and another increase when a broad range of covariates are included (specification 4). This is not particularly surprising, as it is reasonable to expect that similar factors will influence employment outcomes in general, including employment rates and occupational divisions. Of greater interest is the observation that – of all the regression specifications – only those for specification 4 are robustly significant across estimation models (probit/linear probability), treatment populations (GSMs only / GSM and Employer Sponsored), and the set of covariates included for analysis. Hence, these results suggest that, once all of the observed characteristics are taken into consideration, changes to skill migration policy (not represented by the set of covariates) resulted in a significantly higher probability of employment in a higher occupation for employed Skill Stream migrants.

5. Conclusions

Recognition of skilled immigration as a driver of economic growth focusses attention on policies that manage the skilled migrant intake. Recent international trends in skilled migration policy have converged toward so-called hybrid systems, in which both supply-driven independent migration and demand-driven employer sponsored migration play significant roles. This study empirically evaluates the influence that Australia's shift from a supply driven system in 2005 toward a hybrid system in 2009 had on the short-term labour market outcomes of migrants.

We find that rates of employment amongst GSM and Employer Sponsored skilled migrants increased statistically significantly by between 11 and 13 percentage points as a result of the shift in policy (slightly larger effects were estimated for GSMs in isolation). Approximately 5 percentage points of this aggregate effect can be attributed to a shift in emphasis of the system in favour of Employer Sponsored migration. The remainder of the effect on employment rates can be attributed to changes in the eligibility criteria for GSM category visas, which were designed to achieve a better match between independent GSM characteristics and the needs of Australian employers.

Important reforms implemented to the eligibility criteria for GSM category visas included increasing English language requirements for a broad range of visas (from IELTS 5, vocational, to 6, competent),

adapting qualifying occupation lists in response to changing labour market needs, and shifting emphasis of the points-based system in favour of experience at the expense of education. We find that controlling for self-reported migrant language skills and age (to proxy experience) helps to explain approximately 2 percentage points of the aggregate effect of policy on employment rates amongst Skill Stream migrants, which is off-set marginally after adding controls for education. This leaves approximately 5 percentage points of the overall effect on employment rates attributable to other uncontrolled aspects of policy change, including alterations to qualifying occupations and the imperfect nature of age as a proxy for experience.

Amongst the subset of GSMs who report being employed, we find that the shift in skilled migration policy between 2005 and 2009 increased rates of employment in managerial and professional occupations significantly, by 5 percentage points. Controlling for contemporaneous changes in language skills and age helps to explain approximately 3 percentage points of this increase (reducing the treatment effect to a statistically insignificant 2 percentage points), which is entirely off-set by additional controls for education. This suggests that approximately 3 percentage points of the increase in the incidence of managers and professionals amongst GSM migrants can be attributed to other uncontrolled factors.

Extending the analysis to consider the effects of changes to skilled migration policy on the occupational classifications of GSM and Employer Sponsored migrants as a group results in smaller point estimates that, though positive, are not statistically significant at the 95 percent confidence interval. Taken together with our other results, our analysis consequently suggests that Australia's shift from a supply-driven to a hybrid system of skilled migration significantly improved rates of employment amongst skilled migrants without compromising their occupational distribution on average. This is an important result, particularly when it is recognised that employment rates amongst GSM and Employer Sponsored migrants were in excess of 80 per cent prior to the changes in policy.

Our results suggest an interesting interpretation of Australia's 2005 to 2009 shift to a hybrid system of skilled migration. The changes implemented to policy tightened the conditions for independent skilled migration at the same time as demand-driven employer sponsored migration was being actively promoted by the government. Our estimates indicate that tightening of the independent GSM visa category successfully screened in favour of migrants who exhibited both higher rates of employment in the first 12 months after take-up of their visa, and higher rates of employment as either managers or professionals.

However, our finding of no significant improvement in the rate of employment as managers or professions amongst GSM and Employer Sponsored migrants as a group, suggests that some migrants with weaker labour market skills may have applied for entry to Australia through the Employer Sponsored rather than the GSM category as a result of the shift in policy. Seen from this perspective, Australia's hybrid system of skilled migration can be understood as selecting the strongest candidates for independent skilled migration, and requiring weaker candidates to find a sponsoring employer as a pre-condition for the granting of a permanent visa. Our estimates suggest that this approach to policy has helped to significantly improve the short-run employment outcomes of skilled migrants.

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Table 4.1: Selected Difference in Differences regression statistics for the incidence of employment of Primary Applicants of Family Stream and Skill Stream visas aged 18-54

treatment population	GSM and Employer Sponsored migrants				GSMs only			
regression specification	1	2	3	4	1	2	3	4
per cent employed	72.33	72.53	72.57	72.48	67.33	67.51	67.56	67.55
in Skill Stream	88.80	89.05	89.04	89.00	84.92	85.17	85.13	85.06
in Family Stream	54.77	54.87	54.93	55.13	54.77	54.87	54.93	55.13
observations	15063	14944	14766	14315	12496	12387	12255	11928
probit model								
per cent correctly predicted*	72.46	77.98	78.44	80.90	67.49	74.08	74.66	77.68
of those employed	91.07	90.08	90.25	90.58	88.44	87.13	87.27	87.72
of those not employed	23.82	46.04	47.21	55.39	24.33	46.96	48.38	56.78
treatment effect**	**0.1057**	**0.0824**	**0.0854**	**0.0900**	**0.1237**	**0.0976**	**0.1060**	**0.1099**
standard error	(0.0120)	(0.0117)	(0.0124)	(0.0157)	(0.0147)	(0.0146)	(0.0154)	(0.0193)
linear probability model								
per cent correctly predicted*	72.46	77.98	78.37	80.89	67.49	74.07	74.50	77.66
of those employed	91.07	90.46	91.41	91.20	88.44	87.62	88.67	88.08
of those not employed	23.82	45.02	43.88	53.74	24.33	45.91	44.98	55.95
treatment effect**	**0.1329**	**0.1116**	**0.1142**	**0.1386**	**0.1439**	**0.1136**	**0.1231**	**0.1355**
standard error	(0.0150)	(0.0143)	(0.0144)	(0.0150)	(0.0163)	(0.0159)	(0.0160)	(0.0168)

Source: regression statistics calculated using STATA on pooled data reported for the initial wave questionnaires of LSIA 3 and cohorts 1 and 2 of CSAM

Notes: control population refers to Family Stream migrants and treatment period reported by CSAM data
dependent variable: dummy for paid employment
* predicted employment evaluated using threshold probability of 50%
** treatment effect = population average impact of treatment on probability of employment for treated population in treatment period
treatment effect in the probit model calculated by evaluating predicted probabilities of employment implied by the estimated model
treatment effect in the linear probability model is the same as the estimated coefficient
regression specification 1 has no covariates beyond the time and population dummy variables required for the difference in differences regression
regression specification 2 augments specification 1 to include English language and age covariates
regression specification 3 augments specification 2 to include education qualifications covariates
regression specification 4 augments specification 3 to include a wide range of covariates including relationship status, dependent children, reasons for migrating, on-shore visa application, country of origin, state of residence, time in Australia, and housing
The reduction in sample size from specification 1 to 4 is due to missing data reported for some covariates.

Table 4.2: Selected Difference in Differences regression statistics for higher occupational classification of employed Primary Applicants of Family Stream and Skill Stream visas aged 18-54

treatment population	GSM and Employer Sponsored migrants				GSMs only			
regression specification	1	2	3	4	1	2	3	4
per cent higher occupation	42.67	42.74	42.76	42.72	36.39	36.45	36.41	36.42
in Skill Stream	52.83	52.89	52.90	53.06	46.66	46.71	46.57	46.73
in Family Stream	24.98	25.01	25.06	25.11	24.98	25.01	25.06	25.11
observations	10779	10724	10603	10299	8309	8258	8178	7985
probit model								
per cent correctly predicted*	60.93	65.10	70.23	72.59	63.89	65.77	70.67	72.79
of those employed	78.63	60.18	65.70	65.68	33.53	30.80	47.88	52.44
of those not employed	47.77	68.77	73.60	77.74	81.27	85.82	83.71	84.44
treatment effect**	**0.0268**	**0.0021**	**0.0348**	**0.0698**	**0.0512**	**0.0218**	**0.0580**	**0.0916**
standard error	(0.0234)	(0.0233)	(0.0220)	(0.0225)	(0.0250)	(0.0256)	(0.0246)	(0.0252)
linear probability model								
per cent correctly predicted*	60.93	65.10	70.09	72.38	63.89	65.77	70.74	72.66
of those employed	78.63	60.18	65.46	64.77	33.53	30.80	47.72	50.93
of those not employed	47.77	68.77	73.55	78.05	81.27	85.82	83.92	85.11
treatment effect**	**0.0310**	**0.0061**	**0.0388**	**0.0693**	**0.0552**	**0.0249**	**0.0584**	**0.0881**
standard error	(0.0202)	(0.0196)	(0.0188)	(0.0193)	(0.0222)	(0.0218)	(0.0210)	(0.0218)

Source: regression statistics calculated using STATA on pooled data reported for the initial wave questionnaires of LSIA 3 and cohorts 1 and 2 of CSAM

Notes: Higher occupation = managers and professionals; control population refers to Family Stream migrants and treatment period reported by CSAM data

* predicted higher occupation evaluated using threshold probability of 50%

** treatment effect = population average impact of treatment on probability of higher occupation for treated population in treatment period

treatment effect in the probit model calculated by evaluating predicted probabilities of higher occupation implied by the estimated model

treatment effect in the linear probability model is the same as the estimated coefficient

regression specification 1 has no covariates beyond the time and population dummy variables required for the difference in differences regression

regression specification 2 augments specification 1 to include English language and age covariates

regression specification 3 augments specification 2 to include education qualifications covariates

regression specification 4 augments specification 3 to include a wide range of covariates including relationship status, dependent children, reasons for migrating, on-shore visa application, country of origin, state of residence, and time in Australia

Appendix A: Data Description and Harmonisation

Table A.1: Description of variables considered for analysis (dependent variables)

Variables	Description and harmonisation (if any)
At work	Whether the person is currently working in a job, business or farm. The wording of the survey questions varies, with CSAM referring explicitly to a "paid job" and LSIA 3 referring only to a "job". It is therefore possible that respondents working as (unpaid) family workers, for example, would report themselves as employed in LSIA 3 but not in CSAM. To control for this possibility, we excluded the (few) observations in LSIA 3 where respondents stated that they had a job with zero earnings. This distinction had no impact on our results.
Highly skilled occupations	Whether the person works in highly skilled occupations (dummy). We consider 2 possible groupings of highly skilled occupations based on the 1 digit ANZSCO classification. Highly skilled occupations are defined as "managers and professionals", or as "managers, professionals and technical and trades" in the sensitivity analysis. Occupation codes at the 4-digit level are reported by LSIA 3 and CSAM and for respondents who are at work. The classification of occupations, however, changed from ASCO in LSIA3 to ANZSCO in CSAM. Translation tables are provided by the Australian Bureau of Statistics at the 4 digit occupation level. These tables were used to recode the ASCO codes reported by LSIA 3 into ANZSCO codes. To ensure the highest possible degree of comparability between the major occupation groups (1 digit level) in ASCO and ANZSCO, further attention was devoted to the 35 instances where the 4 digit ASCO codes can be translated into several 4 digit ANZSCO codes that spanned 2 or more 1 digit occupation groups in ANZSCO. This situation concerned 19 % of people at work in LSIA3. For example, ASCO 2231 (Computing Professionals) can be translated into ANZSCO 1351 (ICT Managers), ANZSCO 2611-33 (ICT Business and Systems Analysts and other ICT professionals) or ANZSCO 3131 (ICT Support Technicians). Allocating the ASCO 2231 code reported by LSIA 3 is therefore complicated by the fact that we do not know to which of the three constituent ANZSCO codes any individual belongs. Furthermore, this choice will affect whether Computing Professionals (people with ASCO 2231) in LSIA3 end up working as Managers (group 1), Professionals (group 2) or as Technicians (groups 3) in the ANSCO classification used in CSAM. We addressed this issue by analysing the distribution across the constituent ANZSCO codes of observations reported by CSAM (in conjunction with the label of the occupation in ASCO. In the example above, CSAM reports 3 ICT managers, no ICT technicians, and 173 respondents classified as ICT professionals. In this case, we therefore allocated all observations with ASCO 2231 to ANZSCO 2611 (ICT professionals). Prima facie evidence in support of this approach is given by the close similarities between the population distributions of the ANZSCO codes imputed from LSIA 3 data and those reported by CSAM data for Family Stream migrants, as reported in Table 3.1.
Visa categories	Based on their visa number, respondents are classified into 6 visa categories. 1) Family visa (family) 2) Family/State/Territory sponsored visas (GSM) 3) Independent visas (GSM) 4) Employer visa, incl. LA and ENS (employer sponsored) 5) Business and distinguished talents visas (excluded from the analysis) 6) Graduate visas, temporary – only in CSAM (excluded from the analysis)

Table A.1: Description of variables considered for analysis (cont.)

Covariates	Variable description and harmonisation (if any)
Age bands	Constructed from age, where age is defined as the difference between the year of the survey and the year of birth (year defined as 2005 for LSIA3, 2009 for CSAM cohort 1, and 2010 for CSAM cohort 2) • 18 – 24 • 25 – 34 • 35 – 44 • 45 – 54
male	male=1; female=0
Has a partner	Dummy variable. Equal to 1 if the respondent has a partner either in Australia or abroad. This question is asked directly in LSIA3. In CSAM the related question is whether the respondent applied to migrate with a partner. Other questions in CSAM ask about "the current relationship status" with their migrating partner, or about details of their "current partner". These questions were used to impute a partner variable consistent with the question directly asked in LSIA3.
Partner working in Australia	Dummy variable. Whether the respondent currently has a partner who is at work in Australia. Exclude cases where the partner is at work abroad. Question directly asked in LSIA3. In CSAM, the labour market question refers to the respondent's current partner without specifying their geographic location. From this we exclude cases where respondents report that their partner has not yet arrived in Australia to ensure greater consistency with the wording used in the question in LSIA3.
Has children who migrated with them	The number of the respondent's children who migrated to Australia with the respondents (Primary Applicant) and are still living with the respondent. This variable imperfectly account for the number of children living in the household with the respondent. This definition captures the only common information regarding children, between the two surveys. Another related variable "Child in HH likely" was constructed for the sensitivity analysis, see below.
Highest qualification	Refers to the highest post-school qualification obtained (in Australia or abroad). In LSIA3 the question was asked directly. In CSAM, respondents were asked about their highest qualification as well as their highest Australian qualification. Whichever qualification was highest was used in this case. Qualifications were harmonised under the following groups:[1] 1) No post school qualification (incl. no schooling) 2) AQF Certificate I-IV and other; AQF level 1-4 3) Diploma and advanced diplomas; AQF level 5-6 4) Bachelor and post-graduate Diploma (together in LSIA); AQF level 7-8 5) Master's level degree; AQF level 9 6) Doctorate; AQF level 10
Highest qualification obtained in Australia	Dummy variable equal to 1 if the highest qualification was obtained in Australia.
State	Current state of residence: ACT, NSW, NT, QLD, SA, TAS, VIC, WA
on-shore visa application	Dummy variable: visa application onshore = 1

[1] AQF denotes "Australian Qualifications Framework"

Table A.1: Description of variables considered for analysis (cont.)

Covariates	Variable description and harmonisation (if any)
English proficiency	Respondents' self-reported spoken English proficiency. Exactly the same question format and wording was used by both LSIA2 and CSAM. Answers were classified into three groups: 1) very well (including English reported as best language spoken) 2) well 3) not well or not at all
Reason for migrating	Reason for migrating to Australia. The question uses the exact same wording in LSIA3 and CSAM. The possible answers are 1) better future for family 2) a higher standard of living 3) Australia's features – beaches, climate, lifestyle, etc., 4) to join family or relatives 5) work or business opportunities
Region of birth	Variable constructed from the reported country of birth. The regions considered are: • Born in an English speaking country (Australia, Canada, Ireland Republic, New Zealand, South Africa, the United Kingdom, or the United States). • Born in East Asia (China, Hong Kong, Japan, Macau, Mongolia, South Korea, North Korea, or Taiwan) • Born in South Asia (Bangladesh, India, the Maldives, Nepal, Pakistan, or Sri Lanka) • Born in South East Asia (Brunei, Burma, Cambodia, East Timor, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, or Vietnam) • Born in the Middle East (Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, Turkey, or the United Arab Emirates)
Child in HH likely	Dummy variable. Uses all the information available in each survey to impute whether a child is likely to be present in the respondent's household. This includes information on the respondent's and partner's details of social benefits (child care rebate, parenting payments, etc.)
Current housing arrangement	The same question (exact words) was asked in both surveys but the choice of answers was worded slightly differently 1) Owns home outright 2) Mortgage 3) Renting 4) Lives with relatives 5) other
Has a partner in Australia	Dummy variable. Whether the respondent has a partner in Australia. Excluded observations here respondent states having a partner abroad.
Has children who migrated (dummy)	Dummy version of the same variable above, except that it is coded 0/1 on whether there are children or not.
Time in Australia	Dummy variable. Equal to 1 if in Australia for 1.5 years or more. The comparability of this variable between LSIA and CSAM is questionable due to differences in the data that each survey reports.

Appendix B: Supplementary Regression Statistics

Appendix B.1: Regressions for probability of employment

Table B.1: Probit regression statistics for the incidence of employment of Primary Applicants of Family Stream, GSM, and Employer Sponsored visas aged 18-54

regression specification	1	2	3	4
treatment effect	0.1057	0.0824	0.0854	0.0900
per cent employed	0.7233	0.7253	0.7257	0.7248
per cent correctly predicted	0.7246	0.7798	0.7844	0.8090
of those employed	0.9107	0.9008	0.9025	0.9058
of those not employed	0.2382	0.4604	0.4721	0.5539
log likelihood	-7694.8	-6983.9	-6832.6	-6059.4
pseudo R-squared	0.1339	0.2050	0.2123	0.2805
observations	15063	14944	14766	14315
constant	0.1692*	-0.5801*	-0.6138*	-0.8265*
Difference in Differences dummy variables				
post 2009 period	-0.1819*	-0.1963*	-0.2034*	-0.0907*
Skill Stream migrant	0.8972*	0.8906*	0.6828*	0.1610
Skill Stream migrant post 2009	0.5038*	0.4470*	0.4671*	0.5113*
English language proficiency				
English speaking country	.	0.5017*	0.5294*	0.3068*
speak English well	.	0.3679*	0.3405*	0.2395*
speak English very well	.	0.7638*	0.7370*	0.5888*
Age band				
25 to 34	.	0.3285*	0.3282*	0.1174*
35 to 44	.	0.2243*	0.2159*	0.0036
45 to 54	.	0.1500*	0.1383*	0.0003
Skill Stream and age band				
25 to 34	.	-0.2099*	-0.0841	0.1926*
35 to 44	.	-0.1425	0.0305	0.3589*
45 to 54	.	0.0604	0.2619*	0.4425*
Education qualifications				
Certificate 1-4	.	.	0.1672*	0.1503*
Diploma	.	.	0.0873	0.1494*
BSc. Post-grad diploma	.	.	-0.0147	0.0541
Masters degree	.	.	-0.1191*	-0.0515
Doctorate qualification	.	.	0.3505*	0.3485*
Australian qualification	.	.	0.3069*	0.3020*
on-shore visa application	.	.	.	0.2449*
Skill Stream and on-shore visa	.	.	.	0.1809*
male	.	.	.	0.6307*
partner working in Australia	.	.	.	0.4297*
female partner working in Aus	.	.	.	-0.2687*
migrated with child	.	.	.	-0.3141*

Regression Specification 4 continued in Table B.5

See notes of Table B.5 for further details

Table B.2: Probit regression statistics for the incidence of employment of Primary Applicants of Family Stream and GSM visas aged 18-54

regression specification	1	2	3	4
treatment effect	0.1237	0.0976	0.1060	0.1099
per cent employed	0.6733	0.6751	0.6756	0.6755
per cent correctly predicted	0.6749	0.7408	0.7466	0.7768
of those employed	0.8844	0.8713	0.8727	0.8772
of those not employed	0.2433	0.4696	0.4838	0.5678
log likelihood	-7185.598	-6549.014	-6404.028	-5729.391
pseudo R-squared	0.0898	0.1615	0.1707	0.2379
observations	12496	12387	12255	11928
constant	0.1692*	-0.6033*	-0.6361*	-0.8309*
Difference in Differences dummy variables				
post 2009 period	-0.1819*	-0.1975*	-0.2097*	-0.1122*
Skill Stream migrant	0.7384*	0.8757*	0.5944*	0.2440*
Skill Stream migrant post 2009	0.4989*	0.4341*	0.4712*	0.4970*
English language proficiency				
English speaking country	.	0.4824*	0.5104*	0.3041*
speak English well	.	0.4073*	0.3682*	0.2635*
speak English very well	.	0.7948*	0.7573*	0.5990*
Age band				
25 to 34	.	0.3275*	0.3300*	0.1238*
35 to 44	.	0.2272*	0.2255*	0.0174
45 to 54	.	0.1576*	0.1578*	0.0180
Skill Stream and age band				
25 to 34	.	-0.2736*	-0.1259	0.0931
35 to 44	.	-0.4107*	-0.1736	0.1743
45 to 54	.	-0.5180*	-0.2810	-0.0052
Education qualifications				
Certificate 1-4	.	.	0.1648*	0.1415*
Diploma	.	.	0.0843	0.1223*
BSc. Post-grad diploma	.	.	-0.0187	0.0439
Masters degree	.	.	-0.1235*	-0.0597
Doctorate qualification	.	.	0.1085	0.1648
Australian qualification	.	.	0.3986*	0.3920*
on-shore visa application	.	.	.	0.2034*
Skill Stream and on-shore visa	.	.	.	0.0155
male	.	.	.	0.6042*
partner working in Australia	.	.	.	0.4027*
female partner working in Aus	.	.	.	-0.2470*
migrated with child	.	.	.	-0.3600*

Regression Specification 4 continued in Table B.5

See notes of Table B.5 for further details

Table B.3: Linear probability regression statistics for the incidence of employment of Primary Applicants of Family Stream, GSM, and Employer Sponsored visas aged 18-54

regression specification	1	2	3	4
treatment effect	0.1329	0.1116	0.1142	0.1386
per cent employed	0.7233	0.7253	0.7257	0.7248
per cent correctly predicted	0.7246	0.7798	0.7837	0.8089
of those employed	0.9107	0.9046	0.9141	0.9120
of those not employed	0.2382	0.4502	0.4388	0.5374
observations	15063	14944	14766	14315
constant	0.5672*	0.2833*	0.2747*	0.2635*
Difference in Differences dummy variables				
post 2009 period	-0.0722*	-0.0723*	-0.0745*	-0.0334*
Skill Stream migrant	0.2897*	0.3045*	0.2474*	0.1157*
Skill Stream migrant post 2009	0.1329*	0.1116*	0.1142*	0.1386*
English language proficiency				
English speaking country	.	0.1019*	0.1111*	0.0554*
speak English well	.	0.1591*	0.1500*	0.1044*
speak English very well	.	0.2808*	0.2704*	0.2045*
Age band				
25 to 34	.	0.1281*	0.1243*	0.0497*
35 to 44	.	0.0953*	0.0900*	0.0174
45 to 54	.	0.0663*	0.0605*	0.0044
Skill Stream and age band				
25 to 34	.	-0.1085*	-0.0727*	0.0008
35 to 44	.	-0.0878*	-0.0427	0.0369
45 to 54	.	-0.0496	-0.0017	0.0525
Education qualifications				
Certificate 1-4	.	.	0.0480*	0.0385*
Diploma	.	.	0.0285*	0.0396*
BSc. Post-grad diploma	.	.	0.0035	0.0162
Masters degree	.	.	-0.0186	-0.0073
Doctorate qualification	.	.	0.0531*	0.0451*
Australian qualification	.	.	0.0775*	0.1244*
on-shore visa application	.	.	.	0.0915*
Skill Stream and on-shore visa	.	.	.	-0.0355*
male	.	.	.	0.1509*
partner working in Australia	.	.	.	0.0839*
female partner working in Aus	.	.	.	-0.0559*
migrated with child	.	.	.	-0.0890*

Regression Specification 4 continued in Table B.5

See notes of Table B.5 for further details

Table B.4: Linear probability regression statistics for the incidence of employment of Primary Applicants of Family Stream and GSM visas aged 18-54

regression specification	1	2	3	4
treatment effect	0.1439	0.1136	0.1231	0.1355
per cent employed	0.6733	0.6751	0.6756	0.6755
per cent correctly predicted	0.6749	0.7407	0.7450	0.7766
of those employed	0.8844	0.8762	0.8867	0.8808
of those not employed	0.2433	0.4591	0.4498	0.5595
observations	12496	12387	12255	11928
constant	0.5672*	0.2706*	0.2622*	0.2433*
Difference in Differences dummy variables				
post 2009 period	-0.0722*	-0.0720*	-0.0754*	-0.0361*
Skill Stream migrant	0.2508*	0.2992*	0.2149*	0.1064*
Skill Stream migrant post 2009	0.1439*	0.1136*	0.1231*	0.1355*
English language proficiency				
English speaking country	.	0.1287*	0.1393*	0.0764*
speak English well	.	0.1711*	0.1568*	0.1057*
speak English very well	.	0.2989*	0.2829*	0.2064*
Age band				
25 to 34	.	0.1232*	0.1204*	0.0459*
35 to 44	.	0.0910*	0.0872*	0.0146
45 to 54	.	0.0647*	0.0614*	0.0068
Skill Stream and age band				
25 to 34	.	-0.1177*	-0.0738*	-0.0032
35 to 44	.	-0.1472*	-0.0819*	0.0236
45 to 54	.	-0.1721*	-0.1097*	-0.0129
Education qualifications				
Certificate 1-4	.	.	0.0498*	0.0400*
Diploma	.	.	0.0315*	0.0395*
BSc. Post-grad diploma	.	.	0.0003	0.0155
Masters degree	.	.	-0.0253	-0.0093
Doctorate qualification	.	.	0.0248	0.0400
Australian qualification	.	.	0.1139*	0.1431*
on-shore visa application	.	.	.	0.0773*
Skill Stream and on-shore visa	.	.	.	-0.0279
male	.	.	.	0.1721*
partner working in Australia	.	.	.	0.0944*
female partner working in Aus	.	.	.	-0.0551*
migrated with child	.	.	.	-0.1150*

Regression Specification 4 continued in Table B.5

See notes of Table B.5 for further details

Table B.5: Additional statistics for regression specification 4 reported in Tables B.1 to B.4: employment of Primary Applicants aged 18-54

continued from table	B.1	B.2	B.3	B.4
Region of birth				
East Asia	-0.1520*	-0.1230*	-0.0679*	-0.0559*
South Asia	-0.3320*	-0.3491*	-0.1308*	-0.1365*
South East Asia	-0.0705	-0.0660	-0.0508*	-0.0418*
Middle East	-0.7959*	-0.8077*	-0.2700*	-0.2635*
Main reason for migrating				
future for family	0.0963*	0.0998*	0.0368*	0.0335*
higher standard of living	0.1693*	0.1939*	0.0493*	0.0562*
Australia's features	0.1890*	0.1583*	0.0469*	0.0424*
work or business	0.3094*	0.2664*	0.0685*	0.0701*
education and other	0.0495	0.0740	0.0275	0.0283
Australian State of residence				
Australian Capital Territory	0.0113	0.0043	0.0051	-0.0019
Northern Territory	0.3413*	0.3233	0.0618*	0.0853
Queensland	-0.0308	-0.0463	-0.0024	-0.0101
South Australia	-0.1301*	-0.1549*	-0.0300*	-0.0445*
Tasmania	0.0066	-0.0751	0.0074	-0.0178
Victoria	-0.1085*	-0.1045*	-0.0229*	-0.0273*
Western Australia	-0.0225	0.0075	-0.0030	-0.0021
in Australia for 18 months or more	0.1412*	0.1898*	0.0352*	0.0484*
Male and:				
in Australia for 18+ months	-0.3678*	-0.3037*	-0.1150*	-0.0971*
Australian qualification	-0.5528*	-0.5772*	-0.1774*	-0.2013*
migrated with child	0.3247*	0.3672*	0.0748*	0.1076*
from East Asia	-0.0693	-0.0724	0.0711*	0.0354
from South Asia	0.2598*	0.3552*	0.1405*	0.1505*
from South East Asia	-0.0965	0.0152	0.0498*	0.0529*
from Middle East	0.4308*	0.4652*	0.1998*	0.1802*
housing status				
mortgage holder	0.2812*	0.2898*	0.0683*	0.0793*
renter	0.2600*	0.2602*	0.0709*	0.0763*
staying with relatives	0.0897	0.0911	0.0138	0.0217
other housing (not owner)	-0.0276	0.0475	0.0044	0.0103

Source: statistics calculated using STATA on pooled data reported for the initial wave questionnaires of LSIA 3 and cohorts 1 and 2 of CSAM

Notes: * indicates coefficient significant at 95% confidence interval

control population = Family Stream migrants; treatment period reported by CSAM data

treatment effect = average impact of treatment on probability of employment for treated population in treatment period

predicted employment evaluated using threshold probability of 50%

Appendix B.2: Regressions for probability of higher occupations amongst the employed

Table B.6: Probit statistics for the incidence of higher occupations amongst employed Primary Applicants of Family Stream, GSM, and Employer Sponsored visas aged 18-54

regression specification	1	2	3	4
treatment effect	0.0268	0.0021	0.0348	0.0698
per cent in higher occupations	0.4267	0.4274	0.4276	0.4272
per cent correctly predicted	0.6093	0.6510	0.7023	0.7259
of higher occupied	0.7863	0.6018	0.6570	0.6568
of lower occupied	0.4777	0.6877	0.7360	0.7774
log likelihood	-6936.2	-6591.7	-5905.5	-5597.0
pseudo R-squared	0.0569	0.0995	0.1841	0.2038
observations	10779	10724	10603	10299
constant	-0.6886*	-1.5751*	-0.9072*	-0.7904*
Difference in Differences dummy variables				
post 2009 period	0.0544	0.0287	-0.0010	-0.0317
Skill Stream migrant	0.6952*	0.5557*	0.4600*	0.2083
Skill Stream migrant post 2009	0.0674	0.0055	0.1026	0.2111*
English language proficiency				
English speaking country	.	0.2151*	0.4251*	0.2414*
speak English well	.	0.2274*	0.0338	0.0088
speak English very well	.	0.8143*	0.4579*	0.4481*
Age band				
25 to 34	.	0.2462*	0.1506*	0.1609*
35 to 44	.	0.3285*	0.3205*	0.2899*
45 to 54	.	0.2989*	0.3557*	0.2873*
Skill Stream and English proficiency				
speak English well	.	0.2711	0.1387	0.2337
speak English very well	.	0.0508	0.0114	0.1260
Education qualifications				
No post-school qualification	.	.	-0.7179*	-0.7339*
Certificate 1-4	.	.	-1.3408*	-1.3456*
Diploma	.	.	-0.5630*	-0.5720*
Masters degree	.	.	0.0779*	0.0807
Doctorate qualification	.	.	1.0049*	0.8818*
Australian qualification	.	.	-0.1090*	-0.0894*
on-shore visa application	.	.	.	0.2463*
migrated with child	.	.	.	0.1781*
Region of birth				
East Asia	.	.	.	-0.0812
South Asia	.	.	.	-0.3760*
South East Asia	.	.	.	-0.2916*
Middle East	.	.	.	-0.1676

Regression Specification 4 continued in Table B.10

See notes of Table B.10 for further details

Table B.7: Probit probability statistics for higher occupations amongst employed Primary Applicants of Family Stream and GSM visas aged 18-54

regression specification	1	2	3	4
treatment effect	0.0512	0.0218	0.0580	0.0916
per cent in higher occupations	0.3639	0.3645	0.3641	0.3642
per cent correctly predicted	0.6389	0.6577	0.7067	0.7279
of higher occupied	0.3353	0.3080	0.4788	0.5244
of lower occupied	0.8127	0.8582	0.8371	0.8444
log likelihood	-5221.931	-4981.765	-4522.737	-4330.935
pseudo R-squared	0.0415	0.0803	0.1567	0.1729
observations	8309	8258	8178	7985
constant	-0.6886*	-1.4602*	-0.8021*	-0.6979*
Difference in Differences dummy variables				
post 2009 period	0.0544	0.0276	-0.0155	-0.0242
Skill Stream migrant	0.5207*	0.7798*	0.5042*	0.3614
Skill Stream migrant post 2009	0.1285	0.0559	0.1634*	0.2654*
English language proficiency				
English speaking country	.	0.2602*	0.5231*	0.3436*
speak English well	.	0.2006*	-0.0107	0.0237
speak English very well	.	0.7688*	0.3698*	0.4388*
Age band				
25 to 34	.	0.1727*	0.1140*	0.1024
35 to 44	.	0.1977*	0.2468*	0.2070*
45 to 54	.	0.0408	0.1913*	0.1330
Skill Stream and English proficiency				
speak English well	.	-0.0423	-0.0901	-0.0645
speak English very well	.	-0.3271	-0.2135	-0.1489
Education qualifications				
No post-school qualification	.	.	-0.7548*	-0.7762*
Certificate 1-4	.	.	-1.3339*	-1.3709*
Diploma	.	.	-0.6644*	-0.6725*
Masters degree	.	.	0.0258	0.0444
Doctorate qualification	.	.	0.9260*	0.8921*
Australian qualification	.	.	0.0217	0.0374
on-shore visa application	.	.	.	0.0258
migrated with child	.	.	.	0.1418*
Region of birth				
East Asia	.	.	.	-0.0011
South Asia	.	.	.	-0.4061*
South East Asia	.	.	.	-0.2300*
Middle East	.	.	.	-0.1898

Regression Specification 4 continued in Table B.10

See notes of Table B.10 for further details

Table B.8: Linear probability statistics for the incidence of higher occupations amongst employed Primary Applicants of Family Stream, GSM, and Employer Sponsored visas aged 18-54

regression specification	1	2	3	4
treatment effect	0.0310	0.0061	0.0388	0.0693
per cent in higher occupations	0.4267	0.4274	0.4276	0.4272
per cent correctly predicted	0.6093	0.6510	0.7009	0.7238
of higher occupied	0.7863	0.6018	0.6546	0.6477
of lower occupied	0.4777	0.6877	0.7355	0.7805
observations	10779	10724	10603	10299
constant	0.2455*	0.0108	0.2615*	0.3035*
Difference in Differences dummy variables				
post 2009 period	0.0175	0.0097	-0.0007	-0.0064
Skill Stream migrant	0.2571*	0.1218*	0.0966*	0.0184
Skill Stream migrant post 2009	0.0310	0.0061	0.0388*	0.0693*
English language proficiency				
English speaking country	.	0.0831*	0.1386*	0.0770*
speak English well	.	0.0450*	-0.0067	-0.0156
speak English very well	.	0.2109*	0.0938*	0.0871*
Age band				
25 to 34	.	0.0808*	0.0438*	0.0454*
35 to 44	.	0.1106*	0.0955*	0.0832*
45 to 54	.	0.0987*	0.1025*	0.0793*
Skill Stream and English proficiency				
speak English well	.	0.1311*	0.0560	0.0872*
speak English very well	.	0.1108*	0.0668	0.1009*
Education qualifications				
No post-school qualification	.	.	-0.2430*	-0.2411*
Certificate 1-4	.	.	-0.4100*	-0.4055*
Diploma	.	.	-0.1969*	-0.1950*
Masters degree	.	.	0.0313*	0.0319*
Doctorate qualification	.	.	0.2943*	0.2441*
Australian qualification	.	.	-0.0406*	-0.0321*
on-shore visa application	.	.	.	0.0778*
migrated with child	.	.	.	0.0550*
Region of birth				
East Asia	.	.	.	-0.0357*
South Asia	.	.	.	-0.1256*
South East Asia	.	.	.	-0.0913*
Middle East	.	.	.	-0.0382

Regression Specification 4 continued in Table B.10

See notes of Table B.10 for further details

Table B.9: Linear probability statistics for higher occupations amongst employed Primary Applicants of Family Stream and GSM visas aged 18-54

regression specification	1	2	3	4
treatment effect	0.0552	0.0249	0.0584	0.0881
per cent in higher occupations	0.3639	0.3645	0.3641	0.3642
per cent correctly predicted	0.6389	0.6577	0.7074	0.7266
of higher occupied	0.3353	0.3080	0.4772	0.5093
of lower occupied	0.8127	0.8582	0.8392	0.8511
observations	8309	8258	8178	7985
constant	0.2455*	0.0481*	0.2864*	0.3254*
Difference in Differences dummy variables				
post 2009 period	0.0175	0.0098	-0.0040	-0.0039
Skill Stream migrant	0.1878*	0.2000*	0.1081	0.0690
Skill Stream migrant post 2009	0.0552*	0.0249	0.0584*	0.0881*
English language proficiency				
English speaking country	.	0.0994*	0.1697*	0.1103*
speak English well	.	0.0364*	-0.0177	-0.0092
speak English very well	.	0.1962*	0.0702*	0.0872*
Age band				
25 to 34	.	0.0568*	0.0321*	0.0275
35 to 44	.	0.0651*	0.0687*	0.0553*
45 to 54	.	0.0098	0.0454	0.0272
Skill Stream and English proficiency				
speak English well	.	0.0196	-0.0182	-0.0135
speak English very well	.	-0.0285	-0.0088	0.0061
Education qualifications				
No post-school qualification	.	.	-0.2464*	-0.2491*
Certificate 1-4	.	.	-0.3912*	-0.3969*
Diploma	.	.	-0.2272*	-0.2265*
Masters degree	.	.	0.0130	0.0203
Doctorate qualification	.	.	0.3203*	0.3031*
Australian qualification	.	.	0.0046	0.0109
on-shore visa application	.	.	.	0.0043
migrated with child	.	.	.	0.0407*
Region of birth				
East Asia	.	.	.	-0.0097
South Asia	.	.	.	-0.1362*
South East Asia	.	.	.	-0.0695*
Middle East	.	.	.	-0.0465

Regression Specification 4 continued in Table B.10

See notes of Table B.10 for further details

Table B.10: Additional statistics for regression specification 4 reported in Tables B.6 to B.9: higher occupation of employed Primary Applicants aged 18-54

continued from table	B.6	B.7	B.8	B.9
Main reason for migrating				
future for family	-0.0381	-0.0818	-0.0129	-0.0250
higher standard of living	0.1198	0.1203	0.0375	0.0388
Australia's features	0.1537*	0.1274	0.0518*	0.0449*
work or business	0.2827*	0.2382*	0.0951*	0.0823*
education and other	0.2395	0.2279	0.0814	0.0787
Australian State of residence				
Australian Capital Territory	0.2585*	0.2974*	0.0858*	0.1025*
Northern Territory	-0.2238	-0.2985	-0.0599	-0.0667
Queensland	0.0050	0.0157	0.0032	0.0069
South Australia	-0.1717*	-0.0964	-0.0539*	-0.0271
Tasmania	-0.1438	-0.1542	-0.0432	-0.0503
Victoria	-0.0706	-0.0772	-0.0224	-0.0240
Western Australia	-0.0873	-0.1344*	-0.0299*	-0.0459*
in Australia for 18 months or more	-0.2387*	-0.1393*	-0.0774*	-0.0433*
male	0.0235	0.1017*	0.0058	0.0310*

Source: regression statistics calculated using STATA on pooled data reported for the initial wave questionnaires of LSIA 3 and cohorts 1 and 2 of CSAM

Notes: * indicates coefficient significant at 95% confidence interval
control population refers to Family Stream migrants and treatment period reported by CSAM data
treatment effect = population average impact of treatment on probability of employment for treated population in treatment period
predicted employment evaluated using threshold probability of 50%