

SKILLED LABOUR: GAINS AND LOSSES

Bob Birrell, Ian R Dobson, Virginia Rapson and T. Fred Smith

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The Authors

Bob Birrell is Reader in Sociology and Director, Centre for Population and Urban Research, Monash University.

Ian R Dobson is Director of Institutional Research and Associate to the Deputy Vice-Chancellor at Monash University.

Virginia Rapson is Research Manager, Centre for Population and Urban Research, Monash University.

T. Fred Smith is Deputy Vice-Chancellor (Research) at La Trobe University.

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Executive Summary

This Report examines the movement of skilled workers to and from Australia over the five year period 1995-96 to 1999-2000. The main objective was to establish the extent of any losses or gains of such workers by occupation over this period. The Report also incorporates a qualitative component which explores the factors shaping the international movement of skilled workers.

The data utilised covered all persons arriving in or leaving Australia on a permanent or long-term basis, including New Zealand citizens. Long-term arrivals refer to persons who state an intention of staying in Australia for a year or more. Long-term departures refer, in the case of Australian residents, to persons who state that they are leaving Australia for a year or more, and in the case of visitors, to those who state that they are leaving Australia after a visit of a year or more. The data originate primarily from passenger cards filled in by people arriving, or leaving Australia. Because of this, the information provided is sometimes inadequate for precise identification of their occupation. The data base also lacks qualitative information on the occupational characteristics of movers, such as level of education and job experience. It is therefore not possible to address concerns such as those related to the loss of senior research scientists.

The Report classifies the movement data into three streams. The first is settlers, that is, those who say that their stay in Australia is permanent (including New Zealand citizens). The second is residents, who are defined as all those who are permanent residents of Australia, whether Australia-born or former settlers. The third stream is visitors who hold rights to work and who state an intention of staying long-term in Australia. Australia's gain or loss of skilled workers is thus the sum of the movement of settlers and the net flows of Australian residents and visitors.

The main finding is that over the five years in question Australia registered a 'brain gain'. There was a net loss of skilled residents, but this was more than offset for almost every occupation by gains from settler movement and a net inflow of visitors.

Detailed analysis of skilled worker movements over the three years 1997-98 to 1999-2000 showed that the overall skilled worker gain was modest relative to the total Australian employed workforce as of May 2000. The 'brain gain' over this three year period for professionals was equivalent to 2 per cent of the stock of employed professional workers and 3.6 per cent for managers and administrators relative to the managerial and administrative workforce in employment. Gains of this order were found for all the occupations under consideration including 3.2 per cent for computing professionals, 2.1 per cent for accountants and 0.6 per cent for nursing professionals.

A major focus of the Report is the extent of net resident losses of skilled workers. In the case of professionals this loss was 35,927 over the three years 1997-98 to 1999-2000. This loss has increased during the 1990s. Nevertheless, when compared to the stock of Australia's employed workforce as of May 2000, it is small. The loss of residents was equivalent to 2.2 per cent for all professionals. There was no tendency for high losses in occupations where international demand was strong during the period. The net resident loss relative to the employed stock of workers was 2.1 per cent for computing professionals, 2.9 per cent for accountants and 1.4 per cent for nurses.

Further analysis of the movements of resident professionals showed that by far the chief destination for those leaving on a permanent or long-term basis was the United Kingdom, followed by the USA and Singapore. Return rates from these destinations were 70 per cent from the United Kingdom, 58 per cent from the United States and 44 per cent from Singapore.

The predominance of the United Kingdom as a destination, the relatively high return rate and the youthful age of Australian residents departing for the United Kingdom, suggest that much of this movement was akin to the traditional Australian 'boomerang' trip overseas. The United Kingdom remains the main destination for such trips, in part because a substantial minority of Australian residents hold work rights in Britain. Young Australians also have access to Working Holiday visa rights to the United Kingdom (but not to the United States).

While the study did not support the widespread view that Australia is experiencing a 'brain drain', the lack of qualitative data on movers leaves open the possibility that Australia is losing high quality residents and replacing them with lower quality settlers and visitors. Analysis of past patterns of immigration indicates that there was some basis for this concern in the late 1980s, but that the recent tightening of the immigration program has led to a better targeted and higher quality flow of migrants.

The final qualitative phase of the Report explores the issue of why, given that there are more lucrative opportunities for some professionals overseas, Australia is losing so few of its skilled workers, even in high demand fields like computing. The same question applies to the continued inflow of settlers and visitors in these fields. The conclusion drawn from case studies of particular occupations was that where demand for the skill in question in Australia was strong there is a relatively limited outflow of residents. The implication is that employment in Australia offers attractions other than high salaries. The analysis of this issue suggests that the main attraction is lifestyle.

SKILLED LABOUR: GAINS AND LOSSES

Introduction

There is widespread concern about Australia losing skilled workers to other nations. The fear of an alleged 'brain drain' is largely based on anecdotal accounts of high level scientists, computing professionals and others being attracted to the United States or some other first world country. There is a reciprocal concern that Australia will not be able to attract highly skilled migrants because of the competitive advantage of locations like the United States, given Australia's weak dollar and relatively low salaries. According to Professor Lauchlan Chipman, Chair of the Australian Vice-Chancellors' Committee's Standing Committee on Information Policy, even if Australia tries to fill the allegedly wide gaps in the Australian IT workforce with developing country migrants 'it is not going to happen. The bidding war for graduates from developing nations would have been intense in any circumstances but with a weak dollar Australia is simply not in the hunt.'¹

Despite the anecdotal nature of these concerns, they are plausible given that there are lucrative opportunities available to some categories of skilled Australian workers in some locations. The recent decline in the value of the Australian dollar has added fuel to such concerns. There is also evidence of new opportunities for international migration. Only a few developed countries operate formal migration programs, including the United States, Canada, New Zealand and Australia. But there are new opportunities for the movement of skilled workers, mainly directed at persons moving for temporary employment, but usually also ultimately offering permanent residence. The United States, in particular, has sharply increased its annual quota of temporary resident work visas (H-1B visas) from 65,000 in the late 1990s to 195,000 in 2001. The nations of Western Europe, which have hitherto run highly restrictive migration regimes are also becoming more open to skilled migration. Great Britain, which is by far the largest destination of skilled Australian residents moving overseas, has recently (late 2000) made employment based work visas more accessible. These reforms include allowing recent foreign born graduates of British universities in skill shortage areas to be eligible for work permits where they are sponsored by a British employer, even though they have no work experience.² Partly as a result, net migration into Britain has increased sharply in recent years, not just from the subcontinent of India and other former British colonies in Asia, Africa and elsewhere, but also from 'Old' Commonwealth countries like New Zealand, Australia and Canada.³

There has been little systematic analysis of migration movements in the many academic works which have explored the social and economic implications of the new 'globalising' environment. Nevertheless, the impression given in these works is that a two tiered pattern is emerging in which the knowledge- and capital-rich experience minimal constraints on international mobility at the same time as barriers are increasingly being laid against the movement of others. As one text puts it 'for the inhabitants of the first world – the increasingly cosmopolitan, extraterritorial world of global businessmen, global culture managers or global academics, state borders are leveled down, as they are dismantled for the world's commodities, capital and finances'.⁴ Another argues that 'people with scarce skills can go anywhere in response to attractive combinations of income levels and lifestyles. This is one of the factors contributing to the concentration of innovation and control in "world cities" which dominate the global economy.'⁵

Given this setting it is not surprising that many Australian commentators fear that Australia could be subject to a 'brain drain'. Australia, as an outlier in the global economy, may appear to be vulnerable in a context where there is an international scramble for skilled labour. Just as both Tasmania and New Zealand are losing significant components of their 'best and brightest' to the Australian mainland,⁶ so perhaps Australia may find itself being drained of such people to the international corporate heartlands of Europe and North America.

This study explores these concerns by examining the international movement of skilled persons to and from Australia in the second half of the 1990s. Data are provided on the movements of people in selected occupations to and from Australia over the period 1995-96 to 1999-2000. The occupations chosen include those such as computing professionals and accountants where supply shortages were evident in Australia during the second half of the 1990s. In these occupations there has been some concern that these shortages have been exacerbated by a 'brain drain' from Australia. The other occupations studied were selected because of their particular interest to the Commonwealth Departments which contributed to the support for the study. These include scientists and engineers. In the case of scientists, the concern has not so much been a lack of domestic supply but fears that allegedly inadequate public and private support for research and development in Australia has prompted an exodus of Australian scientists to overseas locations.

Data Sources

The Australian Government holds one of the most comprehensive sets of records of international movers in the world. Occupational detail (down to the four-digit Australian Standard Classification of Occupations (ASCO) level) is recorded and stored electronically for the following categories of movers:

Arrivals

- Persons entering Australia on a permanent basis (that is, they hold permanent residence visas – sometimes referred to as settlers) who say they are part of the workforce.
- New Zealand citizens who say they are part of the workforce and intend to settle here permanently or who enter on a long-term basis (defined as arriving in Australia with the stated intention of staying a year or more).
- All others who do not hold permanent residence visas but who intend to visit Australia for a year or more and who are in the workforce.
- Australian residents (that is, persons born in Australia or persons who hold permanent residence visas, including New Zealand citizens who normally live in Australia) who are returning from a long-term stay overseas (defined as a year or more).

Departures

- Residents leaving Australia who declare that they are leaving permanently.
- Residents who indicate that their departure is for a long-term visit overseas (defined as a year or more in duration).
- Visitors (persons not holding permanent residence status) who are leaving Australia after a long-term stay of a year or more.

For each of the persons moving in and out of Australia in the above categories, apart from occupation (if in the workforce), information is available on birthplace, citizenship, age, sex, place of origin for arrivals and place of destination for departures, and visa category. No data are available for education level.

Limitations of the data

While the information described is of great value for the purposes of this study, it has limitations. First, no occupation data are recorded for persons who arrive for short-term visits (defined as less than a year's duration) or, in the case of Australian residents, those who are returning from a short-term visit overseas. This means that the data tend to understate the contribution of skilled visitors to the Australian workforce. This is particularly so in the case of arrivals holding long-stay business visas (visa category 457) who may stay for up to four years but often indicate that their visit is to be short term (that is, less than one year's duration). These 457 visa category visitors would normally undertake skilled work in Australia.

Second, the veracity of the occupation data depends on the traveller filling out his or her passenger card accurately. (One exception is those entering Australia as permanent residents in the skilled categories or on long-stay business visas whose occupational data are taken from electronic data sources entered by the Department of Immigration and Multicultural Affairs (DIMA) officers at the overseas issuing post). Passengers often do not fill in the full detail of their occupation. Thus instead of saying that they are an electrical or mechanical engineer, they simply write 'engineer'. Or instead of indicating their occupation is primary or secondary teacher they write 'teacher'. Teachers are not shown here by category for this reason. In the case of natural and physical science professionals, detail for each component occupation is provided along with a total for the category. However, the detail for the component occupations must be treated with caution. It is likely to be accurate for the settler group because it is taken from on-line sources (rather than from the passenger card) deriving from the original application process. But for other movement categories the information comes from the less reliable passenger card. Thus the 'other natural and physical science' sub-category tends to be artificially increased because those coding the passenger cards often do not have enough information to be precise about which occupation within the natural and physical sciences the person occupies.

Third, there is the possibility of people incorrectly filling in the time period of their visit or stay overseas. In the case of visitor arrivals, it is common for the same person to indicate that he or she is entering Australia for a long-term stay more than once in a particular year. For example, a long-stay business visa holder may enter Australia intending to work for more than a year, but go home for Christmas. When returning to Australia after Christmas he or she may quite correctly say (again) that a long-term stay is intended. The data set utilised in the analysis here includes an indicator for each long-term arrival as to whether the entry is the first or a subsequent entry. Analysis of these data has shown that about a third of visitor entries recorded as long-term are second or subsequent entries. Thus published information of the movements of long-term visitors (including that reported in Australian Bureau of Statistics (ABS) publications) may exaggerate the number of people entering Australia for such visits. For this study we have not taken account of duplicate entries because there is no parallel indicator for 'first' and subsequent departure for visitors leaving Australia after a long-term stay. To some extent the 'excess' of long-term visitor arrivals will be counteracted by duplicates in the departure data as well.

Fourth, there is the problem of 'category jumping'. Both residents and visitors may not leave or stay for the period they state on their passenger card. This could lead to over or underestimates of movers by occupation. Though the ABS calculates 'category jumping' estimates for the overall flows of residents and visitors, no adjustments are made by occupation. For example, if an Australian resident leaves saying the departure is for a short-term but in fact leaves for a long-term stay or permanently, the statistics will undercount the loss of residents. There is no doubt that this occurs, particularly in the case of some overseas-born residents. For example, the ABS has consistently estimated that a high level of Hong Kong-born Australian residents who say they are leaving for a short-term stay in fact leave for a longer period.⁷ There is no way of identifying the occupation of such persons. 'Category jumping' also occurs in the other direction, especially where persons enter Australia as short-term visitors such as students and thus do not have an occupation recorded. Where such persons subsequently change their status in Australia to that of permanent resident (such as when a former overseas student is sponsored for permanent residence by an employer) they then become 'category jumpers'. Currently over half of all long stay Temporary Business visas are issued to applicants already in Australia, usually to persons who arrived on short-term visitor visas. Many of these persons will subsequently work in Australia on a long-term basis, but will not have been counted amongst the long-term visitor arrivals in the movements data base.

Finally it is difficult to assess the 'quality' of movers. As noted, there are no data on educational level in the movements data base. It is obvious that the value to Australian employers of movers such as doctors, university lecturers, engineers and so on will vary sharply according to the qualifications and experience these persons bring with them. Those selected under the Government's Independent program are far more likely to be able to productively enter the Australian labour market than those entering under the family reunion or humanitarian programs. In these latter categories there is no consideration of qualifications or English language skills in the selection process. This 'quality' issue will be explored further below.

These caveats indicate that the apparent precision shown in the tables can be misleading. The information presented should be regarded as indicative of the impact of international movement on Australia's skilled workforce. Nevertheless, the Australian data provide a rich source of information on the origin and destination of arrivals and departures by occupation for most of those with work rights in Australia, as well as some characteristics of the mover, including birthplace and citizenship.

Aggregate movements

We begin with the overall pattern. Table 1 shows the annual net flows of persons with an occupation over the years 1995-96 to 1999-2000, by selected occupations and total movements for all persons indicating an occupation. For the years 1995-96 and 1996-97 the occupational data were adjusted to the Second Edition ASCO occupational definitions introduced in 1996 through the use of a concordance prepared by the ABS. DIMA did not switch to the Second Edition ASCO definitions until the year 1997-98.

Three broad categories of movers are distinguished as; those arriving as permanent residents or settlers, net residents and net visitors. This classification is used throughout the Report. Settlers or permanent residents include all those who initially arrive in Australia holding

permanent resident visas. They also include New Zealanders where such persons indicate that their stay in Australia is permanent. Once in Australia, however, settlers are regarded for the purposes of this study as part of the overall stock of residents. It is generally assumed (or hoped) that settlers, as well as Australia-born residents, are here to stay. Table 1 shows that the settler inflow has been substantial throughout the 1995-96 to 1999-2000 period, and that it has increased significantly since 1997-98.

Central to this study is the extent to which any part of the stock of permanent residents (whether Australia-born or settlers) is departing and not returning. Fears about a 'brain drain' refer to possible losses amongst both Australia-born and overseas-born residents. Like the Australia-born residents, settlers have the right to leave and, if they fulfil certain residential requirements, can return to Australia when and if they please. Thus the second category, net residents, refers to the difference between the number of permanent residents leaving Australia who say that their departure is permanent or long-term and the number who return after a long-term stay overseas. We do not differentiate between those indicating that their stay overseas is permanent or long-term, largely because decisions on this matter are often fluid. However, for the record, in 1999-2000 a third of residents departing Australia on a permanent or long-term basis said that they were leaving Australia permanently. Table 1 shows that there has been a net loss of skilled residents throughout the period in question and that this loss has increased sharply, particularly since 1998-99. The components of this net loss are probed later. Nevertheless, it is notable that the net resident loss is less than the gains from settler arrivals for all persons recording an occupation through the period 1995-96 to 1999-2000. However, there are some occupations amongst the professional and managerial group where the net resident loss exceeds the settler intake, especially in 1998-99 and 1999-2000.

The third component identified in Table 1 and elsewhere in this study is net visitors. This refers to the difference between the number of those who arrive in Australia with a visa allowing them to work who indicate that their stay is to be for a year or more and those who leave Australia after a long-term stay of a year or more. Table 1 shows that there is a significant and growing number of net visitors over the second half of the 1990s.

When these three streams are combined, it is plain that Australia is not experiencing an aggregate 'brain drain'. Over the five years to 30 June 2000 there was a net gain of 155,279 persons who hold an occupation. There was a gain in every occupation identified (apart from Other Natural and Physical Science Professionals, but this possibly derives from the coding problems mentioned above).

Table 1: Settler arrivals and net movement of permanent residents and long-term visitors 1995-96 to 1999-2000

Occupation	1995-96			1996-97			1997-98			1998-99			1999-2000			Total 5 yrs			
	Settlers	Net Residents	Net Visitors	Settlers	Net Residents	Net Visitors	Settlers	Net Residents	Net Visitors	Settlers	Net Residents	Net Visitors	Settlers	Net Residents	Net Visitors	Settlers	Net Residents	Net Visitors	Net total
Finance Managers	314	-89	310	264	-93	304	286	-78	340	285	-163	540	269	-133	556	1,418	-556	2,050	2,912
Company Secretaries	26	-7	25	22	-8	24	16	-1	3	63	-2	13	73	-3	23	200	-22	88	266
Information Technology Managers	95	-21	42	82	-20	31	54	-95	83	66	-182	220	214	-277	462	511	-596	838	754
Other Managers & Administrators	4,536	-2,185	4,197	4,872	-5,153	7,990	4,191	-2,363	4,781	4,967	-5,308	8,124	5,658	-6,598	8,336	24,224	-21,608	33,429	36,045
Total Managers & Administrators	4,971	-2,303	4,573	5,240	-5,275	8,350	4,547	-2,537	5,207	5,381	-5,655	8,897	6,214	-7,011	9,377	26,353	-22,781	36,405	39,977
Chemists	190	-19	5	182	-43	35	128	-66	2	157	-69	56	195	-59	28	852	-256	126	722
Geologists and Geophysicists	151	-84	66	158	-136	110	128	-146	153	130	-218	234	179	-130	211	746	-714	774	806
Life Scientists	125	-8	15	91	-12	21	191	-5	32	119	-48	41	152	-66	20	678	-139	129	667
Environmental & Agricultural Science Prof.	267	-25	41	199	-24	53	86	-13	65	190	-16	83	198	-28	94	940	-106	336	1,170
Medical Scientists	61	-22	8	60	4	5	49	-15	12	52	-32	53	82	-15	50	304	-80	128	352
Other Natural & Physical Science Prof.	115	-31	9	118	-15	39	123	-249	-58	131	-386	168	131	-359	51	618	-1,040	209	-213
<i>Total Natural & Physical Science Prof.</i>	<i>908</i>	<i>-189</i>	<i>144</i>	<i>809</i>	<i>-226</i>	<i>263</i>	<i>705</i>	<i>-494</i>	<i>206</i>	<i>779</i>	<i>-769</i>	<i>635</i>	<i>937</i>	<i>-657</i>	<i>454</i>	<i>4,138</i>	<i>-2,335</i>	<i>1,702</i>	<i>3,504</i>
Building & Surveying Professionals	268	-60	23	259	-98	29	260	-83	23	301	-267	145	326	-145	104	1,415	-653	324	1,085
Engineers	1,333	-135	237	1,144	-236	270	1,190	-422	620	1,221	-354	611	1,327	-168	525	6,215	-1,316	2,263	7,162
Building & Engineering Prof.: Other & nfd	390	-9	193	276	-3	204	472	-522	390	674	-1,376	1,322	978	-1,315	1,273	2,790	-3,225	3,382	2,948
<i>Building & Engineering Professionals: Total</i>	<i>1,991</i>	<i>-205</i>	<i>454</i>	<i>1,679</i>	<i>-337</i>	<i>503</i>	<i>1,922</i>	<i>-1,027</i>	<i>1,033</i>	<i>2,196</i>	<i>-1,997</i>	<i>2,078</i>	<i>2,631</i>	<i>-1,628</i>	<i>1,902</i>	<i>10,420</i>	<i>-5,194</i>	<i>5,969</i>	<i>11,195</i>
Accountants (& nfd)	1,548	-415	233	1,212	-723	214	1,320	-990	399	1,312	-1,455	864	1,696	-1,253	850	7,088	-4,837	2,560	4,811
Auditors	114	-30	17	90	-53	16	17	-49	48	68	-56	70	120	-91	51	409	-280	202	331
Corporate Treasurers	9	-2	5	7	-3	4	2	-6	3	7	-9	9	11	-9	8	36	-30	29	35
Computing Professionals	1,183	-293	362	1,288	-580	337	1,222	-771	566	1,403	-1,476	1,490	1,668	-757	1,272	6,764	-3,877	4,027	6,914
Mathematicians, Statisticians and Actuaries	70	-24	15	53	-8	15	54	-17	20	59	-34	40	71	-46	33	308	-129	123	302
Medical Practitioners	624	-49	181	498	-140	254	358	-115	172	408	-356	616	544	-358	578	2,432	-1,018	1,801	3,215
Nursing Professionals	1,095	-482	90	907	-586	100	938	-681	93	1,042	-1,012	349	1,119	-911	262	5,101	-3,671	894	2,323
School Teachers	1,610	36	171	1,371	-53	88	1,449	-772	293	1,566	-2,418	736	1,903	-1,863	784	7,899	-5,070	2,071	4,900
University Lecturers and Tutors	537	-96	116	443	-133	108	378	-194	278	486	-483	503	624	-544	547	2,468	-1,450	1,552	2,570
Economists	140	-32	15	121	-25	19	117	-38	-8	119	-49	21	130	-76	41	627	-220	88	495
Other Professionals	5,757	-2,932	1,155	5,455	-3,967	1,778	4,432	-2,625	1,125	4,829	-5,473	2,975	5,611	-4,368	2,906	26,084	-19,366	9,939	16,657
Total Professionals	15,586	-4,714	2,957	13,934	-6,835	3,698	12,914	-7,779	4,228	14,274	-15,587	10,386	17,065	-12,561	9,688	73,773	-47,476	30,957	57,254
Bldg, Arch & Surveying Assoc Profs	176	-5	-1	162	-32	-2	84	-18	1	79	8	-4	78	0	-3	579	-48	-9	522
Engineering Associate Professionals	496	-12	16	414	-21	8	146	-5	20	261	7	32	259	10	11	1,576	-22	88	1,642
Bldg & Eng Assoc & Techn Other & nfd	103	-4	16	82	-12	8	225	-120	-35	225	-209	188	297	-229	125	931	-573	302	660
<i>Bldg & Eng Assoc & Techn: Total</i>	<i>775</i>	<i>-21</i>	<i>31</i>	<i>657</i>	<i>-65</i>	<i>14</i>	<i>455</i>	<i>-143</i>	<i>-14</i>	<i>565</i>	<i>-194</i>	<i>216</i>	<i>634</i>	<i>-219</i>	<i>133</i>	<i>3,086</i>	<i>-643</i>	<i>381</i>	<i>2,824</i>
Finance Associate Professionals nfd	0	0	0	0	0	0	176	-2	28	2	-5	3	0	-2	-1	178	-9	30	199
Branch Accts & Mgers, Fin Inst, Assoc Prof	62	-47	106	62	-78	99	43	-61	58	56	-120	57	64	-83	19	287	-389	339	236
Financial Dealers and Brokers, Assoc Prof	157	-50	47	154	-77	50	50	-132	80	139	-216	192	202	-180	156	702	-655	525	572
Financial Investment Advisors, Assoc Prof	117	-31	34	110	-56	32	40	-87	39	96	-227	159	149	-204	286	512	-604	550	458
<i>Finance Associate Professionals: Total</i>	<i>336</i>	<i>-128</i>	<i>188</i>	<i>326</i>	<i>-211</i>	<i>180</i>	<i>309</i>	<i>-282</i>	<i>205</i>	<i>293</i>	<i>-568</i>	<i>411</i>	<i>415</i>	<i>-469</i>	<i>460</i>	<i>1,678</i>	<i>-1,658</i>	<i>1,444</i>	<i>1,464</i>
Chefs	288	-76	-13	294	-64	-44	212	-195	-15	432	-295	-88	498	-200	53	1,724	-830	-107	786
Other Associate Professionals	2,715	-852	740	2,446	-732	568	1,967	-509	181	2,049	-1,900	1,189	2,546	-2,290	562	11,723	-6,283	3,239	8,679
Total Associate Professionals	4,113	-1,078	946	3,723	-1,071	718	2,943	-1,129	357	3,339	-2,957	1,728	4,093	-3,178	1,208	18,211	-9,413	4,957	13,754
Mech Eng Tradespersons	946	-115	-33	736	-199	-41	732	-257	-27	804	-268	14	771	-176	-47	3,988	-1,015	-135	2,839
Fabric Eng Tradespersons	299	-61	-13	266	-84	-31	250	-48	-35	291	-83	-22	284	-20	-28	1,390	-296	-128	966
Automotive Tradespersons	576	-60	-17	451	-14	-29	560	-43	-43	656	-85	-19	658	-102	-42	2,901	-304	-150	2,447
Elect & Elect Tradespersons	758	-101	4	650	-112	-11	625	-155	-43	766	-246	73	743	-174	-31	3,541	-787	-8	2,746
Construction Tradespersons	1,106	-276	-221	1,008	-93	-187	1,033	-129	-208	1,343	-239	-101	1,469	-239	-315	5,960	-977	-1,032	3,951
Other Tradespersons	2,758	-461	-120	2,442	-376	-204	2,323	-550	-230	2,239	-833	35	2,150	-740	-128	11,912	-2,959	-648	8,305
Total Tradespersons	6,442	-1,074	-401	5,553	-878	-503	5,523	-1,182	-586	6,099	-1,754	-20	6,075	-1,451	-591	29,692	-6,339	-2,101	21,253
Other Occupations	11,473	-2,994	465	9,881	-3,349	156	9,205	-5,349	-1,844	10,627	-8,838	693	12,498	-8,078	-347	53,685	-28,608	-877	24,200
Total	42,585	-12,218	8,759	38,362	-14,980	8,639	35,132	-17,976	7,362	39,720	-34,791	21,684	45,945	-32,279	19,335	201,744	-112,244	65,779	155,279

How significant is Australia's 'brain gain'?

In order to assess the significance of this 'gain', the net gain from overseas movements for the three years 1997-98 to 1999-2000 in each occupation has been expressed as a percentage of the stock of persons employed in that occupation in Australia as of May 2000. The analysis is limited to movements over these three years because of the difficulties of providing concorded data for 1995-96 and 1996-97 when variables like destination/origin or birthplace are examined.

These net gain ratios, expressed as percentages, are shown in Table 2. On this measure, Australia has achieved a modest 'brain gain' in the professional fields, including computing professionals, accountants and mathematicians, statisticians and actuaries (all fields where concerns about a 'brain drain' have been expressed). The net flow from international movements over the three years to mid-2000 amongst professionals was equivalent to 2 per cent of the numbers employed in the professions as of May 2000. The rate of net gain was larger in the Manager and Administrator fields and smaller for the Associate Professional and Tradespersons fields. The relatively high net gain for building and engineering professionals (which includes engineers, architects and other building professionals) is largely a consequence of a high rate of settler intake in these fields in the late 1990s.

Those who have followed the 'brain drain' literature since the late 1980s will not be surprised at these findings. In the case of engineers, successive research reports have indicated that Australia has experienced a net gain in its engineering workforce through international movements since the 1980s (and before). In 1988, Pure showed that notwithstanding some concerns about a 'brain drain' at the time, Australia was receiving a substantial net gain of scientists and engineers from international movement.⁸ T.F. Smith elaborated on this finding in his studies of the international movement of engineers published in 1993⁹ and 1994.¹⁰ In a subsequent study by Birrell and Hawthorne, which was based on the 1991 Census, it was shown that 44.2 per cent of all persons holding degree level qualifications in engineering who were resident in Australia in 1991 were overseas born.¹¹ Most recently, the Department of Industry, Science and Resources (DISR) has reported that Australia made a net gain of scientists and engineers from international movement throughout the 1990s.¹² The report in question shows that there was a net gain from migration of scientists and engineers over the period 1987-88 to 1998-99 of 55,000 of which 27,000 were engineers.

Throughout the period since the late 1980s, most of the engineers arriving as settlers came from Asia and Eastern Europe. Australia has attracted large numbers of engineers from these locations in part because graduate numbers are large relative to the professional opportunities in these regions. As a consequence many engineers are eager to take up any opportunities available in a first world country by immigrating there. Table 1 shows that there were 3,728 settlers arriving in Australia over the period 1997-98 to 1999-2000 who indicated that they were engineers. The Appendix to this Report shows that 1,578 came from Asia, including 551 from China and 207 from India. The most important Eastern Europe source countries were the former USSR with 143 and Romania with 93.

Another way of looking at the importance of overseas movements is to compare the net overseas gain for particular fields to the changes in Australia's employed workforce in the same field. In the case of professionals, the net overseas gain for the three years to 1999-2000 shown in Table 3 is 32,628, which is equivalent to 15.6 per cent of the total increase in the number of employed professionals in Australia over the same three-year period.¹³ The equivalent figure for computing professionals is 15.0 per cent. During this period there were about 15,000 local graduates in IT. These figures indicate that the movement of skilled persons to and from Australia is contributing a modest net gain to the Australian skilled workforce. This does not mean that professionals who came to Australia all worked in the profession in question. This is most unlikely in the case of engineers, since as Table 3 shows, according to estimates derived from the ABS Labour Force Survey, there was a decline in the number of persons employed as professional engineers between 1997 and 2000 in Australia. In a slack labour market for engineers, where employers can be selective in their choice of applicants, some new entrants with overseas qualifications would struggle to find employment as professional engineers.

Table 2: Net gains for selected occupations as a percentage of employed stock, permanent and long-term movements, 1997-98 to 1999-2000

Occupation	Stock (employed persons May 2000)	Net flow	Net gain as per cent of stock
Finance Managers	36,267	1,902	5.2
Company Secretaries	968	185	19.1
Information Technology Managers	14,845	545	3.7
Other Managers & Administrators	582,299	21,788	3.7
Total Managers & Administrators	634,379	24,420	3.8
Chemists	9,025	372	4.1
Geologists and Geophysicists	7,910	541	6.8
Life Scientists	6,149	436	7.1
Environmental and Agricultural Science Professionals	21,485	659	3.1
Medical Scientists	15,080	236	1.6
Other Natural and Physical Science Professionals	5,129	-448	-8.7
<i>Total Natural and Physical Science Professionals</i>	<i>64,778</i>	<i>1,796</i>	<i>2.8</i>
Building & Surveying Professionals	25,799	664	2.6
Engineers	73,323	4,550	6.2
Building and Engineering Professionals: Other and nfd	11,173	1,896	17.0
<i>Total Building and Engineering Professionals</i>	<i>110,295</i>	<i>7,110</i>	<i>6.4</i>
Accountants	129,002	2,743	2.1
Auditors	8,217	178	2.2
Corporate Treasurers	342	16	4.7
Computing Professionals	142,494	4,617	3.2
Mathematicians, Statisticians and Actuaries	4,763	180	3.8
Medical Practitioners	56,085	1,847	3.3
Nursing Professionals	187,047	1,199	0.6
School Teachers	261,929	1,678	0.6
University Lecturers and Tutors	36,450	1,595	4.4
Economists	6,110	257	4.2
Other Professionals	637,788	9,412	1.5
Total Professionals	1,645,300	32,628	2.0
Bldg, Arch & Surveying Assoc Profs	47,627	225	0.5
Engineering Associate Professionals	45,160	741	1.6
Bldg & Eng Assoc & Techn Other & nfd	6,046	467	7.7
<i>Total Bldg & Eng Assoc & Technicians</i>	<i>98,833</i>	<i>1,433</i>	<i>1.4</i>
Finance Associate Professionals nfd		199	
Branch Accts & Mgers, Fin Inst, Assoc Prof	21,680	33	0.2
Financial Dealers and Brokers, Assoc Prof	40,530	291	0.7
Financial Investment Advisors, Assoc Prof	27,327	251	0.9
<i>Total Finance Associate Professionals</i>	<i>89,537</i>	<i>774</i>	<i>0.9</i>
Chefs	40,714	402	1.0
Other Associate Professionals	784,136	3,795	0.5
Total Associate Professionals	1,013,220	6,404	0.6
Mech Eng Tradespersons	138,853	1,546	1.1
Fabric Eng Tradespersons	81,009	589	0.7
Automotive Tradespersons	129,931	1,540	1.2
Elect & Elect Tradespersons	185,779	1,558	0.8
Construction Tradespersons	296,372	2,614	0.9
Other Tradespersons	370,494	4,266	1.2
Total Tradespersons	1,202,438	12,113	1.0
Other Occupations	4,520,920	8,567	0.2
Total	9,016,257	84,132	0.9

nfd=not fully described

Source: ABS Labour Force Survey, unpublished, May 2000; DIMA, unpublished

As indicated, the movements data tell us very little about the quality of the 'brain gain'. It may be that those entering Australia do not hold equivalent skills to those departing. In particular there is concern about the net loss of skilled Australian residents. Since the Australia-born and many of the overseas-born (especially those who arrived here as children) will have been trained in Australia to Australian specifications, their loss could be regarded as

potentially serious. Much depends on whether such persons return to Australia and the scale of these losses relative to the total stock of persons by occupation.

Table 3: Ratio of Net International Movements to Growth in Employment 1997-2000, by Selected Occupations

Occupation	Employment Change 1997 - 2000	Net Overseas Movement 1997 - 2000	Overseas Movement as a Percentage of Employment Change
Accountants	39362	2713	6.9%
Computing Professionals	30783	4617	15.0%
Nurses	12134	1199	9.9%
Natural & Physical Science Professionals	14396	1796	12.5%
Engineers	-10129	4550	N/A
Other Professionals	122326	17753	14.5%
Total Professionals	208,872	32,628	15.6%

Source: Employment Change, ABS Labor Force Estimates by Occupation, May 1997 and May 2000

The magnitude of net losses of skilled residents

In order to provide an indication of the scale of skilled resident loss, it is appropriate to focus on professional occupations (as defined in the Second Edition of ASCO). Table 4 shows the contribution made to Australia's net gain of 32,628 professionals over the three years to 1999-2000 from the three separate streams under study: settlers, net residents and net visitor movements in and out of Australia. To reiterate, residents are defined as those holding the status of permanent resident in Australia, including Australia-born persons. In the case of New Zealand citizens, they too are regarded as residents if they stated on the passenger card when entering Australia that their move was permanent or when leaving Australia that they were leaving after a long-term stay.

Table 4 shows that there was a net loss of 35,927 residents over the three years. Also, as can be seen from Table 1 the net loss of settlers with professional occupations increased sharply after 1997-98. Is this serious? In one sense it is not, because it was counterbalanced by an overall inflow of 44,253 settlers with professional occupations over the three years in question. This is partly because of the Coalition Government's decision to increase the skilled intake since 1996 and partly because of a large influx of New Zealand citizens. In addition, there was a modest 'brain gain' in these three years from visitor movement of 24,302 professionals. Thus despite the net loss of residents there was a substantial net gain of professionals to Australia from permanent and long-term movement of 32,628.

Table 4: Net gain and components of net gain of permanent and long-term (PLT) movers with professional occupations by country of movement, 1997-98 to 1999-2000, (per cent)

Next / Last residence	Per cent of net PLT movement (negative = loss)			
	Net Gain	Components of net gain		
		Residents	Visitors	Settlers
New Zealand	22.6	-11.9	9.4	21.2
Sth Africa	14.9	0.2	5.1	8.0
China	11.7	-1.9	1.5	9.4
UK & Nthn Ireland	9.0	-28.7	31.5	12.6
India	7.8	-0.2	2.1	4.8
Ireland Rep	4.0	-1.4	5.1	1.3
Canada	3.1	-1.6	3.6	1.6
Hong Kong	2.9	-5.7	0.6	6.4
Philippines	2.9	-0.3	-0.1	2.4
German F.D.R.	2.6	-1.0	2.9	1.1
Malaysia	2.3	-1.0	0.6	2.2
Indonesia	1.3	-1.7	2.6	0.9
USA	0.6	-15.1	16.9	3.4
Japan	-1.0	-3.3	1.4	1.2
Singapore	-2.3	-7.1	3.6	2.1
Papua New Guinea	-3.3	-4.0	0.9	0.3
Subtotal	79.1	-84.8	87.9	78.9
Remainder	20.9	-15.2	12.1	21.1
Total	100.0	-100.0	100.0	100.0
Number	32,628	-35,927	24,302	44,253

Note: Shaded cells are the top ten net losses/gains. Source: DIMA unpublished

Total net numbers vary slightly from other tables because there is no information on the next residence of some departures.

For those concerned about losses of Australian residents (perhaps because of their Australian training) Table 5 provides some perspective on the scale of these losses. The Table indicates the net loss of Australian residents both for the professional occupations and other occupations under study over the years 1996-97 to 1999-2000 relative to the stock of persons employed in the same occupation in Australia as of May 2000.

Table 5: Net movement of Australian residents, 1997-98 to 1999-2000, relative to employed stock, by selected occupations

Occupation	Stock (employed persons May 2000)	Net loss/gain of residents	
		No.	%
Finance Managers	36,267	-374	-1.0
Company Secretaries	968	-6	-0.6
Information Technology Managers	14,845	-554	-3.7
Other Managers & Administrators	582,299	-14,269	-2.5
Total Managers & Administrators	634,379	-15,203	-2.4
Chemists	9,025	-194	-2.1
Geologists and Geophysicists	7,910	-494	-6.2
Life Scientists	6,149	-119	-1.9
Environmental & Agricultural Science Prof.	21,485	-57	-0.3
Medical Scientists	15,080	-62	-0.4
Other Natural & Physical Science Prof.	5,129	-994	-19.4
<i>Total Natural & Physical Science Prof.</i>	<i>64,778</i>	<i>-1,920</i>	<i>-3.0</i>
Building & Surveying Professionals	25,799	-495	-1.9
Engineers	73,323	-944	-1.3
Building & Engineering Prof.: Other & nfd	11,173	-3,213	-28.8
<i>Total Building & Engineering Professionals</i>	<i>110,295</i>	<i>-4,652</i>	<i>-4.2</i>
Accountants (& nfd)	129,002	-3,698	-2.9
Auditors	8217	-196	-2.4
Corporate Treasurers	342	-24	-7.0
Computing Professionals	142,494	-3,004	-2.1
Mathematicians, Statisticians and Actuaries	4,763	-97	-2.0
Medical Practitioners	56,085	-829	-1.5
Nursing Professionals	182,047	-2,604	-1.4
School Teachers	261,929	-5,053	-1.9
University Lecturers and Tutors	36,450	-1,221	-3.3
Economists	6,110	-163	-2.7
Other Professionals	637,788	-12,466	-1.9
Total Professionals	1,645,300	-35,927	-2.2
Bldg, Arch & Surveying Assoc Profs	47,627	-10	0.0
Engineering Associate Professionals	45,160	12	0.0
Bldg & Eng Assoc & Techn Other & nfd	6,046	-558	-9.2
<i>Bldg & Eng Assoc & Techn: Total</i>	<i>98,833</i>	<i>-556</i>	<i>-0.6</i>
Finance Associate Professionals nfd		-9	
Branch Accts & Mgers, Fin Inst, Assoc Prof	21,680	-264	-1.2
Financial Dealers and Brokers, Assoc Prof	40,530	-528	-1.3
Financial Investment Advisors, Assoc Prof	27,327	-518	-1.9
<i>Finance Associate Professionals: Total</i>	<i>89,537</i>	<i>-1,319</i>	<i>-1.5</i>
Chefs	40,714	-690	-1.7
Other Associate Professionals	595,766	-4,699	-0.8
Total Associate Professionals	1,013,220	-7,264	-0.7
Mech Eng Tradespersons	138,853	-701	-0.5
Fabric Eng Tradespersons	81,009	-151	-0.2
Automotive Tradespersons	129,931	-230	-0.2
Elect & Elect Tradespersons	185,779	-575	-0.3
Construction Tradespersons	296,372	-607	-0.2
Other Tradespersons	370,494	-2,123	-0.6
Total Tradespersons	1,202,438	-4,387	-0.4
Other Occupations	4,520,920	-22,265	-0.5
Total	9,016,257	-85,046	-0.9

nfd=not fully described

Source: ABS Labour Force Survey, unpublished, May 2000; DIMA, unpublished

For managers and professionals the net loss of residents was 2.4 per cent and 2.2 per cent respectively. These losses are not large given that they cover a three year period. The net loss for professionals and managers of around 51,000 compares with a total number of non-overseas student graduates from Australian universities of over 400,000 over the same three year period.

In some of the fields where the loss is highest, the distinctive feature of the labour market in question is that demand in Australia is low. For example, there has been a high net loss of geologists which is probably related to the recent downturn in mineral exploration. The high net loss of residents of 19.4 per cent for Other Natural and Physical Science Professionals, could be affected by Australia's relatively poor record in providing research opportunities in these fields.¹⁴ However, this high net loss is partly a consequence of the tendency for such residual occupational categories to be artificially inflated.

The net loss of residents for Building and Engineering professionals, at 4.2 per cent for all those included in this category, was also comparatively high. Unfortunately, it proved difficult to analyse the composition of this loss because most of it occurred in the 'other and nfd' component of the category. For this group there was insufficient evidence to identify the precise occupation of the movers. However, it was possible to analyse the subset of engineers identified in Table 5. The net loss of resident engineers shown in the Table was 944. Analysis of the birthplaces of resident engineers arriving and departing Australia over the period 1997-98 to 1999-2000 (not shown in the Table) revealed that 611 or 65 per cent of the total net loss of resident engineers over this period was Australia-born. It was shown earlier that nearly half of Australia's resident degree qualified engineering workforce was foreign-born by 1991. Their low share of the net loss of Australia's resident engineers indicates that they have a low propensity to leave Australia. Given that there was a surplus of engineers in Australia relative to the job opportunities in the profession during the 1990s it might have been expected that more overseas-born engineers would have sought opportunities abroad. That they did not is probably partly due to the fact that many of the overseas-born engineers arriving in the second half of the 1980s and early 1990s were unable to find positions in their field in Australia and thus were not well placed to compete for engineering jobs overseas.

On the other hand, there are several fields, including those in the financial sector (accountants, financial dealers and investment brokers) and in the computing field (information technology managers and computing professionals) where there is an undoubted pull from overseas but concurrently strong demand in Australia. In all of these fields the net loss of residents, except for the information technology managers, is about the same or below that for all professionals.

These outcomes suggest the hypothesis that where demand in Australia is strong for particular skills, the attractions of working in Australia, such as lifestyle and low cost of living, are sufficient to prevent any major drain of resident Australian professionals. These advantages appear to compensate for the financial gains which might be made by moving overseas. This hypothesis is explored further below in the course of more detailed examination of particular occupations.

Current concern in Australia about the loss of skilled residents seems to be unnecessarily alarmist. Because Australia runs a relatively vigorous immigration program it is inevitable that it will lose some residents. Immigrants often move on an experimental basis. If the move does not work out economically or socially some migrants may decide to leave. In the 1970s there was an alarm about Australia's ability to retain the large settler flow of the 1960s. Studies at the time showed that of the immigrant cohort arriving in 1966, 24 per cent had left Australia permanently by 1971, with even higher losses for those with skilled occupations.¹⁵ It is not possible to replicate this study because the movements data base does not permit any matching of those coming and going (as was the case for the study cited).

Since some resident loss will occur, the issue should be one of the scale of the loss. The findings detailed above indicate that currently, it is not large relative to Australia's skilled workforce. But one view prominent in the current public debate on the issue is that Australia is entering a new phase in which global demand for skilled workers will see Australian resident workers (whether overseas- or Australia-born) becoming the subject of recruitment from other affluent societies. In other words we become the prey rather than the predator in the international pursuit of skilled workers. Our neighbour, New Zealand, seems to be in this situation. As can be seen from Table 4, some 22.6 per cent of Australia's net gain of 32,628 professionals over the three years 1997-98 to 1999-2000 derived from the net movement of people between Australia and New Zealand and moving from Australia to New Zealand. This is equivalent to a loss of 7,374 professionals by New Zealand. At the time of the 1996 New Zealand Census there were 191,597 persons employed as professionals in New Zealand. The three year net loss to Australia represents nearly a 4 per cent loss of the professional stock at the time of the Census. There have also been comparable net losses elsewhere in the world.¹⁶ These losses do constitute a serious 'brain drain'.

However, Australia is losing residents on a much lower scale than is New Zealand. Pessimists may argue that with the recent action on the part of the United States and European nations to make it easier for firms to recruit skilled workers, the present relatively moderate loss of Australian skilled residents could escalate. With new immigration opportunities, Australians might decide to move because salaries are considerably higher in Europe and North America than Australia. This view gains some credibility from our analysis because it is true that both the outflow and net loss of skilled residents has increased in the last couple of years. An alternative view is that the increased net loss of skilled Australian residents in recent years could be put down to a lag effect. Though Australian residents have been drawn overseas in increased numbers it may be that most will return. If so, the recent higher net resident loss will not be sustained.

Testing ideas about resident losses

Our initial working hypothesis was that to the extent Australia was losing skilled residents they would most likely be drawn from those who were overseas born and overseas trained. It was expected that such persons would be less likely to be anchored in Australia by ties of family or emotion (sense of place and identity) and more likely to have connections to job opportunities abroad.

Table 4 provides some information relevant to these issues. The pattern of net losses of residents is consistent with the idea that Australia is losing skilled residents to technologically advanced countries. Some 29 per cent of the net losses of Australian residents with professional occupations came from those moving to and from the UK (including Northern Ireland). The next largest destinations for these losses were the United States, New Zealand and Singapore. For New Zealand, the loss is mainly from New Zealand-born persons returning to New Zealand. This latter flow illustrates the argument that where a particular country is a major source of settlers it is likely to generate a high downstream return flow.

The UK, United States and Singapore are all 'hot spots' in the international 'knowledge economy'. The availability of lucrative and challenging work opportunities is likely to be a factor in these movements. Yet, why the dominance of the UK? Its economy has flourished in recent years, but since the UK does not match the United States when it comes to the level

of demand for professionals or longstanding interest in the recruitment of immigrants to fill skill gaps, why should the net loss to the United States be so much lower than to the UK?

In order to explore these issues further, Tables 6, 7 and 8 show the pattern of movement to and from the UK, the United States and Singapore for professionals by birthplace of mover. In the case of the UK, the great majority of those departing Australia to this destination were Australia-born, followed by persons born in other Commonwealth countries, including the UK itself, New Zealand, South Africa and Malaysia. The flow of Australian residents with professional occupations to the United States over the three years to 1999-2000 was only 38 per cent of that to the UK. As with the UK pattern, most of the resident departures are Australia-born. Singapore is distinctive, however, in that it is attracting a much higher share of overseas-born Australian residents than is the UK or the United States. It is drawing substantial numbers of Malaysia-, Vietnam-, China- and Hong Kong-born Australians as well as Singapore-born Australians, most of whom are likely to be Chinese speakers. In every case, more of these Australian residents are leaving for Singapore than to the UK or the United States.

Table 6: Permanent and long-term movements to and from the United Kingdom by birthplace, Australian resident professionals 1997-98 to 1999-2000

Birthplace	Resident arriving	Resident departing	Total Net Resident Loss	Ratio of arrivals/ Departures
	Count	Count	%	%
Australia	18,130	25,398	70.5	0.71
UK & Nthn Ireland	3,328	4,764	13.9	0.70
New Zealand	310	814	4.9	0.38
South Africa	190	270	0.8	0.70
Malaysia	137	238	1.0	0.58
Papua New Guinea	103	154	0.5	0.67
Ireland Republic	97	146	0.5	0.66
India	81	136	0.5	0.60
USA	71	131	0.6	0.54
Canada	64	118	0.5	0.54
Singapore	57	110	0.5	0.52
Hong Kong	60	107	0.5	0.56
Other Africa*	80	107	0.3	0.75
Germany	70	93	0.2	0.75
Sri Lanka	58	87	0.3	0.67
Vietnam	39	86	0.5	0.45
Zimbabwe	44	81	0.4	0.54
Other	593	984	3.8	0.60
TOTAL	23,512	33,824	100.0	0.70

* Excludes North Africa, Kenya, South Africa and Zimbabwe.

Table 7: Permanent and long-term movements to and from the USA by birthplace, Australian resident professionals 1997-98 to 1999-2000

Birthplace	Resident arriving	Resident departing	Total Net Resident Loss	Ratio of arrivals/ departures
	Count		%	%
Australia	5,339	8,787	67.5	0.61
USA	429	776	6.0	0.55
UK & Nthn Ireland	414	721	5.5	0.57
India	129	367	2.8	0.35
New Zealand	121	272	2.1	0.44
China	63	205	1.6	0.31
Philippines	96	165	1.3	0.58
Malaysia	80	143	1.1	0.56
Vietnam	48	124	1.0	0.39
Sri Lanka	47	108	0.8	0.44
Sth Africa	60	90	0.7	0.67
Canada	47	80	0.6	0.59
Hong Kong	49	75	0.6	0.65
USSR & Baltic States	31	65	0.5	0.48
Germ F.D.R.	44	61	0.5	0.72
Singapore	35	60	0.5	0.58
Other Africa*	34	60	0.5	0.57
Other	515	855	6.6	0.60
TOTAL	7,581	13,014	100.0	0.58

* Excludes North Africa, Kenya, South Africa and Zimbabwe.

Table 8: Permanent and long-term movements to and from Singapore by birthplace, Australian resident professionals 1997-98 to 1999-2000

Birthplace	Resident arriving	Resident departing	Total Net Resident Loss	Ratio of arrivals/ Departures
	Count		%	%
Australia	602	2,247	49.1	0.27
Malaysia	355	583	12.7	0.61
Singapore	292	361	7.9	0.81
UK & Nthn Ireland	113	299	6.5	0.38
Vietnam	84	136	3.0	0.62
China	84	133	2.9	0.63
Hong Kong	82	128	2.8	0.64
Indonesia	56	79	1.7	0.71
India	35	79	1.7	0.44
New Zealand	15	64	1.4	0.23
Sri Lanka	52	63	1.4	0.83
USA	12	27	0.6	0.44
Canada	9	24	0.5	0.38
Fiji	3	23	0.5	0.13
Germany	8	23	0.5	0.35
Sth Africa	11	23	0.5	0.48
Taiwan	22	22	0.5	1.00
Other	179	266	5.8	0.67
TOTAL	2,014	4,580	100.0	0.44

Another important difference between the resident loss patterns to the UK and the United States is the implied lower return rate of Australian residents from the United States relative to the UK. This is indicated by the ratio of arrivals to departures. The ratio of residents returning to Australia from a particular country to those leaving for that country can be used as an indicator of return rates. This is because the information summarised in Tables 6, 7 and 8 covers three years of movers. It is likely that a substantial proportion of those who come back to Australia after a visit to a particular country would do so within a year or so. Information drawn from the passenger cards shows that only slightly more than a third of

residents who returned to Australia over the three years to 1999-2000 stayed overseas for more than two years. Those who stay longer might build up their connections to the place in question and as a consequence perhaps stay permanently. Thus the overall return rates for the three countries (70 per cent for the UK, 58 per cent for the United States, and 44 per cent for Singapore) should give a reasonable indication of likely resident loss levels. The only qualification is that in a period like the late 1990s when the international labour market was coming to the boil, there is likely to be a lag effect if those leaving in boom years subsequently return to Australia.

The return rates from the United States are especially low for India-born and China-born Australian residents relative both to Australia-born and most other overseas-born Australian residents. Another point to note is that the number of Australian residents with professional occupations and born in these two countries who moved to the United States was much larger than the number leaving for the UK.

These tendencies are also manifested for Australian residents moving to and from Singapore. As was shown in Table 4, Singapore is the fourth largest location for net losses of Australian residents with professional occupations. As with the United States, this is likely to reflect the pull of job opportunities in a rapidly expanding and now wealthy island nation. This is not surprising given the cultural affinity China-born persons are likely to have with Singapore society. What is of more concern from the point of view of 'brain drain' issues is the relatively low 44 per cent rate of return of Australian residents from Singapore, as shown in Table 8. Surprisingly, the return ratio for Australia-born residents is particularly low, at just 27 per cent.

These data provide some support for the hypothesis that overseas-born professionals are the most likely to leave Australia permanently.

Why is the UK the main destination for skilled Australian residents?

One possibility is that the UK, and especially the City of London is one of the hubs of the new 'knowledge economy'. Undoubtedly the movement of so many Australian resident professionals to the UK has been facilitated by the recent strength of the British economy. But the attraction of the UK may have more to do with the fact that many more Australian residents hold rights to live and work in the UK than in the United States or any other developed economy. British Consular officials in Australia estimate that up to two million Australians are either dual citizens of Australia and the UK or hold rights to take up UK residency by virtue of being the children of British-born citizens living in Australia. In addition, Australian residents whose grandparents were British citizens can apply for four year work visas in the UK. In the year 2000 the British Consulate issued 4,761 such visas. Finally young Australians can work in the UK for up to two years by securing Working Holiday Maker visas.

There are no parallels to these privileges for Australian residents who wish to move to the United States. The main point of entry for those seeking employment is the H-1B temporary resident visa. This requires the involvement of an American employer to act as a sponsor. As noted earlier the number of these visas has been increased sharply in recent years. Internet access to employers looking for overseas workers (especially in the IT field) has made gaining the necessary connection to an American employer more flexible. But movement to the United States for employment purposes is not easy. The most secure pathway is through

completion of an American postgraduate degree (which very few Australian residents undertake) followed by employer sponsorship on an H-1B. The procurement of permanent residence status or a 'green card', even for persons who hold H-1B visas is a long and tortuous process. It is far easier for overseas-born professionals to gain permanent residence in Australia than the United States.

The numbers of H-1B visas issued to Australians has increased in recent years but from a very low base. In 1991 there were 1,102 visas issued to Australians, rising to 1,651 in 1999. (The major occupation for which H-1B visas are issued is computing).¹⁷ This number was dwarfed by other countries of origin, particularly India, to whose residents 55,047 H-1B visas were issued in 1999. The movement of Australian residents to the United States via this visa is potentially a loss to Australia. But at this stage the numbers are small, and as shown in Table 7 most do return to Australia.

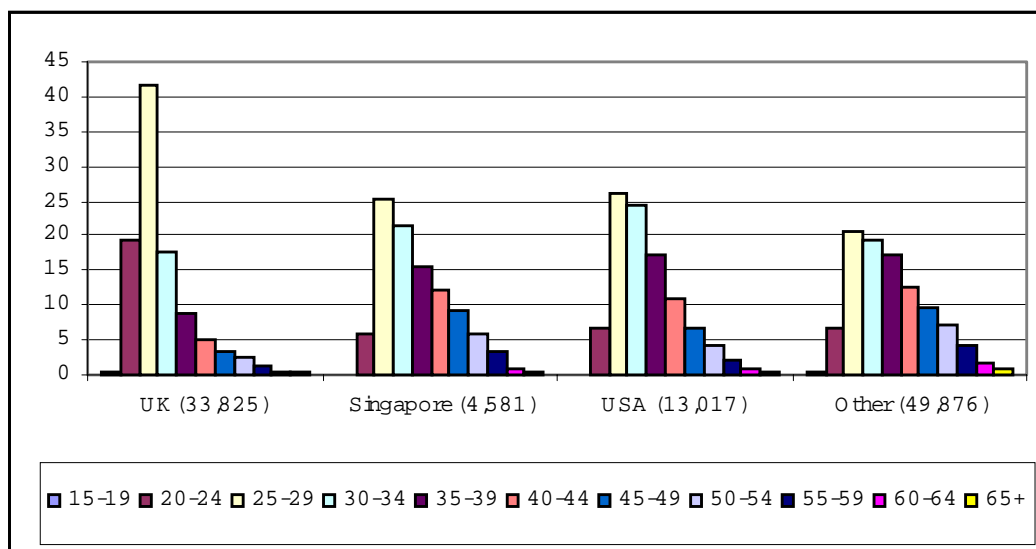
The much larger movement to the UK is more likely to be a combination of work and travel, harking back to the long tradition of Australians taking an overseas spin before settling down to career and family in Australia. The return rate is high. As mentioned earlier in this Report, very few Australian residents are being recruited via the UK work permit system. If Australians were being heavily caught up in corporate recruiting or inter-company transfers one would expect these numbers to be significant (since most Australians do not have work rights in Britain). However in the year 2000 the British Consulate in Australia issued just 27 work permits to Australian residents.

Age and the propensity to move

One way of testing the hypothesis that the movement of Australian residents to the UK can be regarded as part of a traditional boomerang trip abroad is to examine the age distribution of resident departures. This is shown in Figure 1 for residents who indicated that they held professional occupations and who departed Australia over the three years 1997-98 to 1999-2000 for the UK, the United States, Singapore and all other destinations.

The dominance of persons in the younger age groups (20-24 years and particularly 25-29 years) is clear for visitors to the UK. The Australian residents departing for the United States and Singapore are relatively older. Older persons are much more likely to be moving to pursue professional careers than is the case for the younger visitors to Britain. Thus the age distribution data offers a partial confirmation of the earlier argument that the large outflow of Australian residents to the UK is probably best interpreted as a continuation of the past pattern of young people exploring the world rather than as part of long-term career moves.

**Figure 1: Age of residents departing by next residence
Australian resident professionals 1997-98 to 1999-2000**



Analysis of selected occupations

To facilitate further analysis of the international movement of skilled persons we explore the experience of accountants, computing professionals and natural and physical scientists. The components of the last group, such as geologists and life scientists, were not analysed separately because as explained earlier, many scientists did not provide sufficient detail on their passenger cards to allow coding to occur at this level. Accountants and computing professionals have been chosen for closer investigation because they are considered to be the two most important ‘in shortage’ occupations in Australia at present. In both cases, employers have expressed concern about the possibility that international competition for the relevant skills may be harming the progress of Australian enterprises. The natural and physical sciences were chosen because of the amount of recent public debate about the alleged extent of losses of Australian expertise in these fields.

In the light of the foregoing analysis, the main hypothesis examined was that where there is strong demand within Australia for persons in a particular occupation, significant losses of Australian residents are unlikely. The assumption behind this idea was that though Australian salary levels may have lagged behind those offered in some of the high demand locations in the international skilled labour marketplace, there are compensating lifestyle benefits which may counter some ‘pull’ factors to leave Australia. In principle, this hypothesis should apply to skilled overseas residents who are contemplating international movement as well as Australian residents. If so, one would expect Australia to be attracting such persons as settlers or visitors, as well as retaining its own skilled workers. This is not to deny that many other factors could come into play in explaining the international movements of skilled workers, including location of family and networking links within firms. The concern at this stage is to use these case studies to better understand the central finding of this Report, that despite Australia’s relatively peripheral status in the global hi-tech economy, it is nevertheless not experiencing any significant ‘brain drain’ amongst its own residents. At the same time it is attracting a substantial influx of skilled migrants from overseas, both on a permanent and temporary basis.

Table 9 shows the movement of residents from Australia over the three years 1997-98 to 1999-2000 who reported their occupation as one of the three selected for further analysis. It shows the percentage of residents departing Australia over this period relative to the stock of employed persons as of May 2000, as well as the main destination points for accountants, natural and physical scientists and computer professionals. These data provide a picture of the extent of mobility of each occupational group and of the countries they were attracted to.

It is notable that the rate of out-movement for Australian resident computing professionals is lower than that for professionals overall, as well as for accountants and natural and physical scientists. This finding may come as a surprise to those fearing an exodus of computing professionals to greener pastures. If the international marketplace was particularly attractive for Australian IT specialists, then it could be expected that computing professionals would be in the vanguard, rather than being relative laggards. Those holding this view may also be surprised that almost twice as many of the computing professionals who left Australia moved to the UK rather than to the United States. The relatively low movement to the United States is consistent with the H-1B visa data cited above. It confirms the finding that there is no significant movement of Australian IT specialists to the hubs of the international IT industry in Silicon Valley, Austin (Texas) or Cambridge in the United States.

Table 9 Proportion of employed stock and major locations of residents leaving Australia 1997-98 to 1999-2000, by occupation

Occupation	% of Employed Stock Departing	Major Location						Total
		UK	USA	Hong Kong	Singapore	New Zealand	Other	
	%	%	%	%	%	%	%	
Accountants	7.4	43.2	8.9	12.8	5.1	4.5	25.5	100.0
Natural & Physical Science Professionals	6.8	27.6	24.3	1.8	2.6	6.1	37.6	100.0
Computer Professionals	4.7	38.8	21.5	8.0	4.7	4.2	22.8	100.0

Table 9 shows that there was a higher rate of out-movement of Natural and Physical Science Professionals relative to all professionals (which was 6.1 per cent over the three years in question) and of Computer Professionals. This is consistent with the idea that where there is low demand in Australia for the skills in question, Australian residents have had to look overseas for employment. The point should not be overstated, however, since the implied return rate (or ratio of arrivals to departures) over the three years 1997-98 to 1999-2000 was similar for each of the three occupational groups in question. It was 56 per cent for natural and physical scientists, 55 per cent for computing professionals and 61 per cent for accountants.

The movement of accountants does not fit the hypothesis under consideration. During the three years to 1999-2000 there was very strong demand for accountants in Australia. Over the three years May 1997 to May 2000, the employment of accountants in Australia increased by 43.9 per cent compared with 14.5 per cent for all professional workers. Why then did a relatively high proportion leave Australia, given that there were abundant job opportunities within Australia during this time?

It is possible that Australian resident accountants are more integrated into the international corporate network or are engaged more often in international business deals than other professionals, including computing professionals. It could also be that the overseas-born

component of Australia's accounting workforce has a high degree of mobility. The examination of movement patterns of Australian resident accountants by birthplace, conducted below, supports this idea.

Table 10 shows the proportion of the resident professionals departing Australia 1997-98 to 1999-2000 by country of birth. The birthplace data for the stock of accountants (and the other occupations) is also presented and this has been drawn from an analysis of persons employed in particular professions at the time of the 1996 Census. Though a little dated, the 1996 Census is the only source from which such birthplace data could be derived.

While the overwhelming majority of the departing resident accountants were Australia-born, it is seen that, in terms of their representation in the total workforce, a high proportion of the Australian accounting workforce who moved overseas were born in Asian countries. In the case of Hong Kong-born accountants, though they made up just 1.3 per cent of the employed accounting workforce in 1996, they constituted 9.3 per cent of the accountants moving overseas during the three years in question. There is a similar pattern of high mobility for other resident accountants born in Asia. As can be seen from the Table, Australia-born accountants are less likely to move overseas. While they constituted 73 per cent of employed accountants in 1996, they represent 60 per cent of those moving overseas in the three years to 1999-2000.

Table 10 Share of residents departing Australia 1997-98 to 1999-2000 by birthplace and share of employed stock 1996, by occupation

Occupation	Birthplace of Residents Departing							Total %
	Australia %	UK %	China %	India %	Malaysia %	Hong Kong %	Other %	
Accountants	60.0	6.6	2.7	0.8	4.4	9.3	16.2	100.0
Natural & Physical Science Professionals	63.8	8.2	2.6	1.5	1.6	1.1	21.2	100.0
Computer Professionals	52.6	10.4	2.5	3.4	3.0	6.3	21.8	100.0
	Birthplace of Employed Stock in 1996							
Accountants	73.0	6.4	0.7	0.9	2.2	1.3	15.5	100.0
Natural & Physical Science Professionals	71.0	8.7	1.5	1.0	1.0	0.6	16.2	100.0
Computer Professionals	60.4	9.9	1.1	2.2	1.9	2.1	22.4	100.0

This higher relative mobility for Asia-born professionals is also seen for Computer Professionals and to a lesser extent for Natural and Physical Science Professionals.

Further analysis of the destination patterns of those moving within the occupations under study is shown in Tables 11, 12 and 13, concerning respectively Accountants, Natural and Physical Science Professionals and Computer Professionals.

For example, Tables 11 and 13 indicate that departing resident Asia-born accountants and computing professionals are predominantly moving to Asian locations. In the case of the accountants moving to Hong Kong in the three years to 1999-2000, Table 11 shows that only 2.5 per cent of departing Australia-born accountants moved to Hong Kong, but 90 per cent of those born in Hong Kong and 36 per cent of those born in China moved there. Some 77 per cent of all the resident Australian accountants who moved to Hong Kong during the period were born in Hong Kong.

Table 11 Next country of residents departing, by birthplace, 1997-98 to 1999-2000: Accountants

Country of Birth	Next Country of Residence															Total %	Total No.
	New Zealand	UK	Rep of Ireland	Germany	Indonesia	Malaysia	Singapore	China (exc Taiwan)	Hong Kong	India	Canada	USA	South Africa	Other			
Australia/Aust. Ext. Terr.	3.9%	57.9%	0.8%	0.5%	1.7%	0.5%	3.5%	0.6%	2.5%	0.3%	1.9%	10.6%	0.2%	15.0%	100.0%	5707	
New Zealand	43.8%	33.7%	1.0%		0.3%		1.0%	1.0%	0.7%		0.7%	6.7%		11.1%	100.0%	297	
PNG		35.6%	2.2%				8.9%				2.2%			51.1%	100.0%	45	
UK and Nth Ireland	3.8%	56.9%	0.9%	0.5%	1.7%	0.8%	3.2%	1.4%	3.6%	0.2%	1.1%	9.3%	0.5%	16.1%	100.0%	633	
Rep of Ireland	3.9%	21.1%	43.4%		9.2%		6.6%				2.6%	2.6%		10.5%	100.0%	76	
Germany	6.7%	26.7%		40.0%								6.7%	6.7%	13.3%	100.0%	15	
Indonesia		5.6%	2.8%		38.9%		41.7%	2.8%	5.6%					2.8%	100.0%	36	
Malaysia	2.4%	9.4%			1.2%	37.5%	27.2%	2.2%	9.1%	0.5%	0.5%	1.7%		8.4%	100.0%	416	
Singapore	3.3%	20.7%				2.2%	56.5%	3.3%	4.3%			2.2%	1.1%	6.5%	100.0%	92	
China (exc Taiwan)		1.1%		0.4%	0.8%		3.4%	32.4%	54.6%		0.4%	3.8%		3.1%	100.0%	262	
Hong Kong	0.5%	1.4%	0.1%				2.5%	2.8%	90.7%		0.1%	0.9%		1.0%	100.0%	885	
Japan		14.3%										14.3%		71.4%	100.0%	7	
India	2.7%	18.7%	1.3%			1.3%	10.7%		1.3%	9.3%	5.3%	24.0%	1.3%	24.0%	100.0%	75	
Sri Lanka	3.5%	13.3%			1.8%		6.2%				0.9%	16.8%	0.9%	56.6%	100.0%	113	
Canada		25.0%							9.4%		46.9%	9.4%	3.1%	6.3%	100.0%	32	
USA		24.0%	4.0%		4.0%		2.0%				4.0%	56.0%		6.0%	100.0%	50	
South Africa	0.9%	38.7%	0.9%				3.6%		1.8%		1.8%	10.8%	26.1%	15.3%	100.0%	111	
Other	3.7%	21.3%	0.6%	0.3%	0.5%	0.8%	4.3%	1.7%	7.5%	0.3%	1.1%	9.0%	0.8%	48.3%	100.0%	654	
Total %	4.5%	43.2%	1.1%	0.4%	1.5%	2.1%	5.1%	1.9%	12.8%	0.3%	1.7%	9.0%	0.6%	15.9%	100.0%		
Total No.	427	4107	101	38	146	199	489	180	1215	29	158	852	56	1509		9506	

Table 12 Next country of residents departing, by birthplace, 1997-98 to 1999-2000: Natural & Physical Science Professionals

Country of Birth	Next Residence														Total %	Total No.
	New Zealand	UK	Rep of Ireland	Germany	Indonesia	Malaysia	Singapore	China (exc Taiwan)	Hong Kong	India	Canada	USA	South Africa	Other		
Australia/Aust. Ext. Terr.	4.6%	32.6%	0.8%	2.8%	2.1%	1.1%	1.4%	0.5%	0.7%	0.3%	4.2%	26.1%	1.3%	21.6%	100.0%	2831
New Zealand	42.0%	25.0%		0.5%	1.1%		0.5%			0.5%	3.7%	13.3%	1.6%	11.7%	100.0%	188
PNG	21.1%	21.1%		5.3%							5.3%	21.1%		26.3%	100.0%	19
UK and Nth Ireland	4.4%	38.9%	1.1%	2.2%	1.6%	1.9%	0.8%		0.8%	0.3%	3.3%	18.4%	1.1%	25.2%	100.0%	365
Rep of Ireland	10.0%	15.0%	55.0%	5.0%								5.0%		10.0%	100.0%	20
Germany	4.1%	6.1%		36.7%	2.0%	2.0%	8.2%				4.1%	16.3%	2.0%	18.4%	100.0%	49
Indonesia					37.5%		25.0%		37.5%					0.0%	100.0%	8
Malaysia	1.4%	11.1%		1.4%	2.8%	13.9%	29.2%	4.2%	4.2%			22.2%		9.7%	100.0%	72
Singapore		21.7%					21.7%	4.3%				34.8%		17.4%	100.0%	23
China (exc Taiwan)	5.1%	6.0%		0.9%	0.9%	4.3%	17.9%	16.2%	11.1%		3.4%	24.8%		9.4%	100.0%	117
Hong Kong	4.1%	2.0%					8.2%	4.1%	65.3%			8.2%		8.2%	100.0%	49
Japan	8.3%	16.7%		16.7%	8.3%							8.3%		41.7%	100.0%	12
India	2.9%	5.9%		1.5%	4.4%	2.9%	1.5%			27.9%		25.0%		25.0%	100.0%	68
Sri Lanka	11.5%											19.2%		65.4%	100.0%	26
Canada	6.8%	15.9%		2.3%	2.3%						29.5%	22.7%	2.3%	18.2%	100.0%	44
USA	3.5%	3.5%			2.3%		2.3%		3.5%		2.3%	57.0%	2.3%	23.3%	100.0%	86
South Africa	4.1%	26.5%					4.1%				4.1%	14.3%	24.5%	22.4%	100.0%	49
Other	3.4%	12.9%	0.5%	3.2%	3.4%	1.2%	2.9%	0.5%	1.5%	0.2%	2.4%	21.7%	1.0%	45.1%	100.0%	410
Total %	6.1%	27.6%	0.9%	2.9%	2.1%	1.4%	2.6%	0.9%	1.8%	0.7%	3.9%	24.3%	1.4%	23.2%	100.0%	
Total No.	270	1224	39	127	95	60	117	42	82	31	175	1080	64	1030		4436

Table 13 Next country of residents departing, by birthplace, 1997-98 to 1999-2000: Computing Professionals

Country of Birth	Next Residence														Total %	Total No.
	New Zealand	UK	Rep of Ireland	Germany	Indonesia	Malaysia	Singapore	China (exc Taiwan)	Hong Kong	India	Canada	USA	South Africa	Other		
Australia/Aust. Ext. Terr.	3.4%	49.8%	1.1%	1.3%	0.6%	1.0%	3.2%	0.5%	1.7%	0.2%	2.5%	21.6%	0.5%	12.7%	100.0%	3507
New Zealand	38.8%	35.4%	1.0%	1.0%			0.5%		1.0%		1.0%	12.9%	1.4%	7.2%	100.0%	209
PNG		53.8%					3.8%				3.8%	30.8%		7.7%	100.0%	26
UK and Nth Ireland	4.3%	65.8%	1.4%	0.9%	1.0%	1.3%	2.4%	0.4%	1.1%	0.7%	0.9%	10.9%	0.1%	8.7%	100.0%	698
Rep of Ireland	1.7%	29.3%	53.4%									6.9%		8.6%	100.0%	58
Germany	8.6%	22.9%		42.9%							2.9%	14.3%		8.6%	100.0%	35
Indonesia	3.4%				17.2%		51.7%		3.4%			17.2%		6.9%	100.0%	29
Malaysia	3.5%	12.9%	0.5%	1.0%	1.5%	26.4%	30.3%	0.5%	5.0%		1.5%	11.9%		5.0%	100.0%	201
Singapore	1.9%	18.5%			1.9%	3.7%	51.9%	1.9%				13.0%		7.4%	100.0%	54
China (exc Taiwan)	1.2%	0.6%		0.6%			5.4%	23.4%	36.5%		2.4%	23.4%		6.6%	100.0%	167
Hong Kong		3.1%		0.2%		0.5%	3.1%	1.2%	86.9%	0.2%	1.0%	2.6%		1.2%	100.0%	421
Japan									14.3%					85.7%	100.0%	7
India	1.3%	6.2%				0.9%	4.4%		0.9%	13.2%	1.3%	59.5%	0.4%	11.9%	100.0%	227
Sri Lanka	7.3%	12.7%			3.6%	1.8%	10.9%		1.8%	1.8%	1.8%	29.1%		29.1%	100.0%	55
Canada	2.0%	22.0%				2.0%	2.0%	2.0%	2.0%		48.0%	20.0%		0.0%	100.0%	50
USA	4.4%	13.2%			1.1%	1.1%	1.1%					70.3%		8.8%	100.0%	91
South Africa	8.2%	36.1%		1.6%							4.9%	23.0%	16.4%	9.8%	100.0%	61
Other	2.5%	20.1%	0.1%	0.8%	0.3%	0.5%	5.1%	0.1%	2.9%	0.5%	1.4%	29.8%	0.7%	35.2%	100.0%	766
Total %	4.2%	38.8%	1.3%	1.2%	0.6%	1.6%	4.7%	1.0%	8.0%	0.7%	2.3%	21.5%	0.5%	13.4%	100.0%	
Total No.	281	2588	84	78	43	109	315	68	534	49	150	1431	36	896		6662

These findings have some interesting implications for reflections about the extent of Australian engagement in Asia. It is clear that Australia-born professionals are showing little interest in moving to Asian locations. This is despite the economic dynamism of parts of the region and the relatively high salary packages available, especially in Singapore and Hong Kong.¹⁸

The movement of a significant proportion of the Asia-born component of the skilled resident workforce may be of concern, especially in the context of the Australian Government's decision to expand the immigration program to accommodate several thousand additional former full fee-paying IT graduates per annum.¹⁹ However further analysis of the Asia-born accountants and computing professionals who are leaving Australia (not shown in the Tables) indicates that most are returning.

In the case of the Hong Kong-born resident accountants, although 1,215 left Australia on a permanent or long-term basis over the three years to 1999-2000, 1,083 returned to Australia after a long-term stay overseas during the same period. The only significant exception to this pattern was found with India-born computing professionals. Some 227 left Australia (mainly for the United States) but only 84 returned.

The movement of skilled migrants to Australia

If Australia was 'not in the hunt' in the international marketplace for skilled personnel, as Professor Chipman²⁰ asserts, it would be hard to attract skilled persons from overseas, let alone hold the bulk of Australian residents in the fields where overseas demand was strongest. These expectations are not supported by the data presented here. As noted earlier, for almost every occupation examined, the net losses of Australian residents are more than covered by settler arrivals (including New Zealand citizens) and a net inflow of visitors.

While Australia is undoubtedly attracting considerable inflows of professionals, there is some concern as to whether these migrants match the skills of the Australian residents who are leaving.

In the case of mathematicians, the Federation of Australian Scientific and Technological Sciences (FASTS) recently published a report entitled *Mathematical Sciences in Australia: Looking for a Future*.²¹ This is specifically directed at an examination of the health of mathematics in Australia and covers the decline in the number of students undertaking advanced mathematical courses in schools and universities, the lack of suitably trained teachers as well as the loss of highly qualified academic staff from universities. The latter data were drawn from an e-mail survey of all university mathematics departments and cover the movement of mathematicians post 1995. The lists show 62 experienced mathematics researchers and 45 new researchers leaving Australian universities for positions overseas. It also lists nine Australia-born and 14 overseas-born new mathematics researchers entering Australia. Thus, the total outflow is 107, over half of which are experienced researchers, which is offset by an influx of 23, all relatively inexperienced researchers.

The movements data for mathematicians, statisticians and actuaries reported in Table 1 indicates a net outflow of residents for the five year period 1995-2000 of 129. However, there was an inflow of 308 settlers and 123 net visitors, resulting in a net gain of 302. However, as acknowledged earlier, the movements data base provides no information about the relative

educational level, experience, English language capacity or other relevant skills of movers. In this case it may well be that the apparent 'brain gain' may be somewhat illusory.

Australia's experience with the large influx of skilled migrants who entered Australia in the late 1980s provides further support for the above concerns. Only 38 per cent of the migrants arriving in Australia between 1986 and 1991 who held degree level qualifications had been able to find employment at the professional or managerial level as of 1991.²² Subsequent analysis of the 1996 Census showed that the situation of these 1986-91 arrivals had not improved. For those holding credentials gained overseas, the proportion employed at the professional or managerial level was just over 40 per cent by 1996, indicating that they had made little occupational progress during the intervening five years.²³

This outcome was partly attributable to the onset of the recession in the early 1990s. In addition, many of the migrants in question had entered under the family or humanitarian programs and thus had not been subject to any assessment of their credentials. The selection criteria in place at the time for those who were selected as skilled migrants were also deficient in that they took no account of whether the skills the migrant offered were in demand in Australia. Further, it was only in the early 1990s that DIMA required most skilled migrants to pass a formal test of their English language capacity. These studies, however, did show that computing professionals were doing reasonably well in Australia, even when they came from Non-English-Speaking countries.²⁴ This outcome reflects the high demand for such skills and the relative ease of transference of professionals trained in international programming languages.

The experience of the late 1980s should not be generalised to the circumstances at the end of the 1990s. By this time the family migration program had been reduced and the selection regime affecting the settlers entering Australia under the Skilled programs was better attuned to the needs of Australian employers. To gain selection in the main skilled program an applicant had to possess at least vocational English skills and had to have his or her credentials accepted by the relevant professional or trade authority in Australia. Since mid-1999, when the system was reformed again, an element of occupational targeting has been included, which favours skills in demand (including computing, accounting and nursing) and gives priority to applicants with Australian qualifications. From mid-2001, applicants who are former full fee-paying overseas students will not have to leave Australia to apply for permanent residency.

Selection of skilled migrants is based on a points system, which measures factors including skill, age, English language ability, (Australian) qualifications and level of demand for particular occupations. The current 'pass mark' is 110 points. As part of the recent reforms, occupations eligible for selection are classified into 40, 50 and 60 point categories. The 60 point group includes professional fields such as computing, engineering, nursing and some trades. The 50 point group includes occupations where specific university or trade training is not central to employment in the field, for example in various managerial occupations in personnel or public relations work. A number of the scientific occupations such as physicists and mathematicians are also included in this second category. The 40 point category includes various sub-professional fields. Several of the financial sector occupations, such as futures traders and financial investment advisors are classified within this group. Most applicants will struggle to achieve the required pass mark if they do not possess a 60 point occupation unless they are sponsored by relatives in Australia. Most clerical and blue collar occupations are not listed at all and thus are not eligible to apply. Other occupations not listed include doctors and

university lecturers, the former because the Australian Government had been anxious to reduce the inflow of doctors because of an alleged oversupply of doctors in Australia and the latter because the opportunities for unsponsored academics are somewhat limited - academics need to be sponsored by their employers under the Employer Nomination Scheme.

As a result of these reforms, the quality and occupational relevance of immigrants selected under the skilled categories has improved sharply. The latest information (for the first seven months of 2000-2001) concerning the outcomes of those applying under the new Skilled-Independent program (visa category 136) indicates that 29 per cent of all the principal applicants selected were computing professionals and 19 per cent were accountants. The share for these two occupations is well above what it was under the pre-1999 selection system. Also, just over half of the computing professionals and accountants selected so far during 2000-2001 held Australian qualifications. Most of these would have completed these qualifications as full fee-paying overseas students in Australia.

Applicants who hold Australian qualifications in computing and accounting are likely to be in demand elsewhere in the world. Moreover most of the successful applicants are of Asian origin. They are taking up the migration option to Australia at a time when there is a serious shortage of IT professionals in parts of Asia, including, as noted above, in Hong Kong and Singapore. Australia, therefore, is attracting these people despite the vigorous competition elsewhere.

Australia's attractions

The strong demand for professionals in computing and some other fields in Australia in recent years is fundamental to Australia's ability to retain most of its own resident professionals with the skills in question and to attract overseas trained persons in the same fields. This is particularly evident in relation to New Zealand citizens. New Zealand commentators emphasise that it is not so much any shortfall of jobs in New Zealand which explains the exodus to Australia but the potential career gains and higher salaries available in Australia. Lifestyle is a secondary matter in this case. But if this is so, what factors can explain why Australia (in its turn) is not losing a greater proportion of its residents to locations which offer better salaries and perhaps better career prospects? And why is Australia attracting a substantial flow of skilled migrants to Australia (other than from New Zealand)?

One hypothesis is that 'lifestyle' is a key factor. This term covers a multitude of dimensions, including political security, a crime and pollution free urban setting (relative to parts of Asia and the United States), a low cost of living, good quality (and at least at the university level) low cost education for children, good housing and other urban amenities and nice weather. Another important factor, especially for residents or prospective immigrants of Asian origin is the existence of substantial co-ethnic communities in Sydney and Melbourne.

It is not easy to arrive at any definitive conclusions about the weight of these factors. There is very little in depth analysis in the literature of the factors shaping international movement to and from Australia. Most of the discussion to date has been anecdotal in nature. However this literature, plus our interviews with experts involved in the recruitment of professional staff did support the hypothesis about the importance of lifestyle attractions in Australia's situation. Nevertheless, the comments that follow should be regarded as preliminary. They are intended to contribute to further debate and it is hoped, will prompt more systematic research on the issue.

Typical of accounts concerning IT personnel is one reported by *Financial Times* journalist Fiona Curruthers. After citing the princely salaries on offer to some IT specialists in Hong Kong and Singapore and Australia's relatively tough tax regime, Curruthers is left with the puzzle as to why Australia (according to the IT recruiters in Asia she spoke to) nevertheless does well in the competition for such staff. The answer is personalised via the case of a British IT specialist, who, it is claimed, could earn a fortune in Europe or Asia, but has instead based himself in Sydney for the past decade. This person is quoted as saying that 'Australia will always attract the best people from overseas because, at the end of the day, lifestyle is the number one reason a European would make the transition'. Curruthers herself concludes that Australia, 'wins hands down in the region for lifestyle, low cost of living, less pollution and reliable public health and education systems'.²⁵

The IT recruiters we talked to emphatically agreed with this judgement about the importance of lifestyle. Nevertheless, they acknowledge that the high level of contracting in the IT field means that Australian residents have to be sensitive to opportunities in overseas markets, especially when demand for their services declines, as it has in recent months. They do look at job opportunities overseas and are willing to move out if necessary. But the intention is to do so for a short stint 'to restore the bank balance'. The recruiters also emphasise that an important factor inhibiting such movement (apart from the lifestyle advantages Australia offers) is the high cost of living abroad. Their advice to Australian residents contemplating moving to the United States is that as a 'rule of thumb', the buying power of the Australian dollar in Australia is roughly equivalent to the buying power of the American dollar in America.

The recruiters also note that in their experience, it has not been difficult to attract migrants here, whether on a temporary or permanent basis. They regard South Africa as a valued and readily accessible source because professionals from South Africa can fit readily into the Australian corporate setting. India too, is increasingly seen as a ready source of IT skills, which is likely to expand in the future as employers overcome some initial uncertainties about skills and concerns about whether the cultural 'style' fits with an Australian workplace. There has been some criticism from employer representatives in Australia about the alleged strictness of Australian immigration regulations. However, recruiters who actually use the system to bring in computing professionals on temporary work permits acknowledge that they can do so readily. This is also our view. The Australian skilled temporary resident regulations were deregulated in 1996. They are currently less stringent than the H-1B rules operating in the United States.²⁶

The evidence presented earlier showed that there has been an increase in the net flow of visitors with work permits to Australia. By far the largest single occupation in this visitor flow is computing professionals. Over the three years to 1999-2000 tables in the Appendix show that there was an inflow of 5,561 visitors with computing occupations and an outflow of visitors with the same occupation of 2,233, thus producing a net intake of 3,328. Most of this net inflow came from the United Kingdom and from the United States. The net inflow from India was somewhat smaller, but India does now rank as the third largest source country.

Conclusion

This Report presents a more positive picture of Australia's attractions for skilled persons than would have been expected given the widespread concern that Australia has been experiencing a 'brain drain'.

This 'brain drain' image has emerged in a knowledge vacuum, since there has previously been little empirical work conducted which could counter such false impressions. Concerns about skill losses seem mainly to have arisen in the context of departures of senior research personnel. However another source of worry has been the emergence of shortages of skilled workers in fields such as IT and accounting. Such concerns have been accompanied by persistent anecdotal reports about the attraction of Australian experts to overseas locations. In this context employers and press commentators have been tempted to conclude that a 'brain drain' is contributing to the shortage situation.

A shortage of highly skilled workers is a problem in some fields. There is a variety of reasons for this situation. It is to be hoped that this Report will direct attention to more substantive causes than the alleged 'brain drain'. These include the level of training opportunities available for Australian residents, particularly in the computing field.

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