ENGINEERING BRAIN-GAIN REVISITED

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The net flow of engineers into Australia may not represent the 'brain-gain' originally thought. Furthermore, the targeted skills migration program may be of minor relevance to meeting employer demand for engineers. Many more migrants with engineering qualifications enter the country and then face uncertain employment opportunities.

INTRODUCTION

The flow of persons holding engineering qualifications to and from Australia has been monitored and reported in a series of articles.[1] This paper extends the study to 1995-96 and 1996-97, bringing it to cover a fourteen year period.

The study was to a large extent motivated by concerns repeatedly raised in the media that Australia suffers a 'brain-drain' through the loss of highly-skilled professionals. The statistical evidence has consistently revealed the opposite situation, with a net gain to Australia of engineering professionals, even when the job market was very restricted.[2]

While a 'brain-gain' may be regarded as a benefit to the Australian economy through a deepening of the skills base, strong evidence has emerged that professionally qualified migrants to Australia, particularly those from a non-English-speaking background (NESB), experience unemployment rates well above those of Australian-born professionals.[3] This lack of professional opportunities has led to NESB professionals taking employment where the required level of qualifications is less than those possessed.[4] Hawthorne[5] has specifically investigated the barriers to professional employment faced by NESB engineers and their potential to negate the objectives of Australia's skilled immigration program.

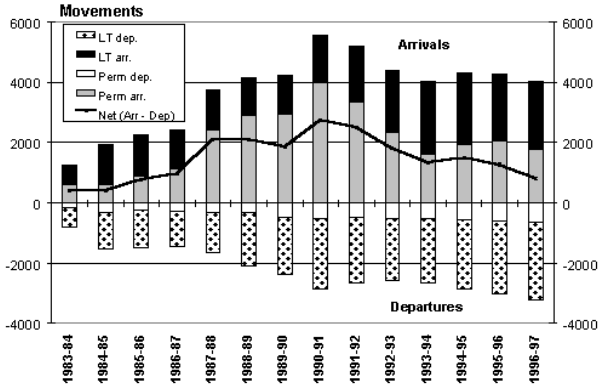
The evidence of the unemployment level for NESB immigrant engineers raises significant doubt as to the value of the 'brain-gain'. It raises the question of the appropriateness of the skilled immigration program to Australia's skill-base needs, in particularly the targeted-skills component as applied to engineers. In this respect, the situation for engineers considered here is a critical case study since throughout the 1980s and 1990s, they have represented the largest single occupational group attracted to Australia within the skilled migration categories.

MIGRATION OF ENGINEERS

In keeping with the previous studies the statistics presented here are taken from passenger card information supplied by the Department of Immigration and Multicultural Affairs (DIMA). The analysis covers the permanent and long-term movement of engineers holding permanent resident status, whether Australian-born or overseas born.

Permanent movement refers to settler arrivals and the departures of Australian-born residents and settlers where there is a stated intention to depart permanently. Long-term movement covers those migrants stating the intention of staying overseas for 12 months or more and those returning to Australia after an overseas absence of 12 months or more.

Figure 1: Movement of resident engineers into and out of Australia, 1993-84 to 1996-97



Within this framework, the permanent and long-term movement of engineers over the fourteen year period 1983-84 to 1996-97 is illustrated in Figure 1. The data clearly show a continuing decline in the net inflow of engineers from a peak of 2,725 in 1990-91 to 792 in 1996-97, thus representing a return to the 1985-86 level. Taken at face value, these statistics would indicate a declining, but nevertheless, positive benefit to Australia from the migration of engineers, that is a 'brain-gain'. A closer analysis reveals the situation is not so clear cut.

MOVEMENT OF AUSTRALIAN-BORN ENGINEERS

Table 1: Permanent and long-term movement of Australian-born engineers

Year	Arrivals		Departures		Total net flow
	Permanent	Long-term	Permanent	Long-term	
1990-91	0	868	180	1,089	-401
1991-92	3	1,006	180	1,141	-312
1992-93	3	987	215	1,055	-280
1993-94	1	1,012	195	1,049	-231
1994-95	6	1,010	228	1,077	-289
1995-96	4	979	230	1,162	-409
1996-97	2	1,031	275	1,300	-542

The data for the permanent and long-term movement of Australian-born engineers are presented in Table 1. A previous analysis[6] drew attention to the drop in the net outflow of Australian-born engineers between 1990-91 and 1993-94. The more recent data reveal a dramatic turn-around with the net outflow rising from 231 in 1993-94 to 542 in 1996-97. It is possibly of more significance that the data now reveal a trend towards an increase in the number of permanent departures over the entire period 1990-91 to 1996-97. That is, the number of Australian born engineers claiming they are leaving for good is increasing. It is also notable that the number of engineers describing their departure as long-term rose sharply over the two years of 1995-96 and 1996-97 after being relatively stable at a little over 1,000 from 1990-91 to 1994-95.

Table 2: Net inflow of overseas-born resident engineers

Country of birth	1990-91			1991-92			1992-93			1993-94			1994-95			1995-96			1996-97		
	Perm. res.[a]	Total[b]		Perm. res.[a]	Total[b]		Perm. res.[a]	Total[b]		Perm. res.[a]	Total[b]		Perm. res.[a]	Total[b]		Perm. res.[a]	Total[b]		Perm. res.[a]	Total[b]	
		No.	%		No.	%		No.	%		No.	%		No.	%		No.	%		No.	%
UK[c]	231	174	5.6	133	136	4.8	63	130	6.2	106	106	6.6	123	158	9.0	146	138	8.2	99	67	5.0
Hong Kong	1,071	825	26.4	635	530	18.8	327	384	18.4	78	229	14.2	124	156	8.8	73	61	3.6	36	24	1.8
Malaysia	356	252	8.1	108	85	3.0	28	21	1.0	27	26	1.6	30	40	2.3	23	4	0.2	17	19	1.4
India	612	601	19.3	598	560	19.9	274	260	12.5	122	134	8.3	170	212	12.0	102	104	6.2	98	90	6.8
USSR[d]	25	26	0.8	303	304	10.8	420	425	20.3	193	191	11.9	222	224	12.7	141	140	8.4	163	167	12.5
Eastern Europe	77	77	2.5	299	291	10.3	209	199	9.5	51	62	3.9	73	70	4.0	69	73	4.4	34	31	2.3
China[e]	130	116	3.7	118	104	3.7	106	103	4.9	84	86	5.3	151	139	7.9	435	432	25.8	236	237	17.8
Other	1148	1051	33.7	852	802	28.5	610	567	27.1	587	729	45.3	703	766	43.4	1107	724	43.2	939	699	52.4
Total (exc. Aust)	3,649	3,122	100.0	3,046	2,812	100.0	2,037	2,089	100.0	1,248	1,609	100.0	1,596	1,765	100.0	1,661	1,676	100.0	1,386	1,334	100.0

[a] Difference between arrivals and departures of resident engineers moving permanently

[b] Difference between arrivals and departures of resident engineers moving permanently or long term

[c] Total for England, UK, Scotland, Wales and Northern Ireland [d] USSR and Baltic States [e] Excluding Taiwan

Source: DIMA, unpublished tables

These figures suggest that the employment situation for engineers in Australia has been relatively unattractive compared with overseas. Recent reports in the media of cancellation of contracts in the construction industry in SE Asia due to the adverse financial situation may result in a reversal in the outflow over the coming months.

MOVEMENT OF FOREIGN-BORN ENGINEERS

Statistics for the flow of foreign-born engineers in and out of Australia are given in Table 2.

Data for selected countries or regions which were identified in earlier reports as the major sources of the net inflow of engineers are presented. It was noted in the 1996 report[7] that the contribution to the net inflow from these selected areas had abruptly fallen from about two-thirds to one-half between 1992-93 and 1993-94. This contribution has fallen further in 1995-96 and 1996-97 and is 31.0 per cent and 29.8 per cent respectively, with all areas,

except the USSR and Baltic States showing a decline in the difference between the number of arrivals and departures of resident engineers moving permanently or long term.

Examination of the DIMA data reveals a dramatic increase in the net inflow of engineers from China (excluding Taiwan Province) such that in 1995-96 and 1996-97 they represented 25.8 per cent and 17.8 per cent of the total net inflow. For this reason, China has been added to the list of source contributors in Table 2. With the possible exception of New Zealand, which was the source of 7.4 per cent and 3.6 per cent of the net inflow of foreign-born engineers in 1996-97 and 1995-96 respectively, up from one to two per cent in previous years, no other country can be identified as a major source for the net flow of engineers into Australia.

As regards the net migration of foreign-born engineers with permanent residence status, there has been a striking decline from 1990-91 in the numbers born in Hong Kong, Malaysia and India, and a rapid growth and peaking of the numbers born in the USSR and Eastern Europe between 1991-92 and 1992-93. The volatility of the figures suggest that the migration of foreign-born engineers to Australia is not simply a response to market demand. Indeed, there are several studies that document the difficulties facing immigrant engineers from a non-English-speaking-background (NESB) in gaining professional employment.[8]

Taken at face value the net inflow of 1,334 foreign-born engineers into Australia in 1996-97 easily covers the net loss of 542 Australian-born engineers. In previous reports this has been seen as sufficient evidence to maintain there has been a significant 'brain gain' in engineers over the past decade.[9]

In view of the forthcoming review of the Independent category of the settler program it is appropriate to examine more closely to what extent this in flow of engineers has been of benefit to Australia. Already there is the evidence of high levels of professional unemployment, thus suggesting that there is a limited market demand for engineers above that met by new Australian graduates.

VISA CATEGORY OF FOREIGN-BORN SETTLER ENGINEERS 1996-97

The entry and exit of long-term foreign-born resident engineers has been more or less in balance throughout the fourteen year period studied. In 1996-97 the number of foreign-born engineers arriving as long-term residents was 1,234, while the number departing was 1,286.

Thus, it is movement of foreign-born settler engineers (FBSE) that provides a measure of the 'brain-gain'. Furthermore, the number and proportion of FBSE entering in each visa category provides a measure of the impact of the skills migration program, with entry through the Employer Nomination Scheme (ENS) and the Labour Agreement categories specifically providing a 'targeted skills' measure of the level of market demand for immigrant engineers. This is because these are the only categories where migrants selection is shaped by direct employer input, in this case by sponsorship of the migrants in question.

Data for the major visa categories of FBSE's in 1996-97 by the countries of birth considered in Table 2 are presented in Table 3. Overall, 40.3 per cent of FBSE entered via the Independent category, while those arriving in the combined Spouse, Parent and Concessional Family categories (henceforth referred to as the 'Family' categories) total 32 per cent. Only 4.9 per cent of FBSEs arrived through the targeted-skills categories of the ENS and Labour Agreement.

The individual country of birth data show that the combined 'Family' categories and the Independent category are the major categories in all instances. The 'Family' entrants are highest for China (58.7 per cent) and Hong Kong (39.8 per cent), with India having the highest level (63.1 per cent) of entry through the Independent category. Only the UK had a significant entry (18.9 per cent) through the targeted-skills categories.

The picture that emerges from these statistics is not encouraging. Almost 43 per cent of the FBSEs who entered Australia in 1996-97 did so through visa categories for which their engineering qualifications were not tested or required. While it may be the intention of these FBSEs to seek accreditation of their qualifications, apart from the New Zealanders, it is unlikely that many will ever enter the professional engineering workforce. Of those FBSEs for which assessment of engineering qualifications took place, only 8.5 per cent entered with pre-arranged employment. Thus, it is questionable whether Australia is truly benefiting from an engineering 'brain gain'.

SKILLS MIGRATION PROGRAM

The above statistics raise serious questions as to the value of the non-targeted skills migration program, at least in so-far as it applies to engineers. Judging by the low level of entry through the targeted ENS and Labour Agreement categories there is little market demand driving settler immigration. This conclusion is supported by the DEETYA Skilled Vacancy Survey Index, which records a drop in the indices for Building Professionals and Engineers, and Engineering and Building Associates and Technicians between November 1995 and 1997. Both indices show demand is subdued and well below the increase evident for Other Professionals and Computing Professionals.

The recently announced changes to the 1997-98 migration program identifies 'migrants entering through the skill categories as having a positive effect on the economy'.[10] However,

the above analysis suggests that the majority of entrants through the non-targeted skills independent category are simply using their engineering qualifications as an entry ticket rather than coming to Australia in response to employer demand.

The renaming of the Concessional Family category as the 'Skilled Australian-Linked' category, while tightening up on the English language skills requirement, does not address the issue of market demand and the high levels of unemployment for immigrant engineers.

Furthermore, noting that 2,265 engineers entered Australia in 1996-97 as long-term residents while 2,586 departed, it seems more likely that the employer demand for engineers is being met by a transient ebb and flow rather than by settler recruitment.

Table 3: Selected visa categories foreign-born settler engineers, 1996-97

Country of birth	Spouse	Parent	Concessional Family	Targeted skills[a]	Independent	NZ	Other visa	Total
UK[b]	36	6	20	33	52	19	9	175
Hong Kong	11	4	20	0	52	0	1	88
Malaysia	4	2	2	1	11	2	1	23
India	10	6	14	4	65	4	0	103
USSR[c]	10	36	21	3	36	0	57	172
Eastern Europe	3	1	8	1	36	2	1	52
China (PRC)	60	48	41	6	77	12	10	254
Other	94	17	88	38	379	197	86	899
Total number	228	120	214	86	708	236	165	1,757
Per cent	13.0	6.8	12.2	4.9	40.3	13.4	9.4	100.0

[a] Employer Nomination Scheme and Labour Agreement categories combined

[b] Total for United Kingdom, England, Scotland, Wales and Northern Ireland

[c] USSR and Baltic States

CONCLUSIONS

Although there was a net inflow of engineers in 1996-97 it is questionable whether the majority will actually use their qualifications for professional employment. This raises serious reservations over the effectiveness of the non-targeted 'skills- tested' component of the migration program when applied to engineers.

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