Chapter 11

INTERNATIONAL MIGRATION AND REVERSE TRANSFER OF TECHNOLOGY: NATURE AND PATTERN

Migration of people, from one place to another and from one region to another has taken place from time immemorial. History of human civilisation is also replete with instances of mass migration of people at different periods of time. However, the origin of international migration as such, coincides with the development of capitalism and technological revolution. In fact, international migration of high quality manpower coincides not only with qualitative change in the process of capital accumulation stimulated by technological changes but also incorporates and holds the units together in the international system. Although some scholars trace the origin of international migration to the ancient times, as a problem with wider socio-economic and cultural implications, brain drain is a twentieth century phenomenon, and more specifically a post-War phenomenon. It is in that context, the problem has come to be referred to as Reverse Transfer of Technology (RTT).

International migration, whether in response to political or economic imperatives, spontaneous or coerced, whether involves the entire nation or selected groups within them, has played a key role in the social and economic transformation of countries throughout history. In fact, international migration has been a process routinely accompanying the development of the international economic order. 

Labour migration is the most dominant form of international migration today. The most important distinction between labour migration and other types of migrations is that it is the migration of individuals whose purpose in moving is to sell their work capacity in the receiving areas. The forces underlying it are fundamentally economic and produce a patterned movement, sustained over extensive periods of time and predictable as to direction and size.\(^2\)

The advent of labour migration, as the dominant form, is a relatively recent phenomenon. Historically, colonizing migrations were the dominant form of economically motivated population movements for two centuries.\(^3\) They were the concrete manifestation of the expansion of an European based mercantilist economy into outlying territories.\(^3\) At this stage, control of investment capital and of the immigrant labour required by that capital abroad rested in the same hands at the centre of the system. Throughout the 19th century, the United States, Canada and Australia received both investment capital and labour from England and a positive correlation existed between the two flows.

19th century political economists were of the view that emigration would strengthen the home economy since it would open new markets for its products and bring relief from over-population. For English economists, such as Torrens, colonisation was essentially the application of redundant capital and population of England to redundant lands of their empire.\(^4\)

Classical economist J.S. Mill viewed the export of population as well as export of capital as ways of counteracting the tendency of profits to fall to minimum. The release of part of the circulating capital and labour to the colonies would

\(^2\) ibid. p.21.
\(^3\) ibid. P.22.
alleviate the pressure on the fertility of the land and hence retard the trend towards decreasing profits. Classical economists further argued that capital could profitably employ emigrant labour in the colonies provided emigrants were prevented by the state from becoming land proprietors and working for themselves. Use of political means to guarantee this economic function of emigrant labour was deemed by J.S. Mill important enough to warrant infringement of the dominant postulates of *laissez faire*.

The gradual decline in the colonisation, especially in the last century, coincided with the exhaustion of such isolated areas and with the incorporation of the world into a single capitalist economic system. At this point the sources of investment capital and free immigrant labour ceased to coincide. In other words, immigration ceased to be a colonising movement from the centres of expanding commercial imperialism and became, instead, a movement from peripheral countries and regions in response to the needs of new industrial centres. This shift in the nature and origins of immigration was to consolidate itself during the twentieth century.

However, it can be argued that the present period of labour migration, far from being independent from earlier colonising movements, was ushered in by the process of colonisation. This occurred as colonists disrupted a pre-existing native economy so as to force migration of a newly created 'surplus' population and procure replenishment for an exhausted domestic labour supply.

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7 Alejandro Portes, n.1, p.25.
8 ibid., p.23.
According to Portes, the progressive disappearance of incorporated areas and economic frontiers after the consolidation of world capitalism thus transformed immigration from a movement of 'advanced' populations settling backward lands, to one in which 'backward' populations were induced to fit the needs of more advanced economics.\(^9\)

Migration from old world to the new constitutes the first truly large voluntary migrations in recorded history. The attraction of the new world continues even today, particularly with respect to North America. But, compared to the past, migration with the primary intention of permanent settlement has much diminished in the post-War period. This is mainly due to strict restrictions imposed by host countries. Governments now regulate immigration strictly according to national interests. Migration is no longer an open invitation to any wishful migrant, it is an important and selective part of the series of policies of the states, developed or developing, to build or sustain economies which either are complex and modern or wish so to become - observes Gregory Henderson.\(^10\)

Apart from the US and Canada, only Australia, New Zealand and Israel still accept permanent primary immigrants. Even in these countries, migration is not an unrestricted process, but is strictly restricted according to well defined norms and qualifications.\(^11\) Permanent migration comprises mainly of family migration for settlement and more recently refugee settlement. Changes in immigration laws, combined with increasing inequalities between developing and developed countries has brought about a diversification of sources of immigrants.

\(^9\) ibid., p.25.
International migration now encompasses a wide variety of types of movement. While the migration for permanent settlement has declined, temporary migration has grown rapidly and occurs in various forms. Historically, it received the largest boost in the post-War reconstruction and re-industrialisation of Europe. Beginning in the late 1950s and continuing into the early 1970s, the economic miracle of Western Europe relied largely upon labour from the Mediterranean countries. United States and Canada relied heavily on Mexican labour to mitigate post-War labour shortages. Temporary migration characterises migratory flows in Asia also. In Singapore, more than 9 per cent of the labour force is made up of non-resident temporary workers. In Southern Africa, formalised recruitment of labour from other African countries for South African mines and farms has been always on a temporary basis. Temporary migration has assumed its most significant growth in the 70s as a result of the historically unparalleled development of the Middle East oil-exporting countries. In short, temporary migration has been global in its distribution and constitutes a significant proportion of international population movements.

It was envisaged that the temporary workers who came under formal government contracts, particularly in Western Europe, would serve only as guest workers and would return to their home countries after a few years of service. However, in a great many cases, these guest workers became permanent residents and have presented new challenges to the host countries in terms of the socio-economic integration and socio-cultural adaptation of both the immigrants themselves and their children.

Adoption of more restrictive immigration policies in major immigrant receiving countries has resulted in a tremendous increase in the phenomenon of

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13 ibid.
undocumented or clandestine migration. It has become one of the fastest growing forms of migration in the world today. Although reliable estimates of undocumented migration are hard to obtain, the phenomenon is evident both in the more developed and in the less developed regions. A good deal of clandestine migration occurs to the major traditional immigrant receiving countries like the USA, Canada, Australia etc. European countries also experience a considerable amount of illegal migration.

ILO estimated that in 1991 there were 2.6 million undocumented aliens in Europe. In South-East Asia, much of Malaysia’s foreign labour force is undocumented while many of Singapore’s foreign workers are illegally recruited. In Japan, illegal labour migration assumed serious proportions in late 1980s. The Ministry of Justice reported that the number of foreigners who had overstayed their visas reached 2,80,000 in May 1992. In Latin America, major part of the labour flow from Columbia to Venezuela and from Bolivia to Argentina is undocumented. Substantial flow of illegal migration takes place within the continent of Africa also. In brief, illegal migration has emerged as a global phenomenon and governments are increasingly concerned over the large tide of illegal migrants.\(^{14}\)

Besides the various types of ‘voluntary’ migration discussed above, ‘involuntary’ migration in the form of ‘forced’ or ‘impelled’ movements also takes place in considerable amount. Migration motivated by political upheaval or ecological disasters come under this category.

However, labour migration has established itself as the dominant form of international migration in the present century. It has assumed a cyclical and

regulated pattern after World War II and its major form is import of reserve labour from lower wage zones to higher wage zones. These features are most marked in the post World War II movement of labour into Western Europe. Reserves had been drawn from exogenous surplus labour pools at the southern end of the continent, from north and central Africa and from the Middle East, South Asia and Caribbean.\textsuperscript{15}

Table 2.1

<table>
<thead>
<tr>
<th>Region of Origin</th>
<th>Annual Number of Emigrants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>44515 (2.2)</td>
</tr>
<tr>
<td>Northern Africa and Western Africa</td>
<td>167613 (8.3)</td>
</tr>
<tr>
<td>Eastern and South Eastern Asia</td>
<td>82481 (4.0)</td>
</tr>
<tr>
<td>Southern Asia</td>
<td>49763 (2.4)</td>
</tr>
<tr>
<td>Latin America</td>
<td>180898 (8.9)</td>
</tr>
<tr>
<td>Developed Countries</td>
<td>1498100 (74.0)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2023370 (100)</strong></td>
</tr>
</tbody>
</table>

* Australia, Belgium, Canada, France, western Germany, the Netherlands, New Zealand, Sweden, the United Kingdom and the United States.


As stated earlier, modern international migration takes place mainly from developing to developed countries. Although there is evidence of rising levels of

migration from developing to developed countries, accurate statistics on the number of emigrants originating in each country of the world is not available. However, available information on the migrant intake of the major receiving countries of the developed world permit the calculation of the average annual number of persons originating in different less developed regions as well as in the more developed regions who were admitted as migrants during specific periods. Table 2.1 gives the estimated migration from major world regions to selected developed countries of the world, viz., Canada and United States in North America, Australia and New Zealand in Oceania and Belgium, France, Germany, the Netherlands, Sweden and the United Kingdom in Europe. Because only ten developed counties are considered, the estimates presented in the table are only indicative of relative levels.

The table shows that 74 per cent of international migrants during 1965-69 originated in developed countries whereas developing countries together accounted for 26 per cent. While the share of developed countries declined to 40.5 per cent during 1980-84, the share of developing countries increased to 55.5 per cent. However, during 1985-89, there was a small increase in the share of developed countries (49.1 per cent) while the share of developing regions marked a decline (50.9 per cent). This data shows that while migration from developing countries to developed countries has increased considerably after 1960s, migration within the developed region also continues in considerable proportion.

In general, temporary labour migration has been the dominant form of present day international migration and governments exercise greater degrees of control on migration. There has been a marked trend in host countries towards closing door policy. In spite of the strict control over the migration of unskilled labourers and other settlers in host countries, developed countries encourage a new class of immigrants - highly qualified professionals and technical personnel. This shift from labour migration to the migration of high quality manpower is most
pronounced since the World War II and is widely referred to as brain drain or reverse transfer of technology.

A UNITAR study conducted by Gregory Henderson lists out the major features of post-War international migration, as follows:

a) there are numerous flows of skilled and trained persons from developing to developed countries;

b) these flows are, however, currently characterised by large flows from a comparatively small number of developing countries to a small number of developed countries and by smaller flow from an increasingly large number of developing countries;

c) in these flows, engineers medical personnel and scientists have unusually large weight;

d) the above flows have mounted rapidly in recent years until the 1968-69 fiscal year;

e) the greater the skill or training on the whole, the greater the susceptibility to migration tends to be;

f) the flows increasingly respond to the changed economic complexity of world societies and to legislation, much of it new, which reflect the demands of a new economic era;

g) the above flows relate to flaws in national educational systems and to the poorly planned or unplanned training of students from developing countries in developed countries; and

h) except possibly for South America, there have been, at least until 1968-69 no signs that the above talent migration is decreasing; there are fairly definite signs that its increase will, under present conditions, probably mount with some rapidity on a long term basis.
The qualitative change in the occupational pattern of immigrants owes its origin to the resurgence of economic growth in the developed countries in the post-War era intensified by the modern technological revolution. Rapid economic development accompanied by a quick succession of technological innovations generated increasing demand for highly qualified and skilled labour. The era when industrialisation was based on the introduction of automatic machines and processes which reduced the needs for human skills to quite a low degree is long past. Modern industrialisation induced growth has become increasingly skill and education intensive. Specialised scientific knowledge and technology have become the major component in the global competition for power. As already mentioned in the previous chapter, knowledge itself has become a commodity that is directly related to the operation of the market economy and the market economy is increasingly taking on the characteristics of a single capitalist economy. Under these circumstances, science and technology has become crucial national resources, as important as land and capital for maintaining and expanding a nation's economic and political power in the world system.

There is a hierarchical structure embedded in the international science and technological system that has resulted in the migration of high level manpower from developing to developed countries. Hence, this phenomenon stems primarily from the stratified nature of the global economy. The nature and pattern of high level manpower migration or brain drain, therefore, reflects the structure of the global economy which is unevenly stratified.

To outline the geographical pattern of brain drain is a difficult task due to the complexity involved in the migration networks. Besides, statistics on brain drain is inadequate; incomplete for some countries and completely lacking for some others. However, the available statistics provide trends and indications of the approximate dimensions of professional migration.
According to Brinley Thomas, the pattern of international flows may be obtained by dividing countries into four groups:

1. Advanced countries with a large net inflow;
2. Intermediate advanced countries with a large two-way traffic;
3. Advanced countries with a large net outflow;
4. Developing countries with a large net outflow.\(^\text{16}\)

United States and Australia are the two countries in the first group, advanced countries with a large net inflow. The United States is by far the largest and the preferred ultimate destination of professional immigrants. In the second group are Canada and the United Kingdom. Many immigrants of varying degrees of skill move by stages out of low-income countries via intermediate to more advanced ones, forming currents of migration determined by the magnetic influence of the richest destinations. The third group advanced countries with a large net outflow, consists mainly of European countries such as Norway, the Netherlands and Switzerland. Finally, there is a heterogeneous fourth group of underdeveloped countries with relatively large net outflow.\(^\text{17}\)

United States is the largest importer of human capital in the world among the developed countries. The number of immigrants to the United States in the professional, technical and kindred (PTK) grades rose from 18,495 in 1956 to 41,652 in 1967 or by 125 per cent, and among them the rate of increase was 215 per cent for engineers (2,804 to 8,822), 189 per cent for scientists (1,002 to 2,893) and 129 per cent for doctors (1,547 to 3,557).\(^\text{18}\) The figure for 1995 was 59,015 (PTK),

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\(^\text{16}\) Brinley Thomas, n.4, pp.308-10.

\(^\text{17}\) ibid.

9,584 (Engineers), 4,524 (Scientists) and 4,199 (Doctors).19 (The US experience in this regard has been discussed in detail in Chapters III, IV and V).

This rapid increase in immigration of high quality manpower to the United States is associated with rapid economic and technological development in the United States. Just a century ago, Europe had a near monopoly of innovation. However, developments in modern science and technology demanded more expensive physical facilities and equipments than before. And quite naturally the United States, which emerged as the dominant economic power in the world, has took over the technological leadership in the post-War period from Europe. Illustrating this point, Charles Iffland and Henry Reiben observed: “Today, a cleavage has developed, and capacities for innovation have concentrated where funds for research are large enough to permit the serious contemporary scientific and technological problems to be dealt with effectively and solved, so that in science and technology, which have become increasingly more complex, real progress can be made.”20 With its emergence as the technological leader, United States began to witness the arrival of large number of engineers and scientists from Europe and other parts of the world.

Table 2.2 would illustrate the magnitude of emigration of scientific and technical personnel from Europe to the United States. The table shows the number of scientific and technical personnel migrated to the United States from European countries and Canada during 1956 to 61. Only two categories, i.e. scientists and engineers are included in the ‘scientific and technical personnel’.

Table 2.2

Movement of Scientific and Technical personnel to the United States, 1956-61

<table>
<thead>
<tr>
<th>Country of last Permanent Residence</th>
<th>Immigrants to the US Annual Average 1956-1961</th>
<th>Percentage of immigrants among scientific and technical personnel graduated in 1959</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scientists</td>
<td>Engineers</td>
</tr>
<tr>
<td>Germany</td>
<td>124</td>
<td>301</td>
</tr>
<tr>
<td>France</td>
<td>26</td>
<td>56</td>
</tr>
<tr>
<td>Netherlands</td>
<td>34</td>
<td>102</td>
</tr>
<tr>
<td>UK</td>
<td>155</td>
<td>507</td>
</tr>
<tr>
<td>Total for Western Europe</td>
<td>339</td>
<td>966</td>
</tr>
<tr>
<td>Austria</td>
<td>23</td>
<td>43</td>
</tr>
<tr>
<td>Greece</td>
<td>14</td>
<td>50</td>
</tr>
<tr>
<td>Ireland</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td>Italy</td>
<td>29</td>
<td>42</td>
</tr>
<tr>
<td>Norway</td>
<td>6</td>
<td>72</td>
</tr>
<tr>
<td>Sweden</td>
<td>8</td>
<td>97</td>
</tr>
<tr>
<td>Switzerland</td>
<td>38</td>
<td>96</td>
</tr>
<tr>
<td>Total for Europe including other European countries</td>
<td>549</td>
<td>1684</td>
</tr>
<tr>
<td>Canada</td>
<td>212</td>
<td>1027</td>
</tr>
<tr>
<td>Other Countries</td>
<td>353</td>
<td>1044</td>
</tr>
<tr>
<td>Total - All Countries</td>
<td>1114</td>
<td>3755</td>
</tr>
</tbody>
</table>

* Estimate

The number of scientific and technical migrants given in the table is the annual average for the period 1956 to 61. The total number of scientific and technical personnel who migrated to the US from Europe was 2,233 while corresponding figure was 1,239 for Canada and 1,397 for countries other than Europe and Canada. Share of each country varied widely from 425 for Germany to 45 for Ireland. The number of engineers was larger than that of scientists for all the countries. An annual average of 4,869 scientific and technical personnel migrated to the US during 1956-61 while the engineers was 3,755 and scientists 1,114. The table also shows the percentage of total scientific and technical personnel graduated in 1959 who migrated to the US. Germany’s 6.1 per cent of scientists and 9.8 per cent of engineers graduated in 1959 migrated to the United States. Corresponding figures for other countries were as follows: France 5 and 1.2, Netherlands 7.9 and 21.8, and the United Kingdom 2.6 and 17.2. For Switzerland the percentage for migrants was as high as 10.6 (scientists) and 22.4 (engineers) and for Canada 12.5 and 48, respectively.

This rapid shift in the migration pattern was a consequence of the changes in the economic structure in both Europe and the United States. During the post-War period, United States began to replace Europe as the leader of technological innovations. Though Europe was not behind in many fields like high-voltage electricity, metallurgy, plastics or synthetic fibres, it was not on level with the US in the decisive industries such as computers, electrically programmed machine tools, semiconductors, jet aviation, or satellite communication characterised precisely by their very high use of scientists.21

Ambroise Rouse, Director General of the Compagnie générale d’électricité (CGE), has cited some striking figures to elucidate the superiority of the American companies’ research efforts. With a sales volume of 2.1 billion francs

21 ibid., pp. 60-61.
in 1964, the CGE (50,000 persons) was the largest French company in the electronic-electro technical sector. It devoted 120 million francs to R&D or 5.5 per cent of its sales volume, which was higher than the sector average. Now the sales volume of General Electric (2,70,000 persons) the American competitor of the CGE is 13 times the CGE's; its R&D represents 9 per cent of sales or an amount of nearly 3 billion Francs, 25 times what CGE can devote to it. Profit is $1,000 per person at General Electric, as against $190 at CGE. This, in part, explains the superiority of the American companies in research efforts and gives an approximate account of the disparity between the absorptive power of the large European companies and its American counterparts.22

The aggregate result of these disparities is that with nearly equal populations, the United States and Europe stand in a ratio of 4 to 1 in the amount of funds devoted to research, $24 billion in the US (two thirds of which is borne by public authorities) as against only $6 billion in Western Europe.23

The great disparity in research efforts was mainly responsible for the migration of European scientists and engineers to the United States. The superiority of the US in R&D field can be observed from the selected R&D indicators given in Table 2.3.

United States' intake of scientific and technical personnel tremendously increased during 1960s. By 1965, immigrants with occupations had doubled over 1947, but professional, technical and kindred workers had nearly tripled moving from 16 per cent to 22 per cent of all immigrants with occupations, by 1968, they had nearly quintupled, to 48,753 and 23 per cent of all immigrants with occupations. Among these, engineers, scientists and medical personnel had gone to


11,749 or almost quintupled by 1965. From this level, these categories rose to 15,848 in 1967 and to 16,492 in the year ending 30th June 1968.24

Most striking point was the rise in the immigration of professionals from developing countries. From 300-400 level in 1947, such immigration rose to 2,231 in 1956 and 3,604 in 1965 to 13,221 in 1968 (52 per cent of all scientists, engineers and medical personnel). Within these overall increases, the immigration of scientists rose nearly ten times and that of engineers nearly six times between 1956 and 1967.25 The number of immigrating scientists and engineers born in Europe declined by almost half while those born in Asia rose from 4,400 to 5,300. Among the developing countries the contribution of Asian countries (excluding Japan) jumped from about 2,000 in 1965 to 13,000 in 1967.26

The sudden change in 1966-67 was the result of the Act of October, 1965 which abolished the quota system based on national origin and substituted it with a new system of preferences based on family relations and skill levels. The Act provided for, as shall be discussed in the following chapters in detail, a transition period of three years, July 1, 1965 to July 1, 1968 during which the national origins system was to be phased out enabling qualified applicants in the ‘third preference’ category from countries with oversubscribed quotas to be given quota numbers unused by countries with large quotas, until the annual limit of 17,000 was reached.27 This led to the sharp increase in the number of immigrants to the US from developing countries in 1967 and 1968.

### Table 2.3
Selected R&D Indicators For Selected Countries

<table>
<thead>
<tr>
<th>Countries</th>
<th>Scientists &amp; Engineers engaged in R&amp;D per million population</th>
<th>Scientists &amp; Engineers engaged in R&amp;D</th>
<th>National Expenditure on R&amp;D at current prices (million US Dollars)</th>
<th>R&amp;D as Percentage of GNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel</td>
<td>4826 (1984)</td>
<td>-</td>
<td>1152.5 (1990)</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: (1) UNESCO Year Book (Paris, 1997).
(2) Govt. of India, Department of Science and Technology, *R&D Statistics 1993-95* (New Delhi).
Professionals and people with outstanding ability in the science and arts comprise the third preference group which must not exceed 10 per cent of the total of 1,70,000 in any year. Another 10 per cent was allocated to the sixth preference group covering skilled and unskilled workers, including scientists and engineers. The immigration of these categories has had the effect of relieving shortages of labour in the United States.\(^{28}\) (See Chapter III for a detailed discussion)

This change in the policy was designed after taking into consideration the manpower requirements of the United States in order to satisfy its economic and defence targets. Domestic supply of high level human resources plus the small and declining supply from Europe was inadequate to meet the growing national demand for high level manpower and the 1965 change in immigration law was an effort to facilitate the inflow of high quality manpower from an alternate source - developing countries.

The changes in the immigration laws had the effect of raising the share of developing countries in the total immigration of high quality manpower to the United States while the share of Europe marked a sharp decline. Table 2.4 illustrates the changes in the share of Europe and other continents in total US intake of HQM after the passage of the 1965 law.

Table 2.4 shows that the share of Europe which was 37 per cent in 1964 and 37.8 per cent in 1965 began to decline after 1965 and was only 23.8 per cent in 1968. However, the share of Asia which was only 9.6 per cent of the total PTK immigration in 1964, increased to 41.4 per cent in 1969. Share of North America and South America also declined after the 1965 Act, whereas the share of Africa marked an increase and Oceania's share remained more or less stable.

\(^{28}\) Brinley Thomas, n.4, p.312.
Table 2.4

Immigration of Professional Technical and Kindred Workers* Before and After the Passage of the Act of October 3, 1965**

<table>
<thead>
<tr>
<th>Area of Last Residence</th>
<th>Fiscal Year 1964</th>
<th>Fiscal Year 1965</th>
<th>Fiscal Year 1966</th>
<th>Fiscal Year 1967</th>
<th>Fiscal Year 1968</th>
<th>Fiscal Year 1969</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>28756(100.0)</td>
<td>28790(100.0)</td>
<td>30039(100.0)</td>
<td>42652(100.0)</td>
<td>48753(100.0)</td>
<td>40427(100.0)</td>
</tr>
<tr>
<td>Europe</td>
<td>10677 (37.1)</td>
<td>10910 (37.8)</td>
<td>10565 (35.1)</td>
<td>13119 (30.7)</td>
<td>14878 (30.5)</td>
<td>9647 (23.8)</td>
</tr>
<tr>
<td>Asia</td>
<td>2778 (9.6)</td>
<td>2078 (7.2)</td>
<td>5628 (18.7)</td>
<td>12382 (29)</td>
<td>13036 (26.7)</td>
<td>16744 (41.4)</td>
</tr>
<tr>
<td>North America</td>
<td>10709 (37.2)</td>
<td>11546 (40.1)</td>
<td>10198 (33.9)</td>
<td>12835 (30)</td>
<td>16425 (33.6)</td>
<td>9496 (23.5)</td>
</tr>
<tr>
<td>South America</td>
<td>3889 (13.5)</td>
<td>3562 (12.4)</td>
<td>2813 (9.4)</td>
<td>2126 (4.9)</td>
<td>2887 (5.9)</td>
<td>2277 (5.6)</td>
</tr>
<tr>
<td>Africa</td>
<td>403 (1.4)</td>
<td>352 (1.2)</td>
<td>441 (1.4)</td>
<td>668 (1.5)</td>
<td>1009 (2.0)</td>
<td>1810 (4.5)</td>
</tr>
<tr>
<td>Oceania</td>
<td>297 (1.0)</td>
<td>339 (1.1)</td>
<td>392 (1.3)</td>
<td>522 (1.2)</td>
<td>518 (1.0)</td>
<td>453 (1.1)</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* Includes Immigrants who entered the United States as temporary visitors who adjusted status under Section 245 of the Immigration and Nationality Act.
** Effective Date, December 1, 1965.
The non-return of foreign students plays a significant part in causing the inflow of professional immigrants to be as large as it is. In 1967 as many as 48 per cent of the 7,913 scientists, engineers and physicians recorded as immigrants to the United States were students who had entered the country with the declared intention of obtaining education or training and then returning home. But after obtaining their degree they adjusted their status to a permanent resident alien by turning in their 'F' student visa for an immigrant visa. The ratio of student to total professional immigration in 1967 was 89 per cent for Taiwan, 80 per cent for Korea 78 per cent for India and 71 per cent for Iran. 29

Nearly all the students from developing countries who did not go home were either scientists or engineers. Of the 1980 and 1981 foreign citizens receiving science and engineering doctorates, about 60 per cent of the engineers, over 50 per cent of physical and mathematical scientists and 40 per cent of other scientists remained to work in the United States. About 80 per cent of the increase in foreign origin scientists and engineers between 1972 and 1982 consisted of persons who were science and engineering students in the United States. 30

Apart from the United States, Australia is the major immigrant receiving country with a large net inflow of manpower. Immigration has a major share in Australia’s population growth. Because of its geographic isolation, Australia took its role in the immigration market one step farther than did the US or Canada. To make its offer more lucrative, the Australian government assisted many immigrants by incurring part of the immigration and resettlement costs. Of the 2.5 million settlers who migrated to Australia between 1788 and 1939, nearly half did so with

the government assistance. Large numbers of immigrants were recruited after World War II to ensure an adequate supply of labour for the growing economy. Between 1943 and 1983, immigration accounted for 40 per cent of population growth and by 1981, 21 percent of the Australian population was foreign born.

From the foundation of that state, Australia has followed a policy of ‘White Australia’ immigration, firmly oriented towards Europe and received a disproportionately high share of the immigrants from the UK and other European countries. During 1947-61, the origins of its immigration were mainly from the United Kingdom (32 per cent), North Europe (18 per cent), East Europe (20 per cent) and South Europe (27 per cent) and only 3 per cent were from the rest of the world. Except for Greece and Yugoslavia, developing countries have played a small role in Australia’s total immigration. Financial assistance was rarely granted to non-European immigrants.

As regards the occupational pattern, those coming from South Europe were mostly unskilled labour or craftsmen. Among professionals, 14,115 of the 29,568 overseas-born professionals in the 1966 census were born in the United Kingdom and 22 per cent of Australia’s male professional manpower were foreign born. However, Australia has been slowly changing its exclusive reliance on developed countries. In 1956, an immigration category for “distinguished and highly qualified Asians” was introduced. By 1966, regulations promoting immigration of skilled professional non-European labour on terms allowing naturalisation in five years were issued. By the end of 1960s, a trend of gradually increasing immigration from Asia, especially from India, Pakistan and from among ethnic Chinese and several

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33 UNITAR, n.10, p.21.
34 ibid., pp.21-22.
Asian countries has established itself.\textsuperscript{35} Table 2.5 describes overseas-born professionals working in Australia in 1966 by birthplace and occupation.

In 1972, Australia formally abolished the 'White Australia' policy and enacted an immigration policy that do not discriminate on the basis of national origin or race. While Australia's increasing political and economic alignment with Asia is pointed out as the major factor that led to the adoption of the non-discriminatory immigration policy, pressure of increasing number of potential immigrants and changed economic circumstances in the 1970s are also held responsible for reduction in immigration intake.\textsuperscript{36}

Along with a shift to a non-discriminatory policy, Australia has made her immigration policy more restrictive. And in the light of a more restrictive policy, the question of what type of immigrants Australia should be accepted became the major issue. According to the new law, visas were allocated among the applicants through a point system which generally emphasises educational background and occupational skills.\textsuperscript{37} It was Australia's growing demand for high quality manpower that led to the preferential treatment to highly educated immigrants.

In general, Australia's immigration programme is categorised into family, skilled and humanitarian categories. While the policies of the 1970s stressed skilled immigration, those in the 1980s stressed family and humanitarian immigration. The 1990s have seen the reintroduction of an emphasis on expanding the skilled components of its immigration programme by admitting immigrants best able to contribute to economic development and the well-being of the Australian community.\textsuperscript{38}

\textsuperscript{35} ibid., p.22.
\textsuperscript{36} Deborah A Cobb-Clark and Marie D Connolly, n.32, p.672.
\textsuperscript{37} George J. Borjas, n.31, p.204.
\textsuperscript{38} Deborah A Cobb Clark and Marie Connolly, n.32, p.672.
Table 2.5
Foreign Professionals in Australia by Birthplace and Occupation - 1966

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Country of Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>India</td>
</tr>
<tr>
<td>Architects, Engineers and Surveyors</td>
<td>201</td>
</tr>
<tr>
<td>Chemists, Physicists, Geologists and</td>
<td>87</td>
</tr>
<tr>
<td>Natural Scientists</td>
<td></td>
</tr>
<tr>
<td>Biologists, Vets, Agron and Scientists</td>
<td>27</td>
</tr>
<tr>
<td>Medical Practitioners and Dentists</td>
<td>85</td>
</tr>
<tr>
<td>Nurses</td>
<td>16</td>
</tr>
<tr>
<td>Other Professional medical workers</td>
<td>9</td>
</tr>
<tr>
<td>Teachers</td>
<td>272</td>
</tr>
<tr>
<td>All Professionals</td>
<td>681</td>
</tr>
<tr>
<td>All Occupations</td>
<td>6669</td>
</tr>
<tr>
<td>% of Professionals to Total</td>
<td>10.2</td>
</tr>
</tbody>
</table>

The skilled category consists of employer nominations, business migration, independent and the distinguished talent components. The percentage of the total migration stream allocated to skilled migrants have varied from 10 percent in 1984-85 to 40 percent in 1990-91. The present government has decided to increase the number of skilled migrants by 44,000 or 18.6 per cent while the general immigration programme is decided to be slashed by 10,000 during 1996-97.39

Independent migrants to Australia continue to be accepted or rejected on the basis of a point test which was designed to judge their employability. Like all migrant categories, they are subject to numerically planned intake levels announced each year by the Minister for immigration. Adjustments can be made at any time to the planned intake level or to the pass mark of the point test to control the number of immigrants granted visas.40

As in the case of the United States, student immigration continues to be a major part of the HQM immigration to Australia. It is known that at least 2,400 of 12,000 Asian students in Australia during the mid 1960s expressed their desire to remain there. In Australia, as part of its plan to increase exports and earn more foreign exchange, the government has launched a deliberate drive to attract full fee paying students. To attract students, universities and other institutions in Australia receive incentives from the government. Moreover, the government supports free English language training and arranges publicity and dissemination of information about training opportunities in Australia. The bulk of foreign students attracted to Australia by those incentives are from Asia, a region that is rapidly expanding its economic, political and population ties to Australia.41

39 ibid.
40 ibid., p.676.
Besides the United States and Australia, Canada is the world's another major immigrant receiving country. Until 1961, Canadian immigration law permitted only the entry of persons originating in a few selected countries - such as the United States, the United Kingdom, Ireland and Australia or of persons who were dependants of Canadian residents. Major policy changes in 1962 and 1967 removed the national origin restrictions and shifted the emphasis in the visa allocation system towards skill requirement. Under the non regulations, applicants for entry into Canada were classified into three categories: sponsored immigrants which included close relatives of Canadian residents, nominated relatives which included more distant relatives of Canadian residents and independent immigrants.42

Visa applicants in the last two of these categories were screened by means of a point system. Potential immigrants were graded on a scale of zero to one hundred. Points were awarded according to the applicant's education, occupational demand, age, arranged employment, a "personal assessment" by the immigration officer based on the applicant's motivation and initiative and other factors. Generally, an applicant needed to obtain at least fifty points in order to pass the test and to be awarded an entry visa. Nominated immigrants could obtain from 15 to 30 extra points if an appropriate relative agrees to the nomination requirements. Such an applicant would be required to obtain 20 to 35 points from the other point categories. The objectives of the point system was to meet the manpower needs of Canadian economy in addition to family re-union goals.43

Due to the policy change, there was rapid increase in all varieties of immigration into Canada during 1962-67. Canada's proportion of professional, technical and kindred workers to all immigrants with occupations increased from

16.9 per cent for 1946-65 to 28.3 per cent in 1967 and 30.6 per cent in 1968. This proportion has been even higher than that of the US, which was 11.1 per cent between 1947-65, 27.2 per cent in 1967 and 21.5 per cent in 1968. Professional and skilled labour was 67 per cent of immigrant entry to Canada in 1965 while general unskilled labourers were only 9.5 per cent; 5,737 unskilled labourers entered in 1964 as opposed to 11,965 professionals.44

Before 1962, professional immigration to Canada was mainly from Britain, US and other European countries. The percentage of professionals immigrating to Canada from countries other than United States, Britain and other European sources rose from 7.2 per cent in 1946 to 27.6 per cent in 1963; in 1967, 37 per cent of Canadian professional immigrants came from outside the United States and Europe.45

Canada is also an important way station for professionals entering the United States. It is an intermediate advanced country with a heavy two way traffic of migrants. Between 1950 and 1963, there was an average annual inflow of 7,790 professional immigrants; 1,230 of them from the United States, whereas the annual outflow was 5,476 with 4,681 going to the United States. Thus, in order to retain an average of 2,314 professional immigrants per annum, Canada had to import 7,790 per annum. It is evident that many professionals who migrate to Canada are en route to the United States. In 1962-63, the United States received 2,316 scientists and engineers who recorded Canada as their country of last permanent residence, whereas the number who were Canadian born was only, 1,159. Thus, one out of every two of the scientists and engineers who crossed the border as emigrants was a non-Canadian who had resided temporarily in Canada.46

44 UNITAR, n.10, p.19.
45 ibid., p.20.
Canada amended its immigration Act in 1976. Under the new Act, there was an explicit commitment to link immigration flows to demographic needs and economic conditions in Canada. A revised point system was developed with the same categories as previously, but with different point values. In addition, an independent applicant is required to have a job offer and to obtain at least two points for experience in the occupation to be undertaken and one point for job demand. The Act reaffirmed the non-discriminatory policy regarding origin. In 1979 Canada made a commitment to admit Indo-Chinese refugees. To some extent, Canada enacted a weak version of the 1965 amendments to the US immigration law eleven years after the United States law was passed.47

These policy changes led to a major redistribution of Canadian entry visas among source countries. For instance, 70 per cent of immigrants entering Canada in the 1960s originated in the United Kingdom or other European countries. During 1970s, the fraction of the immigrant flow originating in Europe was cut by half, to 37 per cent. At the same time, the fraction of immigrants originating in Asia almost quadrupled, from 8 per cent in 1960s to 29 per cent in the 1970s.48

Like Canada, United Kingdom is a country with a two way traffic of migrants. But its case is different from that of Canada. As the world’s leader in the era of industrial revolution, the United Kingdom had, from the 18th century, been a centre of attraction for immigrating professionals and men of talent and likewise, an outstanding exporter of talent, especially to the many places which were her colonies. In the 20th century, her role as the leader of technological revolution has been replaced by the United States. Her role as an exporter and importer of talents still continues; but with much diverse effect from that in the colonial era when the

47 Charles B. Keely, n.43, pp. 200-1.
emigration of talent was state sponsored and followed the pattern of physical capital migration seeking profits overseas. However she gains as an importer of talent from developing countries, as in the colonial era.

During 1961-66, England received 19,000 professional and skilled persons in permanent work positions, very largely from developing parts of the common wealth, while she has seen mounting numbers of her new supply of engineers and scientists emigrate.\textsuperscript{49}

Significant immigration into the United Kingdom has long been chiefly confined to common wealth countries. From 1952 until 1962, such immigration was unlimited and the overwhelming percentage of it was of unskilled labour, mostly from India, Pakistan, the West Indies and Ireland. United States McCarran-Walter Act of 1952 effectively cut off West Indian immigration to the United States and it led to a sharp increase in West Indian immigration to the UK. The unintentional diversion of this flow to Britain eventually brought about the Common Wealth immigration Act of 1962 by which Common Wealth citizens wishing to come for long periods to the UK must obtain a voucher issued by the Ministry of Labour to those who either (Voucher A) have a specific job offer from a UK employer or (Voucher B) possess certain specific qualifications or skills of graduate or near graduate status or (Voucher C) all others (including unskilled labour)\textsuperscript{50}

Vouchers 'C' dropped from 17,494 in the first year to 2,221 in the third year and was discontinued after 1964. In the same year, 3,300 teachers, 1,600 engineers, 1,300 nurses and 800 doctors immigrated from developing Common Wealth

\textsuperscript{49} UNITAR, n.10, p.26.
countries to the UK. In 1965, a white paper on Common Wealth immigration did away with Vouchers under clause ‘C’ entirely. At the same time, it defined more sharply the skills needed in category ‘B’ to include doctors, dentists and trained nurses, qualified teachers, graduates in science and technology with at least two years experience since graduation and non graduates with certain professional qualifications and two years experience. During mid-1960s, medical doctors were receiving over 70 per cent of category ‘B’ vouchers which are roughly two thirds of all issued work vouchers. In 1965, Great Britain had a stock of 62,700 economically active doctors. Of these 10,000 were born outside the British Isles and two out of every three of these non-British doctors had come from developing countries, mainly India and Pakistan. In 1967, the graduates of non-British medical schools who established practice in Britain (2,053) outnumbered those who had qualified at home (1933)\textsuperscript{51}

‘A’ category Vouchers had fallen from 8,644 in 1965 to 2,875 or 35 per cent of the total in 1966, while ‘B’ category Vouchers rose to 5,424 or 65 per cent of whom 5,141 or all but 321 came from developing countries within the Common Wealth. Of the 4,600 work vouchers actually issued between June and December 1967, more than half were issued to medical staff. It shows a trend which has cut unskilled immigration almost to nothing (except for dependants) while maintaining a level of skilled and professional immigration at a high rate at least relative to Britain’s population. British reliance on medical manpower from developing countries has been some what greater than that of the US.

Statistics in other areas are unsatisfactory. It appears, however, that British permanent importation of scientific and engineering personnel is far less than that of medical personnel. In these fields, Britain absorbs very few professionals compared to the United States and Canada.

\textsuperscript{51} Ibid., p.602.
Owing to the non availability of British official statistics, it is only possible to arrive at estimates of outward flows of professional manpower by using the records of the main countries of destination. In February 1967, the Minister of Technology gave an estimate of Britain's net loss of scientists and professional engineers through emigration during the period 1958-63. "From 1958 to 1963, excluding students returning home, 19,000 British and Common Wealth scientists and engineers of graduate level left this country and during the same period 15,000 came in. We thus lost 4,000 net over six years." According to British and Canadian sources, the number of British scientists and engineers emigrating to North America went up from 1,261 to 1948 between 1962 and 1964, a rise of 55 per cent. However, Britain is estimated to be a net loser in the immigration market. In this migration system, underdeveloped countries are the ultimate losers. Emigration of British professionals to more developed countries like United States and Canada is perhaps compensated by migration of added number of professionals from underdeveloped countries to Britain.

Other developed countries with a substantial immigration of professionals are Netherlands, France and Germany. Netherlands is an interesting case of immigration to a former colonial country. Generally, labour permits for foreigners are difficult to obtain. However, there is substantial brain drain from former colonial countries to Holland. 32 per cent of the students from developing countries who graduated from the Philips Institute (mid 60s) did not return and the rate of non-return among the very good students was 60-65 per cent. Non return has been something of a problem among the Indonesian, Surnames and Antillian students in Dutch universities.

52 Brinely Thomas, n.46, p.35.
53 UNITAR, n.10, p.25.
Brain drain has been especially marked in medical fields. Of 37 medical graduates in 1968 from developing countries in the Netherlands, only one Suriname returned home. At the end of 1966, 160 Surinam physicians were practising in the Netherlands; Surinam itself in 1965 had only 144 physicians for a population of 3,20,000. There has been a net immigration of some 99 physicians to the Netherlands from Indonesia during 1960-65.54

France is another developed country with a large inflow of foreign professionals. But statistics are inadequate to give the real magnitude of immigration. Study by a special committee of the Education and World Affairs (EWA) shows that among the senior professionals 3.6 per cent or 27,320 were foreigners and of these nationals of former African colonies, Departments and Mandated territories numbered 2,280 or 8.3 per cent of the foreign total. In addition, in 1962, 1,060 foreigners are recorded as occupying intermediate medical and social service posts.55

Strict rules limiting the practice of medicine in France to French citizens and nationals of the French Union apparently make the French medical brain drain numerically less than that of other major western developed countries. Though there are certainly five hundred or more medical doctors of north African origin, there are said to be few foreign interns in French hospitals. Even so, in 1967-68, 50 of the 62 Cameroonian medical doctors working outside Cameroon were practising in France. There were 164 doctors practising in Cameroon in 1965-66 of whom 113 were expatriates. There were, hence, more Cameroonian physicians working outside Cameroon than inside and as many working in France as in Cameroon. Analogous

situations exist for Algeria, some 300 of whose physicians are practising in France, Morocco and Togo.\textsuperscript{56}

As regards the immigration of human capital from the former French colonies, almost all French statistics are known to be severe understatements since large proportions of professionals from former colonies are not considered ‘foreigners’ for formal statistical purposes, enjoy free movement in France and thus evade being caught in statistics. In fact, human imports from francophone countries is quite considerable. France probably receives a large share of African elite than any other developed country. French culture penetrated the colonies principally through the educational system, the deracinating influences of which were powerful while the opportunities for professionals in many of the countries were poor.

As in the case of other major receiving countries, a large number of students from Asia, Africa and the Antilles study in France and a major part of them remain in France after their studies. Hence, the non-return of students is the major channel of immigration in the case of francophone countries also. A study shows that the non-return of Cameroonian educated abroad, especially in France, now reaches each year since 1960 some 30 per cent of the total of Cameroonian ending their education abroad. It was an increase from the rate of 5 - 15 per cent in the periods before Cameroonian independence.\textsuperscript{57} A private survey of 1965 claims that 12,000 sub-Saharan African students have remained in France with their families against 11,000 who were then still pursuing their studies.

Thus, available data on international migration reveals that United States, Canada and Australia are the major recipients of HQM while the chief losers are

\textsuperscript{56} Paul Bourget Sack, “Formation et Evasion des Cartes au Cameroun” cited in UNITAR, n.10, p.38.
\textsuperscript{57} ibid.
Asian countries. African and Latin American countries also send out significant proportion of their educational output.

In the period from 1961 to 1972, approximately 3,00,000 scientific, technical and professional workers from all developing countries migrated to western nations. Australia, Canada and the United States together accounted for nearly half of the total flow. For the two countries for which data is available, Asians constituted a majority of the total flow from developing nations. The nearly 30,000 Asians who settled in Canada during this period made up 52 per cent of all highly educated labour from the developing countries to that country and the 65,000 in the United States comprised 72 percent of flow to that country.58

This substantial immigration which commenced in the mid 1960s has not abated. Between 1972 and 1988, approximately one fifth of a million Asians with training in science-based professions entered the United States from the four major sending countries - India, South Korea, China and Philippines.59

India is among the major contributors of HQM to the developed countries. The outflow from India which was mostly to England and Europe earlier has shifted towards the US since mid 60s. Every year large number of scientists, engineers, technologists and medical personnel migrate from India. For example, roughly one fourth of all B. Tech. graduates of Indian Institutes of Technology (IIT) so far produced are reported to have migrated permanently. 46 per cent medical graduates (1956-80) of India’s prestigious medical institute, All India Institute of Medical Sciences (AIIMS), have permanently settled abroad. In this group, 86.9 per cent migrants settled in the USA and the rest in Australia (4.7), the UK (3.1), Canada

59 ibid., pp 544-5.
(3.1), Gulf countries (1.6) and in Germany (.6). During 1967 - 1990, more than one lakh Indians in the professional technical and kindred workers category immigrated to the US.

African countries also lose substantial portion of their highly educated professionals. The magnitude of African emigration must be viewed in relation to the availability of such skills in the respective African countries from which the emigrants come, the quality of the skills that are being lost, and the acute need for such skills in the country of emigration. The cost of the emigration is compounded by the replacement of the emigrated professionals by expatriates at very high costs. It should also be noted that the total university population in most African countries is small between 1,000 and 2,000. The loss of even four to five students is a major problem. The continent spends over $4 billion on technical assistance annually. There are nearly 1,00,000 foreign experts in Africa - more than at independence. At the same times, Africa is sending large number of its scientific and technical personnel abroad. According to the UNDP, some 60 per cent of Ghanaian doctors trained in the 1980s are now working abroad leaving a critical shortage in Ghana’s health services. In 1978, 17 per cent of Sudanese doctors and dentists, 20 per cent of university teaching staff, 30 per cent of engineers and 45 per cent of surveyors immigrated. An estimated 70,000 Africans with middle and high level skills had left the continent by mid 1987.

Among the Caribbean nations, Trinidad and Tobago experiences considerable brain drain. Its brain drain consists especially of non-returning

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60 All India Institute of Medical Sciences, *Pilot Study to Evaluate the Phenomenon of Brain Drain among the Graduates of AIIMS*, Study conducted by Dr. Veena Kalra et. al., Sponsored by Department of Science and Technology, Government of India (New Delhi, 1992), p.1.
63 *ibid.*, p.254.
students, 45 per cent of whom go to the United States, 45 per cent to Canada and 10 per cent to the United Kingdom. Student non-return during 1962-68 was estimated at 30-40 per cent among those going aboard. Total professional and technical workers in Trinidad and Tobago number about 18,000. During 1962-68, 6,216 professional and managerial personnel emigrated to the United States, 3,004 to Canada, 682 to Britain and 570 to other countries. Of these about 84 per cent were skilled technicians, 16 per cent university trained professionals. This increase in the outflow of professionals has mainly been in response to the immigration laws enacted in the US, Canada and the UK in the 1960s.

Jamaica provides another specific example of the immediate results of immigration legislation shifts from racial to educational discrimination. The Common Wealth immigration Act of 1962 drastically reduced the number of West Indians who could immigrate to the United Kingdom. Just at the time that the Common Wealth Immigration Act took effect, new Canadian Immigration regulations were passed in 1962 which eliminated its previous racial bias. In 1965, 2,345 West Indians immigrated to Canada. Of these 561 or nearly a quarter were professionals. The professionals included 168 school teachers, 112 nurses, 67 doctors, 41 professional engineers, 36 accountant, 18 draughtsmen. All of these are developmental personnel which the Caribbean produced and possess in substantially smaller proportion than Canada does. The Canadian policy change in 1967 made immigration regulations completely universal so that, in 1967, of 3,459 immigrant Jamaicans, 403 were professionals. Much the same holds true for immigration from the West Indies to the United States. In fiscal year 1967, 1,712 West Indian engineers, scientists and medical personnel immigrated into the United States; in 1956, the same figure had stood at exactly 100. Within the Caribbean, Jamaica lost many of these professionals. In 1968, 2,652 professional, technical and

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64 UNITAR, n.10, p.43.
65 ibid., pp.44-45.
kindred workers entered from the West Indies; in 1969, this figure rose to 3,677 almost half in each case were provided by Jamaica.66

It is interesting to note that Singapore which had been a net loser in the immigration market in the 1970s has emerged as a net importer of highly educated labour. During the early 1970s, when the country was still in its early stages of development, prime Minister Lee Kuan Yew was one of the more vocal leaders of developing countries behind the brain drain debate. Now Singapore is the major recipient of skilled labour in the ASEAN region. In the 1980s, she adopted an immigration policy that favoured highly skilled migrants in order to stimulate the growth of high technology industries. That shift in policy allowed skilled and professional workers to be readily admitted for long term residence, whereas unskilled workers continued to be admitted under block permits and encouraged to repatriate as soon as their permits expired.67

Middle East OPEC countries also depend heavily on imported skilled and unskilled labour. In these countries, foreign faculty have been recruited to staff universities. For instance, Saudi Arabia has recruited university lectures, medical doctors, engineers and other technical and professional personnel from other Arab countries as well as from industrialised countries and from Asia and Africa. But the case of Saudi Arabia and other OPEC countries is different from that of the western countries rich in human resources and at the same time promote brain drain through legislation.

The geographical network of brain drain migration is almost complete with the above described migration channels. From these networks we can find that the international migration of high level manpower follows certain well defined pattern

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66 ibid.
which is in direct relation with the international economic and technological order. Almost all the countries of the world participate in these migration networks, but their position in the system varies widely.

It is not an easy task to locate the position of each county in the international network of brain drain migration. However, undoubtedly we can conclude that the most developed countries both industrially and technologically, are the largest receivers of high level manpower. This is evident from the case of US, Canada and Australia. This also shows the exploitative nature of brain drain migration. Compared to developing countries, developed countries possess large number of high level personnel per million population and the technology gaps between developed and developing countries are wide. While developed counties had 2,986 scientists per million population in 1980, developing countries had only 127. Asia led the developing countries with 273 scientists per million persons; Africa trailed with 49. Still the developed countries promote the migration of professionals from developing countries through their immigration laws. Examples are the immigration laws of the United States, Canada and Australia where state participation in promoting brain drain is direct and active.

While the United States, Australia and Canada are the largest receivers of HQM, other western countries which are not so developed also receive lesser quantities of high level manpower. While receiving HQM from underdeveloped countries, they lose their own trained manpower to more developed countries. This process act as a catalyst to brain drain from underdeveloped countries who replace the lose of these countries. This shows the hierarchical and interconnected nature of HQM migration networks.

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In short, the magnitude of migration of HQM into a country reflects its position in the international division of production which is defined in part by the level of technological capability of countries. For example, only the nations with the requisite scientific and engineering manpower, such as the United States and Japan are involved in the very high value added research and design activities; those countries with more modest manpower resources, such as Korea and Taiwan can design and produce standardised commodities such as memory chips, microcomputer clones and peripheries; and those with little more than cheap labour are relegated to low value added activity such as assembling printed circuits and integrated chips that are fabricated elsewhere. This special organisation of economic activities implies that later stages of economic development require the development of a strong technological base, both in terms of knowledge and manpower. Hence the developed countries resort to the import of highly skilled personnel as a means of obtaining the requisite manpower for development.

The case of Japan is different from that of other developed countries. Japan has relied heavily on foreign experts. But, in contrast to the US, it has not adopted immigration as a means of obtaining high level manpower. It has made only selective use of foreign technical expertise. It has placed strict restrictions on the employment of foreigners and only a small number of foreign students and trainees are accepted and the immigration of unskilled labour is strictly prohibited.

Experience of France and Britain shows that besides economic factors, factors like language, culture, colonial connections also plays their role in the formation of migration channels. Migration of HQM from francophone countries occurs mainly to France.

We have seen that almost all the developing countries of Asia, Africa and Latin America experience the loss of their highly trained manpower resources. However, Asian countries are the largest senders of high quality manpower to the
major receiving countries as illustrated by the discussion above. This phenomenon which commenced during the post-War period, especially during 1960s continues unabatedly even today. It represents the loss of the most valuable human resources of the developing countries and an invaluable gain to the developed countries.

To sum up, there has been a qualitative change in the occupational pattern of international migrants during the post-War period. Although labour migration continues in considerable proportions, migration of high quality manpower from developing to developed countries has emerged as a dominant form of international migration.

The fore-going discussion also reveals that change in immigration policies was the major factor that accelerated the immigration of skilled manpower to developed countries. In major receiving countries like the US, Australia, Canada and the UK, immigration policies that favour the immigration of high quality manpower were enacted in the post-War period, particularly since mid-1960s. The subsequent reforms in the immigration policy also contained special provisions for the admission of high quality manpower.

The policy changes in those countries tremendously increased the immigration of HQM to developed countries. Earlier immigration laws in the US, Canada and Australia favoured European immigrants and the non Europeans were restricted or prohibited from entering these counties. However, the abolition of discrimination based on ‘national origin’ and its replacement with discrimination based on ‘education’ and skills led to a sharp rise in immigration from developing countries especially from Asia and Africa. Asia replaced Europe as the major source of highly skilled immigrants to the major receiving countries.

In brief, it could be stated that almost all the countries of the world participate in the migration network, but their position in the system varies widely.
It is not an easy task to locate the position of each country within the international migration network. However, the pattern and trends in post-War international migration suggest that countries that are most developed, both industrially and technologically are the largest receivers of high quality manpower. This is illustrated by the experience of the US, Australia and Canada which are the largest receivers of HQM. Other western countries which are not so developed also receive smaller quantities of high level manpower. In short the magnitude of migration of HQM to a country reflects its position in the international division of production which is defined in part by the level of technological capability of countries. The disadvantageous position of developing countries in the international system is revealed through the loss of their high quality manpower to the developed countries.
CHAPTER III