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Reverse transfer of technology

Report of the Secretary-General

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I. INTRODUCTION

1. In resolution 32/192 of 19 December 1977, entitled "Reverse transfer of technology", the General Assembly made a number of recommendations and requests relating to the question of the outflow of trained personnel from developing to developed countries. In paragraph 5 of the resolution, the Assembly requested the Secretary-General to undertake an in-depth study of the "brain drain" problem, in co-operation with the United Nations Conference on Trade and Development (UNCTAD) and the International Labour Organisation (ILO) and bearing in mind the recommendations made by the Group of Governmental Experts on Reverse Transfer of Technology which was convened by the Secretary-General of UNCTAD in February-March 1978. In paragraph 6 of the same resolution, the Assembly also requested the Secretary-General to submit the results of the study to the Economic and Social Council at its second regular session of 1978 and, through it, to the General Assembly at its thirty-third session, taking into account the relevant work being undertaken in other parts of the United Nations system.

2. At its thirty-third session, the General Assembly, in paragraphs 1 and 2 of resolution 33/151, took note of the report of the Secretary-General (E/1978/92) which sought to bring together in summary form the key elements of a number of studies on the subject of the outflow of trained personnel from developing to developed countries. In paragraph 3 of the same resolution, the Assembly requested the Secretary-General to make available to the Assembly at its thirty-fourth session the in-depth study of the "brain drain" problem requested in paragraph 5 of resolution 32/192, covering international, regional, interregional and national aspects of the problem.

3. This study, which has been prepared by the UNCTAD secretariat, covers a number of issues mentioned by the General Assembly in its resolutions 32/192 and 33/151. ^{1/} Part of the report is based on the work of various organizations of the United Nations system, including the Department of International Economic and Social Affairs, the United Nations Industrial Development Organization (UNIDO), the United Nations Development Programme (UNDP), the International Labour Organisation (ILO), the World Health Organization (WHO) and the United Nations Institute for Training and Research (UNITAR). The report also relies on four case-studies undertaken in India, Pakistan, the Philippines and Sri Lanka, and on the discussions of the Group of Governmental Experts on Reverse Transfer of Technology convened by UNCTAD in February-March 1978. The work done in academic and non-United Nations bodies has been taken into account when preparing this report.

^{1/} Details of other studies in this field were outlined in the report of the Secretary-General submitted to the Economic and Social Council at its second regular session of 1978 and to the General Assembly at its thirty-third session (E/1978/92) and in the report of the Secretary-General of UNCTAD to the Assembly at its thirty-fourth session (A/34/425, appendix II).

II. MAIN FEATURES, RECENT TRENDS AND FUTURE PROSPECTS

A. Some statistical considerations

4. The lack of comprehensive and standardized migration statistics continues to present a problem in assessing the dimensions of skill flows. Several points have been made in an earlier UNCTAD study (TD/R/C.6/7, para. 25) with regard to this question:

(a) The definitions and categories used for classifying immigrants are not yet standardized across the developed countries of immigration, which makes intercountry comparisons of flows rather difficult. 2/

(b) The data, even when systematically available, almost always relate to gross rather than net flows. The temporal nature of such flows means that "to-and-fro", or reverse migration, should ideally be netted out from gross figures. But, because of deficient data, measurement has been very difficult except on a rough basis. Generalizing from a very limited number of surveys, "to-and-fro" migration may well be of the order of 25 per cent of gross flows.

(c) Inconsistencies may also arise from the general practice of recording immigration data on the basis of "last permanent residence" as opposed to "nationality". 3/ Much re-routing of developing country professionals takes place via more than one developed country. In the case of Pakistani migrants, it has been estimated that as many as 80 and 56 per cent of scientists and engineers coming into the United States in 1966 and 1973 respectively appear to have resided outside their country of birth: for India this percentage was 10 per cent in 1966 and 24 per cent in 1973; and for the Philippines it was 9 per cent in 1966 and 4 per cent in 1973. 4/

(d) The problem of incompleteness may also arise from the practice of excluding from "PTK" statistics all those coming in under the category of "dependants", some of whom may be highly qualified and would therefore add to the stock of skilled manpower in host countries.

2/ The most appropriate definition of those skilled migrants from the developing to the developed countries who constitute the reverse transfer of technology is derived from the classification adopted by the United States Immigration and Naturalization Service - "PTK" - which includes "professional, technical and kindred workers". Other terms used interchangeably include high-level, highly trained or skilled manpower. The "PTK" classification is broadly similar to that utilized in other developed countries, although in terms of statistical comparability there may be some difficulties.

3/ The United States data (in breakdowns by occupations) are principally available by last permanent residence (although totals are available by nationality as well); the Canadian data are exclusively by last permanent residence; and the United Kingdom data can be had essentially by last permanent residence.

4/ "Immigration of Scientists and Engineers drops sharply in FY 1973: Physicians Inflow still near FY 1972 Peak", National Science Foundation, Science Resource Studies Highlights, NSF 74-302 (29 March 1974), table 3, p. 3.

B. Magnitude of skill flows from developing to developed countries

5. Estimates made earlier by the UNCTAD secretariat had indicated that between the early 1960s and 1972 skilled migration from the developing countries (consisting of engineers, scientists, physicians and surgeons and technical and kindred workers) to the three major developed countries of immigration - the United States, Canada and the United Kingdom - amounted to a little over 230,000 persons (TD/B/C.6/7, table 1). To this can now be added a flow of about 29,000 to the United States during 1973-1975 and 25,000 to Canada during 1973-1976 to yield a total figure of nearly 285,000 (see table 1). It has, however, not been possible to obtain the up-to-date figures for the United Kingdom, but even if a declining trend in the rate of immigration is assumed (say, an average immigration rate of 5,000 per year), this would probably give a total of about 20,000 for the four years 1973-1976. Adding this figure to the total shown in table 1, one reaches a combined total for the three major developed countries of immigration of over 300,000 (1960s to 1975/76).

6. The estimates take no account of skilled migration to other developed countries - particularly to continental Western Europe, which is regarded as an important recipient of developing country skills. Some broad estimates can, however, be made for this region on the basis of figures provided in an ILO study, which showed that nearly 2.9 million migrants from developing countries were employed in Western Europe in the early 1970s. 5/ It can be fairly assumed that detailed breakdowns between skilled and unskilled migrants were similar to those for France, where "high level" cadres and technicians accounted for 1.4 per cent of the total inflow of permanent migrant workers with professional qualifications in 1969; 1.6 per cent in 1970; 2.0 per cent in 1971; 2.4 per cent in 1972; 2.1 per cent in 1973; 4.8 per cent in 1974; and 13.8 per cent in 1975. 6/ In terms of annual average their share came to about 4 per cent during the period 1969-1975. Applying this ratio to the figure of 2.9 million gives an estimated total for developing country skilled migrants in Western Europe of 115,000. Adding this to the total of 300,000 for the United States, Canada and the United Kingdom gives a rough global total for developing-to-developed country skill flows of 400,000 (or possibly more if other countries such as Australia are included) as at the early or mid-1970s.

5/ W. R. Böhring, "Migration from Developing to High Income Countries", in Tripartite World Conference on Employment, Income Distribution and Social Progress and the International Division of Labour, Background Papers (ILO, Geneva, 1976): Vol. II: International Strategies for Development. This figure excludes migrants from southern European countries other than Yugoslavia.

6/ Based on estimates derived from Anicet Le Pors, Immigration et développement économique et social, (Paris, La Documentation Française, 1977), pp. 229-230.

Table 1. Trends in skilled migration from developing countries to the United States of America, Canada and the United Kingdom of Great Britain and Northern Ireland, 1961-1976

Year	<u>Skilled migration from developing countries a/</u>				<u>Share of developing countries in total skilled migration</u>		
	United States (1)	Canada (2)	United Kingdom (3)	Total (4)	United States (5)	Canada (6)	United Kingdom (7)
					Percentage		
1961-65	14 514	(6 147) <u>b/</u>	(20 411) <u>c/</u>	(41 072)	37	20	26
1966	7 635	5 930	10 812	24 377	49	23	26
1967	8 239	8 614	8 156	25 009	52	25	21
1968	8 052	7 489	9 418	24 959	50	24	23
1969	8 419	8 286	9 932	26 637	64	28	22
1970	11 412	6 867	8 635	26 914	69	27	19
1971	16 098	6 195	7 843	30 136	85	31	18
1972	15 822	7 070	8 833	31 725	86	36	19
1973	10 602	6 180	...	(16 782) <u>d/</u>	77	25	15
1974	8 725	7 631	...	(16 356) <u>d/</u>	80	27	15
1975	9 298	6 362	...	(15 660) <u>d/</u>	72	25	14
1976	...	4 842	...	(4 842) <u>e/</u>	...	24	...
Cumulative total	118 816	(81 613)	(84 040)	(284 469)	61	26	22

Sources: UNCTAD secretariat (TD/B/C.6/7), table 1, p. 9; United States, unpublished data from National Science Foundation; Canada, Dept. of Manpower and Immigration, Immigration Statistics.

a/ A broader concept of skilled migration is used in Canada and the United Kingdom than in the United States. The United States figures include only the "professional" categories (i.e. engineers, natural and social scientists and doctors) whereas figures for the United Kingdom and Canada include "professional, technical and kindred workers".

b/ Totals for 1963-1965 only.

c/ Totals for 1964-1965 only.

d/ Totals for the United States and Canada only.

e/ Totals for Canada only.

/...

C. Main characteristics of flows of skilled migrants

7. In addition to the large volume of over-all flows, there has at the same time been a gradual shift in their composition: in the first place, in a shift from unskilled to skilled flows ^{7/} and, secondly, in an increasing share of developing countries in total skilled migration into the developed countries.

8. This trend (see table 1, columns (5)-(7)) has perhaps manifested itself most strikingly in the United States, where the developing countries, which provided only 37 per cent of total skilled migrants in 1961-1965, now account for between 70 and 80 per cent. In Canada and the United Kingdom, their shares in total skill flows have averaged between 26 and 22 per cent respectively.

1. Occupational composition

9. A detailed examination of the occupational composition of skilled migration (see table 2 below) places in even sharper contrast the critical nature of skill outflows from the developing regions. For example, physicians and surgeons have been the most significant category of developing country immigrants into the United States, Canada and the United Kingdom, constituting 60 per cent of the over-all immigration of this category to these three countries (72 per cent in the United States, 49 per cent in the United Kingdom and 37 per cent in Canada). Engineers and scientists have been the second most important category, totaling 43 per cent of over-all immigration of this category into the developed countries (58 per cent in the United States, 32 per cent in Canada and 17 per cent in the United Kingdom).

10. The picture as far as developing countries are concerned is set out in table 3 below. Doctors, engineers and scientists from developing countries, when they enter the developed countries, generally do so during the most productive periods of their professional life. For example, in the case of immigration into the United States "approximately 50 per cent of all FMCs (doctors) coming into the /country/ since the 1960s have been less than 40 years old. In 1970, nearly one-half (49 per cent) of the scientists and engineers immigrating to the United States were under 30; another 46 per cent were between 30 and 44". ^{8/}

^{7/} In the United Kingdom, for example, the share of skilled migrants in total inflows increased from 47 per cent in 1966 to 63 per cent in 1976. In Canada, the share increased from 14 per cent in 1963 to 33 per cent in 1976. The share in the United States has remained fairly stable at around 8 to 12 per cent; the fact that this figure is considerably lower than the other two countries may stem from the rather limited "PTK" category adopted by the United States authorities. The share of skilled workers (high level cadres and technicians, plus qualified employees and workers) in the total immigration into France has increased from 31 per cent in 1969 to 38 per cent in 1975 (see Le Pors, op. cit., pp. 229-230).

^{8/} Foreign Affairs Division, Congressional Research Service, Library of Congress, Brain Drain: A Study of the Persistent Issue of International Scientific Mobility, a study prepared for the Subcommittee on Foreign Affairs, United States House of Representatives (Washington, D.C., United States Government Printing Office, 1974), p. 141.

Table 2. Share of developing countries in total skilled immigration into the United States of America, Canada and the United Kingdom, total 1961 to 1976

<u>Occupation and country of destination</u>	<u>Skilled migrants a/ from</u>		<u>(1) as per cent of (2)</u> (3)
	<u>Developing countries</u> (1)	<u>All countries</u> (2)	
			Percentage
<u>United States b/</u>	<u>118 816</u>	<u>190 813</u>	<u>62</u>
Physicians and surgeons	40 876	56 447	72
Engineers and scientists	77 279	133 478	58
All others c/	661	888	74
<u>Canada d/</u>	<u>81 613</u>	<u>297 211</u>	<u>27</u>
Physicians, surgeons and dentists	4 850	13 023	37
Engineers and scientists	13 601	42 711	32
All others	63 162	241 477	26
<u>United Kingdom e/</u>	<u>84 040</u>	<u>380 751</u>	<u>22</u>
Physicians, surgeons and dentists	15 655	32 065	49
Engineers and scientists	9 225	54 705	17
All others	59 160	293 981	20
<u>Total</u>	<u>284 469</u>	<u>868 775</u>	<u>33</u>
Physicians, surgeons and dentists	61 381	101 535	60
Engineers and scientists	100 105	230 894	43
All others	122 983	536 346	23

Source: TD/B/C.6/7, table 3, p. 13; United States, unpublished data supplied by the National Science Foundation; Canada, Dept. of Manpower and Immigration, Immigration Statistics.

a/ A broader concept of skilled migrants is used in Canada and the United Kingdom than in the United States (see foot-note a/, to table 1 above).

b/ For years 1961-1972.

c/ Computer specialists.

d/ For years 1963-1972.

e/ For years 1964-1972.

Table 3. Skill flows in relation to domestic stock of skilled manpower: sample estimates for selected number of developing and developed countries

Country	<u>Skilled migrants as percentage of domestic stock or annual output</u>		
	<u>Physicians and surgeons</u> (1)	<u>Engineers, scientists</u> (2)	<u>Others</u> (3)
Percentage			
A. <u>Developing countries of emigration</u>			
Philippines <u>a/</u> (1975-1976)	21	11	10
Pakistan <u>b/</u> (1970s)	50-70
Syrian Arab Republic <u>c/</u> (1971)	40
Iran <u>c/</u> (1971)	30
India <u>b/</u> (1966-1967)	30	25	...
Sri Lanka <u>d/</u> (1971-1974)	20	19	36
B. <u>Developed countries of immigration</u>			
United States <u>e/</u> (1971-1972)	51	26 <u>f/</u>	11 <u>g/</u>
United Kingdom <u>e/</u> (1966)	40 <u>h/</u>	5	...

Source: Figures on the Syrian Arab Republic and Iran from WHO (EB 57/21/Add.1, p. 3); figures on the Philippines from UNCTAD (TD/B/C.6/AC.4/5, table 1, p. 3); figures on Pakistan from UNCTAD (TD/B/C.6/AC.4/3, para. 59, p. 28); figures on Sri Lanka from UNCTAD (TD/B/C.6/AC.4/4, table 3, p. 5); and figures on India from UNCTAD (TD/B/C.6/AC.4/6, para. 8, p. 3). The United States and the United Kingdom figures from UNCTAD (TD/B/C.6/7, table 4, p. 15).

a/ Average annual flow of skilled emigrants as percentage of average annual increase in the domestic stock. The figures for "others" relates to 1968-1970.

b/ Outflow as percentage of annual output.

c/ Outflow as percentage of the stock in that year.

d/ Outflow for the years 1971-1974 as percentage of stock in 1971.

e/ Inflow of skilled migrants from developing countries as percentage of annual increments in indigenous stock of manpower in those skills.

f/ Engineers only.

g/ Scientists only.

h/ For period 1962-1966.

/...

2. Regional characteristics

11. Asia - particularly India, Pakistan and the Philippines - has been the principal catchment area (see table 4 below), accounting for about 55 per cent of total skill flows to the three developed countries. The remaining shares have been spread over the other regions. The absolute numbers and the relative shares of those other regions appear to be substantially smaller than those emanating from Asia. On the other hand, for some countries, the loss of a handful of skilled personnel may represent a fairly substantial proportion of their total stock of available skills or may be concentrated in certain key skill groups.

Table 4. Regional distribution of skilled migration:
totals 1961 to 1976

<u>Region of origin/last permanent residence</u>	<u>Number of skilled migrants from developing countries into</u>				<u>Regional shares in total</u>
	<u>United States of America a/</u>	<u>Canada b/</u>	<u>United Kingdom c/</u>	<u>Total</u>	
	(1)	(2)	(3)	(4)	
					Percentage
<u>Asia</u>	<u>88 371</u>	<u>47 493</u>	<u>(23 685)</u>	<u>(156 549)</u>	<u>55.0</u>
India	28 915	11 350)	23 685 d/	(70 478)	(25.8)
Pakistan	2 924	3 604)	...	31 929	11.2
Philippines	19 431	12 498	...	43 185	15.2
Other	26 924	16 261	...	14 917	5.2
Near and Middle East	10 177	4 740	...		
<u>Africa</u>	<u>6 193</u>	<u>3 304</u>	<u>(10 176)</u>	<u>(19 673)</u>	<u>6.9</u>
<u>Latin America</u>	<u>19 709</u>	<u>2 166</u>	<u>(2 723)</u>	<u>(24 598)</u>	<u>8.6</u>
Central America	10 629	-	...	(10 629)	3.7
South America	9 080	-	...	(9 080)	3.2
<u>West Indies</u>	<u>...</u>	<u>18 040</u>	<u>(6 066)</u>	<u>(24 106)</u>	<u>8.5</u>
<u>All others</u>	<u>(1 302)</u>	<u>10 610</u>	<u>(20 095)</u>	<u>(32 007)</u>	<u>11.3</u>
Developing countries total	(118 816)	81 613	(84 040)	(284 469)	100.0

Source: UNCTAD (TD/B/C.6/7, table 2, p. 12); United States, unpublished data supplied by the National Science Foundation; Canada, Dept. of Manpower and Immigration, Immigration Statistics.

Note: Regional totals in columns 1, 3, 4 and 5 do not add to the total for developing countries since a detailed breakdown on a regional basis was not available for all regions.

a/ 1961-1975.

b/ 1963-1976.

c/ 1964-1972.

d/ Also includes figures for Sri Lanka.

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III. SURVEY OF CAUSES OF MIGRATION

12. The so-called "push" and "pull" factors which affect the individual's decision to migrate, thus the causes of "voluntary" migration, can be most clearly elaborated within the context of three broad categories of motivation: (a) international income inequalities (e.g. the differentials with respect to the whole stream of earnings, discounted to the present in some way); (b) professional opportunities and working conditions (e.g. research facilities, libraries, other infrastructure); and (c) social conditions. A fourth factor, which affects the actual magnitude of migration flows, may also be added: this concerns the prevalence of certain distortions, or perverse factors, operating at the macro-level in both the developing and the developed countries.

A. International income inequalities

13. In contrast to studies of internal migration, those on international migration (e.g. "brain drain") dealing in any depth with the problem of motivation have been very few. As with other aspects of skilled migration, there is a paucity of statistical or other useful information on the decision to migrate. Of the studies surveyed by Krugman and Bhagwati on "international" migration, the following would seem to be of interest. Hatch and Rudd ^{9/} in their study of Britons with graduate education going overseas found that many of their respondents who had remained abroad gave reasons that related either to income or, less often, to openings and opportunities. Meyers' ^{10/} study of the non-return of students educated in the United States concluded that the rate of non-return was positively associated with per capita income in the home country and was negatively related to "political élitism". The recent study by Psacharopoulos ^{11/} found relative wages to be the strongest explanatory variable; distance was found to be an unimportant factor, while relative per capita income had one half the explanatory power of relative wages. Psacharopoulos' results furthermore demonstrate that some of the earlier studies of international migration which had indicated that income did not matter were typically based on the wrong use of the income concept, i.e. that of relative per capita income figures rather than the more appropriate income concept as typified by the present discounted value measures of migrants' relative earnings in source and destination countries. According to Psacharopoulos, the whole stream of earnings discounted to the present determined migration decisions rather than per capita income figures at any point in time. Furthermore, he found that average per capita income figures were not a very useful guide to earnings of skilled migrants, as these varied considerably among countries, occupational categories and even temporally.

B. Professional opportunities and working conditions

14. Lack of infrastructure in home countries - in the form of equipment, instruments, libraries, etc. - has been among the reasons for the desire of

^{9/} E. Rudd and S. Hatch, Graduate Study and After (1968).

^{10/} R. G. Meyers, Education and Emigration (New York, David McKay Co., 1972).

^{11/} George Psacharopoulos, "Estimating Some Key Parameters in the Brain Drain - Taxation Model", Journal of Development Economics, vol. 2, No. 3, September 1975.

developing country professionals to pursue their research interests in institutions of developed countries. Proximity to new developments in professional fields may be an added attraction. Another reason may be the sharp contrast between the large amounts of government support for research and development in developed countries compared with the lack of government sponsorship of research and development in developing countries.

15. It is, however, not clear how important these different factors are. Glaser's analysis for UNITAR, for instance, found professional needs to be only weakly associated with the decision on migration. 12/

C. Social conditions

16. The effect of social conditions could include anything from stability of the political and social environment to the availability of particular consumer goods. One of the major findings of the UNITAR study was that "professionals belonging to minority groups in some societies that have recently adopted policies favouring the majorities in the use of language, employment, education, etc. tend to be apprehensive about their futures and to emigrate" (E/1978/92, para. 43). Linguistic and cultural links of some developing countries with their former metropolitan countries may also contribute to the migration among professionals who study abroad.

D. Impact of international labour market distortions and macro-policies of developed and developing countries

17. One reason quite commonly cited places the burden for skilled migration on the nature of educational expansion in developing countries, particularly on its tendency to overproduce high level professionals, combined with collateral shortages of skills at the middle level. Another reason relates to the well-known phenomenon of "internal brain drain" or the tendency among skilled personnel in developing countries to congregate in urban areas. Thus, according to this view, lack of "internal diffusion" of skilled personnel in developing economies tends to reinforce pressures for "external brain drain".

18. Both of these explanations of the causes of "brain drain", have, however, been questioned recently by Hamada and Bhagwati. 13/ They point out that whereas distortions in developing country economies may have been behind the initial impetus of people to go abroad, these reasons do not by themselves provide a sufficient explanation for the continuation of the phenomenon. The reason for the latter must be seen in the "distortion-augmenting" effects of the international integration of the market for skills. Initial distortions causing "brain drain" may in actual fact have been accentuated by the possibility of migration abroad to higher income countries.

12/ William A. Glaser with G. Christopher Habers, "The Emigration and Return of Professionals", a study based on data gathered for UNITAR, Columbia University, Bureau of Applied Social Research, September 1973.

13/ K. Hamada and J. Bhagwati, "Domestic distortions, imperfect information and the brain drain", Journal of Development Economics, vol. 2, No. 3, September 1975.

19. At the developed country level, the factor that seems to have had a significant influence on both the volume of skill flows from the developing countries and, more importantly, its composition has been the selective application of quota restrictions by their immigration authorities. A particularly damaging result of this selectivity criterion has been that cited in an earlier study: that among those students from developing countries who study abroad, it is the least able students who are least likely to emigrate. Hamada and Bhagwati also indicate that "brain drain serves to identify, and thus screen, the more efficient from the less efficient". ^{14/} They furthermore indicate that "if the domestic labour market cannot discriminate as effectively as the international market for professionals, then the economy tends to lose, essentially because emigrants are picked up from the category of the more efficient". ^{15/} In a similar vein, foreign education programmes for students from developing countries, instead of increasing the pool of skilled manpower in the developing countries, have tended to encourage the best students to remain in the developed countries.

^{14/} Hamada and Bhagwati, op. cit., p. 266.

^{15/} Ibid.

IV. ON IMPUTING VALUES TO MIGRATION OF SKILLED PERSONNEL

20. The notion of imputing capital value figures to skilled manpower (as implied by the concept of "human capital") is neither novel nor confined to the area of theory. National authorities of both developed and developing countries in fact frequently make use of the concept for allocating resources to the education and manpower sectors as well as for imputing values to labour services in the household and subsistence sectors for their inclusion in the national accounts. Even in international accounting of resource flows there are certain items to which values are imputed, as, for instance, the calculations of grant-equivalents of aid loans or the valuation given to know-how imported by transnational corporations as part of their equity investment in developing countries. Similar procedures could also be employed for assigning values to international transfer of skills.

A. Methodological issues

21. Fairly standard techniques have been developed for imputing capital value figures to migration of skilled personnel. Fundamentally, there are two approaches that may be adopted: (i) firstly, the "historic cost" (HC) approach, under which both the direct and indirect educational costs embodied in the skilled migrant are added up to present worth; and (ii) secondly, the "present discounted value" (PDV) approach under which an attempt is made to estimate the present worth of the migrants' marginal product over his expected working life in the country of immigration. Both HC and PDV in turn may be imputed under two alternative sets of relevant prices: those prevailing in the developed countries and those that obtain in the developing countries. This procedure thus gives rise to four different valuation concepts which would need to be distinguished:

(a) HC_i : historical costs valued at "developed country prices" and representing savings in education costs in developed countries as a result of skilled immigration;

(b) HC_e : historical costs valued at "developing country prices" and representing education costs lost by developing countries as a result of skilled emigration;

(c) PDV_i : the present discounted value of the skilled personnel in developed countries imputed on the basis of "developed country prices";

(d) PDV_e : the forgone present discounted value of skilled personnel in developing countries, imputed on the basis of "developing country prices".

22. HC_i and PDV_i will measure the impact of skilled migration in the developed countries while HC_e and PDV_e will measure that in the developing ones. If it is assumed that (a) the volume of migration is small and marginal and (b) educational training is optimal in equating marginal returns to marginal costs, then it would be fair to assume that at the margin: $HC_i = PDV_i$ and $HC_e = PDV_e$. In this limiting case, the present worth and historic cost measures would not only be alternatives but would provide equivalent bases for imputing values. However, none of these

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assumptions would seem to be particularly realistic, so that these four different estimates could be generally expected to yield four distinct valuations of skilled migration. Moreover, in view of the higher incomes and costs in the developed countries, it should be expected that valuations based on developed country prices (i.e. HC_i and PDV_i) would typically exceed those based on developing country prices (i.e. HC_e and PDV_e).

23. If the objective of the exercise is to provide a balanced picture of the flows of productive resources between the developed and developing countries, it would be appropriate to choose a valuation procedure which is commensurate conceptually with the practice now accepted by the Development Assistance Committee of the Organisation of Economic Co-operation and Development of converting resource flows into grant equivalent figures. The Committee's estimates of resource flows are typically based on developed country valuations. It would, therefore, not be unreasonable to apply a similar procedure to skilled migration and impute capital value figures in terms of either the HC_i or PDV_i concepts.

B. Preliminary estimates of imputed capital value of skill flows

24. The historic cost measure (HC_i) would seem to be appropriate in the case of analysis of the longer-term effects, where the cost of substituting for or replacing migrants through training becomes relevant. However, for imputing values to skilled migration in the short run, where such substitution possibilities are limited, the PDV_i concept would seem to be the more relevant and will therefore be employed throughout this section. Basically, this valuation procedure involves treating skills as an asset that yields a certain return; so that in the international market for such an asset this would be the value the asset would command. In principle, this return can be estimated from three points of view: (a) the migrant's private marginal product; (b) his actual earnings (generally presumed to be indicative of his private marginal product); or (c) his social, rather than his private, marginal product in the country of immigration.

25. For practical purposes, the second method has been adopted here, namely actual earnings. Moreover, this method is likely to produce the most conservative estimates as compared to the other two approaches. ^{16/} Thus, in order to calculate the present worth of a skilled migrant his expected life-time earnings stream in the developed country of immigration, appropriately corrected for productivity changes and inflation, has been discounted to the present, using a social rate of discount of 10 per cent (a "median" rate lying between a "low" of 8 per cent

^{16/} Where there is monopsonistic hiring of migrants by employers, the wages paid to the migrant will tend to be typically below both the private and the social marginal products.

and a "high" of 12 per cent). ^{17/} Such calculations have been made on a per migrant basis for four main skill groups (engineers, social and natural scientists, physicians and surgeons and a category "others") and for three developed countries of immigration: the United States, Canada and the United Kingdom.

26. The results for the period 1961-1972 are presented in a summary form in table 5 below. The over-all picture that emerges is one of substantial resource transfers from the developing countries to the three developed countries.

^{17/} The estimation procedure used here is described in detail in UNCTAD document TD/B/C.6/7, chapter II and technical appendix to chapter II; and in particular para. 42 (a) and para. 64, equation (1). The following formula has been used for calculating PDV_i:

$$PDV_i = (1 + x) \sum_{t=m}^n E_{\beta t} (1 + k)^{\alpha - \beta - m + t} / (1 + i)^{t - m}$$

where:

PDV_i = present discounted value of expected earnings per immigrant, in the relevant skill category, in the developed country;

E_{βt} = earnings of a person in the relevant skill category at age t, observed in cross-section data in the developed country;

t = current age of migrant;

m = age at immigration (the life-time earnings profiles of migrants are traced in terms of their varying age, t);

n = age at retirement;

α = reference year (year of immigration);

β = income data base year for the developed country;

i = social rate of discount;

k = growth rate per annum of productivity at given age due to later education, accumulation and technical progress;

x = percentage change in price level between data base year β and reference year α.

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Table 5: Measures of imputed capital value of skill flows from developing countries to the United States, Canada and the United Kingdom, 1961-1972

<u>Country of immigration and occupational category</u>	<u>Number of skilled immigrants</u> (1)	<u>Imputed capital value per migrant a/</u> (2)	<u>Total imputed capital value</u> (1) x (2) (3)
		(in thousands \$US)	(in millions \$US)
<u>United States (1961-72)</u>	<u>90 191</u>	<u>313</u>	<u>28 233</u>
Engineers	43 626	227	9 889
Scientists <u>b/</u>	19 464	198	3 850
Doctors <u>c/</u>	27 100	535 <u>d/</u>	14 494
<u>Canada (1963-72)</u>	<u>56 598</u>	<u>169</u>	<u>9 556</u>
Engineers	6 377	213	1 358
Scientists <u>e/</u>	3 394	214	728
Doctors	4 049	385	1 560
Others <u>f/</u>	42 778	138	5 910
<u>United Kingdom (1964-72)</u>	<u>84 040</u>	<u>55</u>	<u>4 603</u>
Engineers	6 735	63	425
Scientists	2 490	64	160
Doctors	15 855	68	1 073
Others <u>g/</u>	59 160	50	2 945
<u>Grand total</u>	<u>230 829</u>	<u>184</u>	<u>42 392</u>
<u>Annual average</u>	<u>19 236</u>	<u>184</u>	<u>3 533</u>

Source: UNCTAD, TD/B/C.6/7. Figures in column 1 obtained from tables A-5, A-9 and A-12 of the source. Figures in column 2 derived from (Yp) rows in tables 9, 10 and 11 of the source.

Note: Totals may not be exact owing to rounding off of figures.

a/ Average values weighted by migration flows in each category, each year.

b/ Includes social and natural scientists.

c/ Includes physicians and surgeons.

d/ Averages for physicians, surgeons and dentists.

e/ Includes natural scientists, biologists and agricultural professionals.

f/ Includes professors and principals, teachers, nurses, medical technicians and managerial and other professionals.

g/ Includes all categories specified in f/ above except professors and principals.

/...

C. On modifying the framework for international
accounting of resource flow

27. The significance of the estimates presented in the last section may be more easily appreciated if compared with some other relevant magnitudes. For example, over the period under consideration, the total cumulative net flow of official development assistance (ODA) from the three developed countries to the developing ones amounted to \$US 46 billion (1961-1972), or about \$US 3.8 billion per year. This amount can be seen to be not much larger than the corresponding capitalized value of skill flows from developing countries to the three developed ones: a phenomenon which could aptly be characterized as representing a "countervailing force to foreign assistance". 18/

28. A similar comparison may also be made in the context of total transfer of resources, consisting both of official (ODA and other) and private capital flows. Since this comparison gives a more comprehensive picture of resource flows between the developed and the developing countries, relevant figures are shown in greater detail, on an annual basis, in table 6 below.

18/ United States Library of Congress, Foreign Affairs Division, Congressional Research Service (UNSGPO, 1974), Brain Drain: A Study of the Persistent Issue of International Scientific Mobility, p. 249.

Table 6: Comparison of net flow of official and private resources from the United States, Canada and the United Kingdom to the developing countries and of imputed capital value of skill flows from developing countries to the three developed countries

<u>Year</u>	<u>Total net flow of official and private resources</u> (1)	<u>Imputed capital value of skill flows</u> (2)	<u>Net balance</u> (1) less (2) (3)	<u>Column 2 as percentage of column 1</u> (4)
	(in millions \$US)			
1961-65	26 373	5 048	21 325	19
1965	6 098	3 144	2 954	52
1967	6 845	3 672	3 173	54
1968	7 162	3 821	3 341	53
1969	6 325	4 333	1 992	69
1970	8 069	5 252	2 817	65
1971	9 244	8 028	1 216	87
1972	10 091	9 094	997	90
<u>Grand total</u>	80 207	42 392	37 815	53
<u>Annual average</u>	6 684	3 533	3 151	53

Source: UNCTAD, TD/B/C.6/7. Based on figures provided in table 8. These figures do not include the upward adjustment of 20 per cent for "externalities" made in the original table.

A comparison of the two series indicates that the exclusion of resource transfers implicit in skill flows from the international balance sheet of resource flows has meant that the developed country contribution to developing countries on average has tended to be overestimated to the extent of about 50 per cent.

29. These figures underline the importance of examining in depth the adequacy of the current international accounting framework in order to determine if such a framework should not be appropriately modified so as to present a more comprehensive picture of over-all resource transfers, with the concept of "resource" being appropriately broadened to include the imputed capital value of skilled migration. One possible approach, as suggested by Bhagwati in his study for UNCTAD, would seem to be to distinguish between three distinct elements: the official flows, the

nominal private flows and the imputed capital flows implicit in (and representing the capitalized equivalent of) the flows of skilled manpower (TD/B/C.6/AC.4/2, para. 26). The advantage of such a comprehensive balance sheet of "resource flows" would be that it would bring into better perspective the over-all resource flow situation, and particularly assist in giving a more realistic picture of net resource transfers taking place internationally. The task of imputing capital value figures to skill flows for their inclusion in international resource flow accounting "can be undertaken by reaching an agreement on a set of conventions, procedures and concepts," which may be "no more ... difficult than those that statisticians and economists continually deal with in arriving at, for example, national income accounts on a standardized basis" (TD/B/C.6/AC.4/2, para. 4 (a)).

30. UNCTAD's Group of Governmental Experts on Reverse Transfer of Technology noted that "in view of the inadequacy of statistical data and differences in views, further work by the United Nations system in a co-ordinated manner, on international resource flow accounting at an expert level should be directed towards clarifying the methodological aspects of the concepts and procedures to be developed for its practical application" (E/1978/92, para. 26 (m)). Its recommendation that the Committee on Transfer of Technology, at its second session, should consider appropriate arrangements, including the necessity of convening a group of experts, in the light of the co-ordination decisions of the United Nations system, on the examination of the feasibility of measuring human resource flows was endorsed by the Committee at its second session. The Committee thereby requested UNCTAD's Trade and Development Board to consider appropriate arrangements, including the necessity of convening a Group of Experts, to examine the feasibility of measuring human resource flows and to submit its findings to the Committee on Transfer of Technology.

V. SURVEY OF SOME OF THE POLICY ISSUES FOR ACTION
AT THE NATIONAL LEVEL

A. Action by the developing countries

1. Incentive policies

31. The main aim of incentive policies would be to provide a set of material and other necessary incentives that would make emigration less attractive. The advocates of such policies typically base their prescription for enhanced material incentives on the need to raise salary levels of high level professionals in developing countries. The basic difficulty with this type of proposal lies in the enormous salary differentials that exist between the developing and the developed countries and the impossibility of narrowing this gap sufficiently so as to have any measurable impact on emigration flows. Besides, any attempt to raise professional salaries further towards international levels "would be likely to distort [domestic] wage structures, misallocate resources and create all types of imbalances" in a developing economy. Such developments could furthermore have "inegalitarian and welfare-reducing consequences" (TD/B/C.6/AC.4/2, para. 72), which developing countries can ill afford to ignore.

32. Incentives related to qualitative working conditions may be somewhat easier to implement and may have a beneficial effect. The Indian Government has tried to devise schemes to encourage the return of professionals abroad. In 1957, a National Register of Scientific and Technical Personnel was created for the purpose of gathering information about qualified Indians in foreign countries; the register was then distributed among various recruiting agencies in the public and private sectors to facilitate their employment. This was followed by the introduction in 1958 of a scheme called the "scientists' pool", "the object of which [has been] to ensure the effective utilization of highly qualified personnel, specially those returning from abroad" (TD/B/C.6/AC.4/6, para. 32). Because the scheme provided the participants with temporary (government-sponsored) employment in their own fields while they looked for their own employment, it could be presumed to reduce the uncertainty and economic struggle which the returnee may otherwise have to face. "Since the creation of the pool, the scheme has assisted in the repatriation of [some] 5,500 scientists" (para. 35). Other countries that have tried to implement "return-of-talent" schemes have, however, been somewhat less successful (e.g. Sri Lanka, TD/B/C.6/AC.4/4).

2. Restrictive policies

33. Regulations on emigration based in the developing country can be viewed as the policy counterparts to the immigration restrictions (e.g. quotas, selective entry requirements, etc.) imposed by developed countries.

34. Restrictions by developing countries (which have been applied on certain occasions by certain countries) can take various forms: requirements to put in minimum periods of service in the home country for newly graduated professionals (as with medical graduates in many countries); quotas on the issuance of passports;

making migration more stringent in other ways (for example, the ban in India on holding the examination of the Education Council for Foreign Medical Graduates (ECFMG) of the American Medical Association). Other attempts have included "bonding" - either in terms of required service at home after study abroad or financial loss for non-returnees. In some countries, foreign exchange allocation has been used as a restrictive measure in that it is not granted for studies abroad in those fields for which facilities exist at home.

35. Typically, however, these kinds of restrictions may be difficult to implement and they are also likely to be "surmountable inequitably by the powerful or the ingenious, and to be resented at large by the very professionals whom it is sought to hold back, with possibly adverse effects on their efficiency and commitment to their societies" (TD/B/C.6/AC.4/2, para. 70). Hence, these restrictions have been invoked only infrequently and are occasionally cancelled (as recently in Sr. Lanka) in response to effective protests by professional groups.

36. Mention may also be made here of the argument that skilled emigration may be a direct result of educational over expansion and consequent unemployment. If the scale of educational facilities could be reduced in the country experiencing emigration, it would, ceteris paribus, tend to lower emigration to higher-wage developed countries by, on the one hand, reducing the numbers being produced and, on the other, raising the domestic returns to education.

37. It may be extremely improbable that a policy of restricting educational facilities for professionals, even if considered desirable, could be politically implemented, especially when the integration internationally of high level professionals has made the returns from such educational attainment markedly more attractive. Moreover, the apparent "surplus" of skilled manpower in some developing countries often reflects uneven implementation of policies for reaching two sets of targets - those dealing with skill formation and those dealing with economic growth.

38. For all these reasons, many developing countries have found it difficult (or less preferable) to adopt any restrictive measures which would act as a direct curb on outflows; instead, a policy package that relies largely on incentive type measures has been emphasized in the majority of cases, along with relatively free movements in and out of the country.

3. Delinking policies

39. The third policy element which has been advocated to varying degrees is the concept of "indigenization" of the professional training system, which may have a two-fold objective - that of promoting the country's professional and technical self-reliance through the absorption of progressively higher and more advanced levels of knowledge and that of adapting curricula more closely to the country's development needs. This type of policy could form part of the over-all policy package to reduce the dependence of developing upon developed countries. However, total disengagement from the international system may be too drastic an option and would in any case be difficult to implement for most developing countries. These countries will always require skilled personnel of high quality and,

regardless of where they are trained, graduates will have the ability to gain entry into the international market if they so desire. At the same time, however, there would seem to be considerable scope for examining specific sectors in which the indigenization of the professional training system could be extended and a proper balance struck between the production of high level professionals and those at the middle level.

B. Action by the developed countries

40. Traditionally, the most common developed country measure has been to limit the migration entry of developing country professionals through the application of immigration quotas on a selective basis. However, as migration flows have come to have important economic and social effects on both the developing and the developed countries, one may question the continued validity of a purely "unilateral" approach to fixing immigration quotas, particularly as it raises questions concerning the rights of individuals to free mobility and the effect of unilateral variations in quotas on developing country economies. Accordingly, the recommendation to introduce a régime of bilateral or multilateral agreements which takes into account the mutual interests of both the sending and receiving countries would seem to require serious consideration (see E/C.8/21, para. 70).

41. Several other useful suggestions have been made where action by developed countries could prove of value. These include:

- (a) Reorientation of aid or technical assistance programmes to strengthen educational institutions in developing countries and to encourage the absorption of trained personnel within these countries;
- (b) Establishment and support of funds which would encourage the undertaking of research and training activities in developing country institutions and encourage greater use of developing country skilled professionals and consultants in programmes or projects funded by developed country sources;
- (c) Adoption by developed countries of a number of other measures providing for greater participation by developing country migrants in the development efforts of their countries; these could include, inter alia, removal of obstacles to remittances and transfer of income to their country of origin; and exploration of possibilities for allowing developing country migrants to make voluntary, tax deductible, contributions to chartered developing country organizations, or to earmark, again on a voluntary basis, a certain percentage of their income tax payments in developed countries for developmental purposes;
- (d) The developed countries could also, as recognized by UNCTAD's Group of Governmental Experts, consider rendering assistance in the collection and dissemination of statistical and tax information on skilled migrants, within national constraints, on a bilateral basis, and explore ways of systematizing the availability of such information.

42. In addition, a number of specific proposals for action by the developed countries are contained in the recommendations submitted by the Group of 77 to UNCTAD's Group of Governmental Experts (TD/B/C.6/28 - TD/B/C.6/AC.4/10, annex I, pp. 2-3).

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VI. SURVEY OF MAIN INTERNATIONAL POLICY ISSUES

43. Among the various proposals that have been advanced in the international forum where the role of international co-operation has been underlined, the one that has caught much attention has been the notion of compensation. Thus, General Assembly resolution 32/192 specifically requested the Secretary-General of the United Nations, in co-operation with UNCTAD and ILO, to take into account in the in-depth study of the "brain drain" problem the proposal made by His Royal Highness, Crown Prince Hassan bin Talal of Jordan concerning the establishment of an international labour compensatory facility to compensate labour-exporting countries for the loss of highly trained personnel.

44. The issues involved in the notion of international compensation, and in particular its alternative formulations, have already been analysed in a preliminary manner in studies by the UNCTAD secretariat 19/ and ILO. 20/

45. Several possibilities for ensuring a more equitable sharing of gains or securing equivalence for the resources transferred through the flow of human capital have been examined in UNCTAD. Three main types of proposals might be distinguished:

(a) Proposals requiring contributions by host developed countries;

(b) Proposals involving levying of a modest supplementary tax on the incomes of developing country skilled migrants (typically in the higher income brackets) in developed countries, combined with double taxation relief, with the proceeds so raised channelled into developmental spending;

(c) Proposals for an extension of the International Monetary Fund compensatory financing facility to take account of fluctuations in migrants' remittances.

A. Contributions by host developed countries

46. The rationale for contribution by host developed countries to a more equitable sharing of the burdens and benefits associated with skilled migration can be based on three main considerations:

(a) Where the developing countries incur losses or disruptions in their economies, there would seem to be a cogent case for redressing these losses;

(b) Where developing countries do not incur any measurable disruption and their comparative advantage lies in skill production and exchange, they can legitimately improve their returns from such migration by sharing in the gains

19/ See TD/B/C.6/AC.4/2 and TD/B/C.6/AC.4/7 "Legal and administrative aspects of compensation, taxation and related policy measures: Suggestions for an optimal policy mix".

20/ W.R. Böhning, "Compensating countries of origin for the outmigration of their people", ILO Working Paper (WEP 2-26/WP 18 E).

that accrue to the developed countries, at least to the extent that enables them to cover their investment cost of education (which for certain skill groups, such as doctors, could be substantial);

(c) In so far as there is a prima facie case for deducing that the developed countries benefit from the inflow of skilled migrants such benefits may legitimately be shared by the developing countries from which these skilled migrants originate.

1. Direct assessment on host developed countries

47. One possibility that has received much attention in recent discussions concerns the levying of a direct assessment on host developed countries with the proceeds channelled, for development purposes, either through a special fund or through bilateral arrangements directly to individual developing countries experiencing the "brain drain". Such an assessment could be related to the total number of skilled personnel migrating to the developed countries, the amount of their income, the amount of taxes they paid to the developed country, the relative scarcity of their skills in their developing country of origin, the amount of education they received at developing country expense, or any other combination of factors that would generally reflect the costs and problems of specific developing countries as well as the enrichment of the developed countries.

2. Tax sharing arrangements

48. Any ad hoc formula-based assessment, however, may raise a somewhat greater difficulty in allocating gains than a sharing of an additional budgetary receipt accruing to the host country as a result of immigration. Thus, by bilateral or multilateral tax treaties, individual developed countries could agree, for example, to share tax revenues that they earn from developing country nationals on some formula. There is legal precedent for such tax sharing arrangements among certain developed countries. For example, the revenues from taxing the French workers in the canton of Geneva are shared with the French areas from which the workers come into Geneva. 21/

49. In terms of the revenue-raising potential of tax sharing arrangements, Bhagwati estimates that if about one third or a little more of the taxes raised by developed countries from developing country skilled migrants were to be shared with the developing countries, the amount involved could be around \$US 500 million annually. This formula would also have the advantage that it would not raise problems of discrimination in tax treatment.

3. Other measures based in the developed country

50. Two other related proposals have been made recently which are voluntary in nature and which may be worthy of consideration as supplements to the ideas developed in sections 1 and 2 above (TD/B/C.6/AC.4/7, chap. 1).

21/ Ibid., p. 20.

51. First, it may be suggested that the United States' practice of tax-exempting contributions to approved charities be extended to other developed countries and modified to enable a generous and easier inclusion of as many developing countries' charities as are eligible for such benefits.

52. Second, developing country immigrants in developed countries might be allowed to earmark (up to, say, 10 per cent of their) taxes for donation to a designated agency for developmental spending or to earmark their contributions for expenditure on certain projects or in certain countries or both.

53. Precedents for the earmarking of contributions also exist within the United Nations system in the operations of UNICEF (TD/B/C.6/AC.4/7, para. 41).

54. Revenue raised through these various means could be channelled for developmental purposes through the establishment of especially created institutions, such as international human resource funds, as suggested in a study prepared for the UNCTAD secretariat (TD/B/C.6/AC.4/7) through an international compensatory facility, as suggested in a proposal by Jordan. Furthermore, one or more of such funds (or facilities) could be created in accordance with international practice as organizations with defined powers to receive and spend funds. They might also be created under any particular regional organizations.

55. While international human resource funds should be able to allocate their resources to general development purposes, many potential donors might prefer specially designed programmes prepared for such funds. Broadly, such programmes might have as their purpose:

(a) Funding specific research and training programmes in developing countries or regions specifically for development of personnel capable of conducting developing-country-oriented technological development;

(b) Providing general support for research on the development of technologies in the developing country;

(c) Providing general support for educational institutions in developing countries;

(d) Undertaking research into the conditions of employment and remuneration of migrants and the welfare of their families.

B. Contributions by individual migrants

56. A second type of proposal, first advanced by Bhagwati and since subjected to detailed legal and administrative analysis, relates to the levying of a moderate supplementary tax on incomes of skilled migrants from developing countries (typically those in the higher income brackets) for developmental spending in developing countries.

57. This proposal was also considered at UNCTAD's Group of Governmental Experts on

Reverse Transfer of Technology and, as a result of the comments made, some of the ideas have been revised by Bhagwati in his recent paper. 22/

1. The rational and feasible format

58. Two reasons for a modest supplementary tax on developing country skilled migrants, for the benefit of the developing countries of origin can be put forth:

(a) The purpose may be to use part of the gains or economic rents to compensate for the losses that such migration may inflict on the countries of origin, or to redistribute part of the economic rent associated with migration in favour of those left behind, without affecting economic incentives;

(b) Or the rationale may be an extension of the tax system, in however small a fashion, to those who work abroad rather than at home.

59. A redistributive tax on a part of the increased benefit accruing to highly skilled migrants can be viewed as an extension across national frontiers of the principle of progressive taxation based on equity. This would be in line with existing tax practices. It is considered acceptable under international custom for countries to assert tax jurisdiction over nationals abroad. This, in fact, is what is done under the "global tax" system, under which nationals abroad are taxed, as against the "schedular tax" system, where they are taxed on the basis of residence rather than nationality. Countries such as the United States, Mexico and the Philippines follow the global tax system to advantage. To some extent most income tax systems are hybrids, employing some combination of the global and schedular concepts. However, as also pointed out by Pomp and Oldman "a global system is probably used more often by the developed countries, a schedular more often by the developing countries" (TD/B/C.6/AC.4/7, para. 52). Thus, the developing countries who, for a number of reasons have failed to follow it so far, may be forgoing their right to raise revenue legitimately through these means.

60. It may be important to note that the levying of a supplementary tax on nationals abroad (under a global approach) need not involve excessive burdens through double taxation. The United States, for example, under section 911 of its tax code, allows foreign taxes paid as tax credits against United States tax assessments; other developed countries generally do the same. Such a tax can be levied under existing international law (including conventions on human rights); it can, in principle, be collected without seeking any developed country collaboration and it would seem to be in consonance with the ethical notions underlying taxation by nation States.

22/ Jagdish N. Bhagwati, "The brain drain; compensation and taxation," paper presented to the Conference on Economic and Demographic Change: Issues for the 1980s, International Union for the Scientific Study of Population, Helsinki, 28 August-1 September 1978.

2. Scope for international co-operation

61. The further advantage of this option, as noted by Bhagwati, might be that "it can be exercised unilaterally without any need for multilateral action or even bilateral treaty making. ^{23/} However, it would work better if, under bilateral or multilateral tax treaties, the developed countries could agree to supplying minimal tax information on developing country nationals resident in developed countries.

62. There have been a number of precedents where they have done so in pursuance of a formal commitment contained in a tax treaty. Most tax treaties usually contain explicit provisions pledging each country's assistance to the other in the collection of taxes, but assistance is usually limited to situations in which taxpayers wrongfully seek to obtain treaty benefits. ^{24/} There has, however, been one recent United States treaty that provides for assistance under more general circumstances. ^{25/}

3. Some revenue estimates

63. The full dimensions of revenues that could be raised and the distribution of such revenues among different developing countries would depend, of course, on the tax structure that would eventually emerge. However, the experience of the Philippines, with its limited coverage, extremely low tax rate (varying between 1 and 3 per cent) and its revenue collection of roughly £ 23 million (or approximately \$US 3.95 million) in total during the four-year period 1973-1976 (TD/B/C.6/AC.4/5) suggests an important revenue base.

64. Bhagwati has also made some tentative estimates of the revenue raising potential of such tax measures for the developing countries as a group. Using a notional supplementary tax rate of 10 per cent on net developed-country-tax earnings of developing country immigrants (belonging to the PTK category), and taking a stock of these over a 10-year period, he found that the developing countries as a group could raise tax revenue close to \$US 500 million annually (TD/B/C.6/AC.4/2, para. 100).

^{23/} Ibid., p. 5.

^{24/} E.g. Each of the Contracting States shall endeavour to collect such taxes imposed by the other Contracting State as will ensure that any exemption or reduced rate of tax granted under this Convention by that other Contracting State shall not be enjoyed by persons not entitled to such benefits. (Article 27, United States-Japan Tax Treaty. See Oliver Oldman and Richard Pomp, "The Brain Drain: A Tax Analysis of the Bhagwati Proposal", World Development, vol. 3, No. 10, October 1976, p. 759).

^{25/} "The two Contracting States undertake to lend assistance and support to each other in the collection of the taxes to which the present Convention relates ... in cases where the taxes are definitely due according to the laws of the State making the application." Article 27, United States-France Tax Treaty. (Oldman and Pomp, loc. cit.)

C. Possible extension of the International Monetary Fund
Compensatory Financing Facility

65. The aim of a third proposal is to deal exclusively with the "adjustment problems" associated with fluctuations in migrants' remittances. These have come to constitute a significant item in the balance of payments of several developing countries, and sharp decreases in remittances faced by labour-exporting countries during recessionary periods in labour-importing countries could give rise to serious adjustment problems. Remittances to Turkey, for instance, dropped by over \$US 400 million between 1974 and 1976, and it would seem that the more dependent or poorer the country, the more severe the problems of adjustment are likely to be.

66. One method to deal with such adjustment problems could be to extend the Compensatory Financing Facility of the IMF to cover fluctuations in earnings from remittances in addition to those in merchandise exports. A proposal along these lines was, in fact, put forward in the Manila Declaration and Programme of Action. ^{26/} A further examination of ways of implementing this proposal may be warranted.

^{26/} See Proceedings of the United Nations Conference on Trade and Development, Fourth Session, vol. I, Report and Annexes (United Nations publication, Sales No. E.76.II.D.10), annex V, sect. 4, para. 14 (b) (iv).

VII. CO-OPERATIVE EXCHANGES OF SKILLS AMONG DEVELOPING COUNTRIES: APPROACHES TO COLLECTIVE SELF-RELIANCE

67. The previous five sections have concentrated on the more familiar phenomenon of skill flow from developing to developed country, analysing its main characteristics, causes, economic effects and policy implications. In this section the focus will be on skill flow among the developing countries themselves, as they raise new issues and open up greater possibilities for co-operation among developing countries. This has been amply recognized in General Assembly resolution 32/192 on reverse transfer of technology in which, the Assembly urged, in the first instance, the developing countries to give immediate consideration to the modalities for promoting collective self-reliance among themselves with a view to using and developing their human resources on the basis of mutual advantage within the broader framework of co-operation in the fields of trade, technology and capital; and, secondly, urged the developed countries to support measures designed to encourage the absorption of trained personnel within the developing countries and to support the activities of the international organizations aimed at finding solutions to this problem without prejudice to existing international agreements. The importance of evolving a collective approach on the subject has also been emphasized in the agreed conclusions adopted by UNCTAD's Group of Governmental Experts on Reverse Transfer of Technology which met in Geneva in February-March 1978 as well as in the UNCTAD study entitled "Co-operative exchange of skills among developing countries: policies for collective self-reliance in skilled manpower" (TD/B/C.6/AC.4/8). Some of the main issues raised in this study are summarized below.

A. Features of skill flows between developing countries

1. Distinctive characteristics

68. The study notes that whereas, in the past, migration of skilled manpower between developing countries used to be relatively unimportant, being associated mainly with United Nations sponsored technical assistance programmes that deployed developing country experts in other developing countries, it has now acquired a new significance, both quantitatively and in terms of certain distinctive features of its own, which separates it from the more typical case of developing-to-developed country migration. At least four such features may be mentioned:

- (a) Flows between developing countries tend by and large to be for fixed periods of time with greater prospects of eventual return of migrants to their country of origin, as opposed to a permanent or once-for-all migration to the developed countries;
- (b) The composition of skills in the two cases also seems to be very different, with large concentrations of highly skilled professionals in flows to developed countries and a somewhat more dispersed pattern, varying from highly skilled to semi-skilled and even unskilled manpower, in flows to developing countries;

/...

- (c) The roles and positions of the professionals, who go from one developing country to another, are also vastly different from those joining at the margin of a highly skilled and much larger workforce in the developed countries;
- (d) There seems furthermore to be a larger element of government-to-government transfers involved in developing-to-developing than in developing-to-developed country flows, thus opening up greater possibilities of a somewhat more planned exchange.

69. For these reasons, the study suggests that "policies and responses which would be called for in respect of these two distinct streams of migration would have to be influenced and shaped by different sets of considerations" (TD/B/C.6/AC.4/8, para. 15) and would give rise to somewhat different welfare implications.

2. Empirical evidence

70. Very little attempt seems to have been made thus far to collect systematic data on migration between developing countries, broken down by skill categories and by country of origin and destination, there is evidently a need to fill this major gap in knowledge. It is, however, possible to get some idea of recent trends by drawing on the four case studies of skill exporting countries prepared by the UNCTAD secretariat (TD/B/C.6/AC.4/3-6). In Sri Lanka, for instance, the study found that during the period 1971-1974 more than 35 per cent of emigrant doctors, engineers, teachers and accountants migrated to other developing countries (TD/B/C.6/AC.4/4, para 6). In the case of Pakistan, of the total stock of nationals (both skilled and unskilled) employed abroad at the end of 1977, nearly 45 per cent were working in other developing countries. Furthermore, of the total remittances received from abroad in 1976-1977, as much as 60 per cent seems to have come from countries in the Organization of Petroleum Exporting Countries (TD/B/C.6/AC.4/3). In the case of the Philippines and India, it is indicated that a significant amount of skilled manpower is known to flow to the Middle East, although no figures have yet been compiled.

71. More data regarding the migration of medical personnel have been provided by a WHO study (HMD/76.4). This report shows that of 3,418 doctors from developing countries working in other developing countries, 64 per cent were from Asia, 27 per cent from Africa, and 9 per cent from Latin America. The report also indicates that most of this type of migration has been intra-regional, rather than interregional. Another interesting aspect brought out in this report is "the extent of the dependence of some regions (or sub-regions) on certain categories of skills from other developing countries" (TD/B/C.6/AC.4/8, para. 34). In West Asia, for example, immigrant doctors accounted for approximately 65 per cent of domestic stock and of these, 71 per cent were nationals of other developing countries. In Africa foreign doctors constituted 85 per cent of the domestic stock, of which 47 per cent were of developing country origin.

72. These few figures clearly help to demonstrate that "the demand for skilled

manpower has risen rapidly in developing countries experiencing strong economic growth ... While movements of Latin Americans to Venezuela, Indians and Egyptians to Saudi Arabia, and Iraqis and Pakistanis to Iran are not new, there is now a tendency for such movements to increase. In Latin America, for instance, migration between countries of the region is reaching considerable proportions and emigration from the poorer to the more developed nations consists largely of skilled personnel²⁷ (E/CN.5/545, para. 8).

B. Conceptual basis for co-operation

73. These trends give grounds for taking a serious look at new forms of co-operation among skill-exporting and skill-importing developing countries. The rationale for this can be seen to exist in the emergence in recent years of vast surpluses in the stock of skilled manpower in some developing countries and of investible resources (hence the demand for skills) in others.

1. Advances in skill profile

74. Some idea of the significant expansion that has taken place in developing countries' skilled manpower resources can be gained by looking at the 1950-1972 figures for education expansion compiled by the UNCTAD secretariat.^{27/} These show that over the 12-year period under consideration, the total numbers enrolled in developing countries at all levels of education (i.e. levels I-III) increased nearly fourfold, from 73 to 284 million; or from only half that of total developed country enrolment in 1950 to a level which in 1972 surpassed that of the latter.

75. These over-all growth figures gives an inadequate impression of the veritable explosion that has taken place in enrolment in the third or higher level of learning. The number of students at the third level in all the developing countries in 1950 was only 930,000 or 10 per cent of the world total. By 1972, the number had increased more than eightfold - to 7,600,000 and the share in world total to 25 per cent. By 1980, the number of students enrolled in institutions of higher learning in all developing countries is estimated to rise to around 15,000,000 or to nearly 30 per cent of world total. The significance of this advance may be better appreciated if it is recalled that these figures are three times higher than the total enrolment at this level in all developed - both developed market economy and socialist - countries in 1950, and two thirds higher than that even in 1960.

76. Clearly, formation of skilled manpower is certainly one area where the gap between the level in the developed and in the developing countries has narrowed rather rapidly.

2. Emergence of surpluses of investible resources and excess demand for manpower

77. Simultaneously with this education explosion which has made some developing

^{27/} See TD/B/C.6/AC.4/8, para. 17 and 18, p. 4; and table I, p. 5.

countries actual or potential suppliers of skills, other countries within the developing world, particularly the oil-exporting ones and those experiencing a rapid growth of exports, have seen their foreign exchange resources rise sharply since the early 1970s. Many of them have now embarked on ambitious development programmes so that their past capital constraint has been replaced by actual skill shortages. The demand projections for skilled manpower in their development plans as well as estimates of their current dependence on imported skills, clearly underline this change. Furthermore, faced with the need for diversifying their production structures within a narrow time horizon (i.e. well before their main, and often single, source of revenue dries up) and confronted with their own shortages of manpower with which to transform their economies, the benefits to these countries of a ready access to skilled manpower (a continuously renewable asset) from other developing country sources would appear to be considerable.

3. Complementarities for co-operation

78. The convergence of these two interrelated phenomena - surplus of skills in some developing countries and investible resources accompanied by demand for skills in others - has thus created complementarities between the two groups of countries in their endowment of human and investible resources which could be mutually exploited under some form of co-operative arrangement.

79. For appraising the nature of such complementarities, the UNCTAD study (TD/B/C.6/AC.4/8, para 21) found it analytically convenient to divide developing countries into five broad categories:

I. Countries with strong complementarities

- A. Skill poor - Resource rich
- B. Skill rich - Resource poor
- C. Skill poor - Resource poor

II. Countries with weak complementarities

- D. Balance in skill and resource endowment
- E. Skill rich - Resource rich

80. The last two groups of countries (D and E) might have a relatively limited basis for participation in co-operative skill exchanges, but on the other hand, countries falling in A, B and C groups have reached a stage where the possibilities of co-operation have become vast indeed. Within these groups, the potential for co-operative exchange of skills would seem to be greatest between countries in A group (skill poor - resource rich) and B group (skill rich - resource poor). There would also seem to be promising possibilities for co-operation between countries of C group (skill poor - resource poor) and those belonging to groups A and B. In the latter case, an ideal arrangement might be

for skill transfers to countries of C group, notably the least developed countries, which are poor in both skills and resources, to be organized through technical co-operation programmes operated on a triangular basis by countries with surplus skills in combination with countries that have access to investible resources.

81. So far these possibilities for co-operative action have not been actively explored. This is largely because, as stated in the UNCTAD study, of a near-total absence of

"any clear perception, both in theory, and in practice, that exchange of investible resources for skills could be considered a normal part of trade flows ... Notions on production and trade have been too firmly grounded for so long on commodities that it has needed a widening of this framework to accommodate exchange between commodities and financial flows. Similar accommodation for the exchange of skills for either goods or capital has barely begun. But it is hardly conceivable that a really efficient international, or in fact even national, devision of labour could be undertaken without taking into consideration, for purposes of both production and trade, the comparative advantage involved in production of human capital - that is, skilled personnel" (TD/B/C.6/AC.4/8, para. 25).

C. Possible gains from co-operation

82. The most important issue in assessing the possible advantages of a co-operative approach would seem to be the question of whether the gains from such co-operation would be distributed equitably among the various participating countries. Similar criteria have been utilized for discussion of removal of mutual barriers to trade and for expanding economic integration among developing countries. They are, however, no less important when the question under consideration is one of exchange of factors of production - e.g. capital and skills. There would seem to be sufficient a priori grounds (based on the notion of emerging complementarities in developing country economies) for assuming that both the skill-exporting and skill-importing developing countries would stand to benefit from such exchange.

83. For the skill-exporting countries, possible advantages might consist of short-term relief from unemployment or underemployment; generation of foreign exchange earnings in the form of remittances from migrants abroad or of capital transfers under a co-operative arrangement; maximization of the education system potential; and the possibility that emigrated professionals might be induced to return home, given the fact that migration between developing countries tends by and large to take place under fixed-term contracts. Furthermore, if and when such personnel return, their potential social productivity might have been enhanced by virtue of the fact that they would have gained experience and applied their talents to projects in a social and economic environment more appropriate to the circumstances of their home country.

84. The skill-importing countries would likewise benefit from co-operative

exchanges by being able to have access to highly skilled manpower on substantially better terms than those offered to the equally qualified personnel from non-developing country or high-cost sources; access to skill experience more relevant to the economic and possibly even cultural basis of society; a greater range of options in the selection of skills and of source countries; and more importantly, an assured supply of valuable skilled manpower on a long-term basis.

D. Some policy issues

85. In order fully to exploit these advantages, the UNCTAD study set out a number of measures that would be called for. These were predicated on the grounds that in economies where initial interlinkages are weak it might be somewhat simplistic to expect a system of exchange to emerge spontaneously and inevitably out of economic necessity. Rather, it has to be built on deliberate developing country action, both nationally and collectively. The study outlined four broad areas requiring particular attention.

1. Identification of specific areas for co-operation

86. It is beyond the scope of this paper to discuss all areas. But some of the principal ones may be listed here.

87. There would seem to be, first and foremost, a cogent case for moving towards a "new" division of labour in skill production between developing countries. This would call for a more planned and co-ordinated approach, than has been the case hitherto, to education and manpower policies in developing countries, so that investment in education (production of skills) and skill transfers (trade in skills) could be organized on the basis of comparative advantage considerations, at a broad regional or subregional level.

88. Arrangements for better sharing of information would be another area of co-operation. Appropriate institutional mechanisms, such as data banks or manpower pools, could be set up to provide for periodic exchange of information, on a bilateral or multilateral basis, on employment and investment outlets within the developing countries of the world.

89. Measures would be called for to create appropriate interlinkages between the various national decision-making units in the education and manpower sectors. These could be followed by collaborative efforts to set up joint developing country institutions in these sectors.

90. There would furthermore be considerable scope for on-the-job training and informal education activities undertaken jointly by developing countries. In a number of such countries, various sectors of economic and technical activities have advanced to an extent that other developing country nations can obtain, at a much lower cost, much more relevant on-the-job training.

91. A particularly valuable form of co-operative skill exchange could be organized through specially designed technical co-operation programmes administered and financed by the developing countries themselves, within the

context of the Buenos Aires Plan of Action for Technical Co-operation among Developing Countries. 28/ Such arrangements could also foster and promote developing country owned and controlled consultancy agencies in the professional services by extending to them preferential treatment in the execution of development programmes. Furthermore, the "indigenisation" of such services and the process of making them more appropriate to developing country needs would offer wide scope for co-operation and exchange among these countries.

2. Reciprocity and preferential arrangements in skill exchange

92. The identification of specific areas of co-operation, however, must be conceived within a broader framework of co-operation consisting, as in the case of customs union or economic integration arrangements, of the two notions of (a) reciprocal exchange among co-operating countries, and (b) preferential treatment of developing countries in such exchanges vis-à-vis those with developed countries.

93. Thus, to the extent that developing countries with surplus skilled workers but poor in resources participated in a scheme which encouraged skill transfers on a preferential basis to other developing countries (typically those rich in resources and poor in skills), it would be reasonable to expect that the beneficiary countries would wish to reciprocate by contributing to the fair distribution of gains: either directly, in proportion to the investment costs incurred by exporting countries in producing skills, or by means of an appropriate transfer of resources, in the form of intergovernmental loans or grants; or alternatively, by participating in joint projects which would allow complementarities in the resource base of those countries, to be exploited more fully. Proposals along these lines have already been advanced in various United Nations forums 29/ and examined by UNCTAD in the various studies submitted to its intergovernmental group meeting early in 1978. 30/ The full ramifications of these proposals, would, however, have to be examined further for their practical application to exchanges between developing countries.

3. Agreed norms of employment for personnel from developing countries

94. Harmonizing of the terms and conditions of employment in host developing countries would be another significant area for joint action. Very little is known on the subject and a detailed study could help to articulate standard agreements on employment, remuneration and security aspects of migration within the developing regions.

28/ Report of the United Nations Conference on Technical Co-operation among Developing Countries (United Nations publication, Sales No.: E.73.II.A.11 and corrigendum), part one, chap. I.

29/ See, for instance, the address by His Royal Highness Crown Prince Hassan bin Talal of Jordan to the sixty-third session of the International Labour Conference (International Labour Conference, Provisional Record No. 14, pp. 14/4-14/5). See also TD/B/C.6/28, TD/B/C.6/AC.4/10, in particular paras. 70 (g) and (m).

30/ See TD/B/C.6/7, chap. III; TD/B/C.6/AC.4/2 and TD/B/C.6/AC.4/7.

4. Institutional modalities for co-operation

95. When all the various measures, and many others not listed here, are added up, it would be difficult to visualize that effective co-operation could be accomplished without creating suitable institutional mechanisms to tackle the tasks ahead. Several regional, subregional and sectoral institutional arrangements among the developing countries have already taken shape during the last decades. More recent additions to them are the transfer and development of technology centres. Similar institutional arrangements would also seem to be manifestly necessary in the skill sector if the momentum towards co-operative skill exchanges is to be maintained.

96. The choice and design of a particular form will no doubt depend on the extent of flexibility desired, the nature of the issues to be tackled, the perception of common interests by the concerned parties, their degree of political commitment, and the level of capability that could be exploited jointly. ^{31/} A number of possible forms may appear feasible in different situations, including (a) bilateral co-operation between pairs of countries; (b) regional or subregional co-operation among sets or sub-sets of developing countries; and (c) interregional or multilateral co-operation involving larger groupings of developing countries.

97. All these various arrangements could be utilized either singly or in combination to assist in working out a new framework of co-operation. There would thus seem to be a need to examine the feasibility of the various proposals on skill co-operation along the lines suggested by UNCTAD's Group of Governmental Experts on Reverse Transfer of Technology (see its "agreed conclusions and recommendations", para. 3 in annex II below) and by the UNCTAD secretariat study on the subject (see TD/B/C.6/AC.4/8, sect. C).

^{31/} Francisco R. Sagasti, "Technological Self-Reliance and Co-operation among Third World Countries", World Development, 1976, vol. 4, Nos. 10/11, pp. 939-946.

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Letter dated 18 October 1979 from the Chargé d'Affaires a.i.
of the Permanent Mission of Cyprus to the United Nations
addressed to the Secretary-General

Upon instructions from my Government, I have the honour to draw Your Excellency's attention to the grave situation that has been created in the island as a result of the most recent Turkish attacks of 13 and 14 October against Maronite-Cypriot inhabitants of the village of Kormakitis, situated in the area of the Republic under Turkish military occupation. These attacks culminated, as in the earlier cases of the Maronite villages of Karpasha, Asomatos and Ayia Marina - also located in the occupied area - in the violent taking and usurpation of lands belonging to Maronite-Cypriots. An account of this despicable incident is being given in a memorandum submitted by Mr. Ioannis Mavrides, Representative of the Maronite community in the House of Representatives of the Republic of Cyprus, which is hereto annexed.

The renewed campaign of land-snatching with the colonist-settlers from Turkey as protagonists, which is carried out on orders from Ankara and is directed this time against the peace-loving Maronite community, serves but one sinister purpose, namely, that of complete Turkification of the occupied areas of Cyprus by way of forcibly expelling all indigenous Cypriot inhabitants of Greek, Maronite or Armenian origin and their replacement by more colonist-settlers massively imported from Turkey.

I need hardly emphasize the great unrest that prevails among the members of the Maronite community, who after hundreds of years of prosperous, peaceful and happy living in Cyprus are now being uprooted by the forces of the Turkish Attila and are condemned, like their Greek Cypriot compatriots, to a life of misery and deprivation, away from their ancestral homes and lands.

Undoubtedly, the situation created by the aforementioned unlawful and inhuman acts, coupled with the intensified tactics of oppression, through blackmail and terror, against those unfortunate people as a means for their elimination from the occupied area is in itself serious and acquires even more ominous dimensions when considered

in conjunction with verified evidence already placed before the United Nations of a series of recent arbitrary actions ordered by Ankara, which are clearly designed to further the sinister objective of the abolition of the Republic of Cyprus and the annexation of the occupied Cypriot territories to Turkey.

My Government strongly holds the view that it is the responsibility of the United Nations and in particular of the Security Council, which has an obvious special responsibility towards Cyprus and its people, to take immediate measures to arrest this abhorrent process of faits accomplis. This is, indeed, a matter that should be given serious consideration by the General Assembly and the Security Council, especially in view of the fact that whereas General Assembly resolution 3212 (XXIX) unanimously endorsed by Security Council resolution 365 (1974), calls for the return of all the refugees to their homes in safety, the very opposite process is carried out through still more people being uprooted from their homes and lands and rendered destitute refugees - victims of Turkey's chauvinistic and racist policies.

On behalf of my Government, I wish to lodge a most emphatic protest against the above manifestations of lawlessness and provocation directed against the members of the noble and peace-loving Maronite community in Cyprus and to express the earnest hope that Your Excellency will find it possible to effectively intervene for the purpose of restoring and protecting the fundamental rights of the Maronite citizens of the Republic of Cyprus against Turkey's expansionist schemes which, if remained unrestrained, can only have the most serious implications for the prospects of peace in the island and in the whole area.

I should be grateful if you would circulate this letter as a document of the General Assembly, under agenda item 21, and of the Security Council.

(Signed) Joseph J. STEPHANIDES
Deputy Permanent Representative
of Cyprus to the United Nations
Chargé d'Affaires a.i.