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## THE MIDDLE EAST AND THE UNITED STATES: A PROBLEM OF "BRAIN DRAIN"

### INTRODUCTION

In explaining the determinants of economic growth, economists have attempted to distinguish the relative contributions made by various inputs. Theodore Schultz<sup>1</sup> concluded that improvements in human capital have made larger contributions to growth than increases in physical capital. E. F. Denison<sup>2</sup> was even more specific in his pioneering studies of changes in real national income in the United States from 1927 to 1967, estimating that 23 percent of the growth could be explained by improvements in the educational level of the labor force and 20 percent by advances in technological and managerial knowledge. On the basis of such results, we may conclude that expenditures on education and training, public health, and general research contribute significantly to productivity in the industrialized nations by raising the quality of human capital; thus these outlays command a continuing return in the future.

On the other hand, in developing nations investment in human capital has been considerably less (or even negligible) in the past, and this circumstance has, by and large, hampered growth. It is evident that the effective use of physical capital is itself dependent upon the availability of human capital. The accumulation of physical capital alone cannot lead to rapid economic growth; in practice, additional amounts of it may be of little use in many situations. The absorptive capacity for physical capital has been low because growth in the quantity and quality of human capital has been too slow. In addition to overall shortages of skilled labor, most people in such categories tend to concentrate in certain areas (like capital cities), with a resultant heightening of shortages in other regions, particularly the countryside. The most critical shortages in human capital have been felt in activities where managers, administrators, engineers, doctors, economists, agronomists, and other professional technicians are needed.

<sup>1</sup> T. W. Schultz, "Investment in Human Capital," *American Economic Review*, 51 (March 1961), 1-17.

<sup>2</sup> E. F. Denison, *The Sources of Economic Growth in the United States*, Supplementary paper No. 13, Committee for Economic Development, New York, 1962; and idem, "Education, Economic Growth, and Gaps in Information," *Journal of Political Economy*, 70 (Oct. 1962).

In some countries, however, this shortage of human capital *could* be at least partly alleviated by the return of citizens or former citizens to their country of origin—people who have sought more promising employment overseas after receiving specialized educations or otherwise obtaining marketable skills. Given the critical shortages of human capital in most developing countries, this loss of high-level manpower—the so-called “brain drain”—becomes a serious problem.

A brain-drain situation takes on an added dimension in the case of the Middle East. Given the sudden and vast availability of capital,<sup>3</sup> any shortage of high-level manpower greatly reduces the potential for growth and development. Because of the long gestation period involved in educating and training skilled people, the only methods for overcoming such a bottleneck in the short and medium terms are either the return of expatriates or the hiring of foreign nationals.

Recent emigration from the Middle East has continued to follow familiar patterns—to the United States, Canada, Latin America, and Australia—but has been significant to other countries as well, particularly in Western Europe. In this paper, data pertaining to the United States will be examined in some detail in an attempt to gauge the scope of the brain drain from the Middle East. Available information as to both numbers and characteristics of migrants is presented. Then the merit of various policy options which could reverse the talent flow will be discussed, with some reference to what is known about motivations related to previous movements.<sup>4</sup>

#### MIDDLE EASTERNERS IN THE UNITED STATES

No official statistical indicator adequately describes the migration of any national or occupational group to the United States. Immigration figures are available for each major country of origin (table 1), but these show only those indi-

<sup>3</sup> Various estimates place the trade surplus of the oil-exporting nations of the Middle East at between \$25 and \$40 billion annually for the next five to ten years.

<sup>4</sup> Previous studies of this problem in the Middle East are limited. There are reports for Lebanon and Iran in *The International Migration of High-Level Manpower* (New York: Committee for the International Migration of Talent, 1970); and another study of Lebanon is summarized in *The Brain Drain from Five Developing Countries* (New York: United Nations Institute for Training and Research [UNITAR], 1971). Our investigation here focuses on migration to the United States as an example for which a fair degree of data is available and not because the United States is assumed to be the goal of a majority or even a plurality of the migrants. By way of partial comparison, Australia received about 29,900 migrants from Lebanon and 21,700 from Egypt between 1955 and 1973: these individuals had the status at entry of “permanent arrivals,” closely equivalent to that of immigrant in the United States. About 14,700 Egyptians and 9,300 Lebanese migrated to Canada between 1960 and 1971; over 7,000 former Egyptians and 3,000 former Lebanese acquired Canadian citizenship during the same period. In the United Kingdom, the number of registered aliens grew by nearly 47 percent between 1961 and 1973 to a total of nearly 184,000. In 1973, nearly 4,000 of these aliens were Iranians, up by almost 216 percent in 12 years, while the number of Egyptians had swelled to more than 3,500, an increase of more than 153 percent. The Iraqi population in Britain has grown more slowly—by about 28 percent—to about 3,200.

TABLE 1 *Immigrants admitted to the United States from selected Middle Eastern countries, 1953-1973*

Year <sup>a</sup>	Total immigrants	Egypt	Iran	Iraq	Jordan <sup>b</sup>	Lebanon	Syria
1953	170,434	168	160	125	304	261	124
1958	253,265	498	433	215	528	366	209
1963	306,260	760	705	426	752	448	226
1965	296,697	1,429	804	279	702	430	255
1968	454,448	2,124	1,280	540	2,010	892	644
1970	373,326	4,937	1,825	1,202	2,842	1,903	1,026
1971	370,478	3,643	2,411	1,231	2,588	1,867	951
1972	384,685	2,512	3,059	1,491	2,756	1,984	1,012
1973	400,063	2,274	2,998	1,039	2,450	1,977	1,128
Total	6,521,145	29,417	21,213	11,641	26,341	16,392	9,206

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

<sup>a</sup> All Immigration and Naturalization Service data unless otherwise indicated are for fiscal years ending 30 June.

<sup>b</sup> Includes Palestine.

viduals who declare their intention to become permanent U.S. residents before they leave home. This is certainly an important group, but also significant for most developing countries are those who enter the United States as temporary residents, including students and other visitors (table 2), but eventually change their status (table 3), often after completing certain educational or training goals.

TABLE 2 *Middle East students and other temporary visitors admitted to the United States, 1960-1973*

Year	Total	Egypt	Iran	Iraq	Jordan	Lebanon	Syria
Students							
1960	35,415	242	997	254	134	249	58
1963	38,991	219	540	321	179	249	153
1966	55,716	120	1,023	143	203	320	165
1969	90,486	185	2,201	143	299	471	141
1972	96,568	126	4,053	114	401	854	296
1973	90,693	143	4,832	159	351	802	178
Other temporary visitors							
1960	1,105,321	1,504	2,347	456	305	1,341	259
1963	1,468,100	1,721	3,556	567	637	1,757	505
1966	2,286,207	2,183	3,834	834	900	2,792	745
1969	3,554,842	2,910	6,756	569	1,177	4,047	769
1972	5,074,892	3,515	10,667	564	1,550	5,700	1,198
1973	5,886,631	3,640	13,438	549	1,730	5,739	1,405

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

TABLE 3 *Middle East aliens adjusted to permanent resident status, 1960-1973*

Year	Total adjustments	Egypt	Iran	Iraq	Jordan	Lebanon	Syria
1960	21,901	135 <sup>a</sup>	207	n.a. <sup>b</sup>	120	118	135 <sup>a</sup>
1963	24,660	413	408	180	170	171	85
1965	26,001	1,247	422	164	185	207	152
1968	130,455	608	825	299	328	266	228
1970	55,761	508	1,003	395	472	354	258
1971	73,325	624	1,317	355	494	443	266
1972	89,181	552	1,991	398	646	656	356
1973	90,764	597	1,915	273	578	642	433

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

<sup>a</sup> Nationals of the United Arab Republic, including both Egypt and Syria.

<sup>b</sup> Data not available.

From the six countries listed, for example, came about 3 percent of the immigrants in 1973, but nationals of the same six countries accounted for more than 7 percent of the residence status changers. Another measure of migration results from the American law requiring all aliens, whether temporary or permanent residents, to register their addresses annually (table 4).

TABLE 4 *Middle East aliens reporting under alien address program, 1959-1973*

Year <sup>a</sup>	Total aliens	Egypt	Iran	Iraq	Jordan	Lebanon	Syria
1959	2,948,694	4,824 <sup>b</sup>	5,934	2,007	5,056	5,838	4,824 <sup>b</sup>
1965	3,024,278	2,917	4,797	1,710	4,231	4,417	n.a. <sup>c</sup>
1970	3,719,750	6,484	9,400	3,307	11,202	6,107	3,392
1971	3,679,502	10,357	9,177	4,659	12,546	8,160	4,278
1972	3,900,059	11,711	10,305	5,088	13,569	8,965	4,725
1973 (A)	4,127,821	13,739	12,024	5,507	12,871	10,134	5,020
(B)	4,643,457	15,005	20,904	6,155	14,533	12,143	6,004

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

<sup>a</sup> Figures are for permanent residents only except for 1973; for that year permanent residents are indicated by (A), total aliens by (B).

<sup>b</sup> Figure for nationals of the United Arab Republic, including Egypt and Syria.

<sup>c</sup> Data not available.

Knowing the number of students and other aliens in the United States does not tell us about their eventual intentions, but trends in applications for changes in residential status from temporary to permanent can be indicative of what happens among those who come with at least the initial intention to return home.

While many aliens can qualify indefinitely as permanent residents, the long history of immigration into the United States indicates that naturalization (table 5) is the eventual decision of many such individuals.<sup>5</sup>

TABLE 5 *Naturalizations by former allegiance, 1953-1973*

Year	Total naturalizations	Egypt	Iran	Iraq	Jordan	Lebanon	Syria
1953	92,051	76	93	63	231	194	172
1958	119,866	86	138	86	188	263	129
1963	124,178	170	260	113	543	362	125
1965	104,299	295	295	150	472	343	129
1968	102,726	513	334	196	437	346	162
1970	110,399	377	416	184	456	351	146
1971	108,407	355	501	235	608	345	152
1972	116,215	439	569	370	952	438	188
1973	120,740	637	578	455	1,141	504	250

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

Whether immigrant, resident alien, or naturalization figures are used, the trend is unmistakable—movement from the Middle East, though still small in absolute numbers, is sharply up in recent years. Through the late 1950s, the United States employed highly restrictive immigration policies emphatically biased in favor of northern Europeans and against nearly everyone else; however, the relaxation of these barriers did not lead to an immediate surge of immigration from the Middle East. The new standards favored those with easily marketable skills in the United States—generally the highly educated—as well as those with close American relatives. Though many Syrians and Lebanese had kin in the United States as a result of small but steady migration since the late nineteenth century, neither other Arabs nor Iranians could to any great extent make such familial claims in the early 1960s. Rather, potential residents had to present their own qualifications, such as advanced training, at the consular office when seeking visas.

The other avenue to America was primarily that of temporary admission for a special purpose, such as matriculation at an American university. Many, perhaps the vast majority, of such students were and still are only limited sojourners in intention at the time of initial visa applications. They had every expectation of returning home after completion of immediate educational goals. Even though American legislation governing immigration has undergone many changes in recent years, it has generally been possible for the temporary visitor, with high personal qualifications, to obtain permanent resident status. Legal considerations aside, the residence in the United States for several years by many such

<sup>5</sup> Over 9 million since 1907.

students has led eventually to strong ties—marital, friendship, and professional—which weaken original expectations to return home.

It can be seen from a comparison of tables 1 and 3, that aliens of Middle Eastern background already in the United States who successfully apply to change their status to that of permanent resident swell considerably the ranks of those who enter the United States with this status. About two-thirds of the Iranian, half the Syrian, a third the Lebanese and a quarter of the Egyptian, Iraqi, and Jordanian-Palestinian immigrants were matched in 1973 by compatriot status-changers. As table 6 shows, those who come to the United States for educational or professional

TABLE 6 *Original entry status of aliens adjusting to permanent resident status, 1973 (Percentages)*

Country	Students	Students' spouses and children	Exchange visitors	Exchange visitors' spouses and children	Temporary visitors for pleasure
Egypt	12.5	2.6	6.7	3.3	43.8
Iran	42.2	2.5	14.6	9.2	27.8
Iraq	22.4	1.5	9.7	5.6	47.8
Jordan	46.1	0.7	7.6	2.5	40.0
Lebanon	37.1	1.5	3.1	1.0	49.4
Syria	33.2	1.7	13.7	5.1	33.7

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

training<sup>6</sup> and their immediate families comprise from 30 to 60 percent of the status adjusters in the countries listed; in all, some 55 percent of the adjusters from these countries fall into these groups. The categories under which these applications are made though, are quite varied (table 7). Occupational preference

TABLE 7 *Adjustments to permanent resident status by category, 1973 (Percentages)*

Country	Occupational preference	Spouse, parent, or child of U.S. citizen	Nonoccupational preference
Egypt	7.5	20.4	26.2
Iran	6.1	39.9	24.0
Iraq	4.4	28.2	28.9
Jordan	2.3	45.0	36.7
Lebanon	5.0	45.0	31.5
Syria	7.2	30.5	29.1

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

<sup>6</sup> The exchange visitor category, as far as Middle Eastern visitors are concerned, comprise mostly visitors with some kind of nondegree training.

exemptions are available only to those who have professional or trade credentials; but nonpermanent residents (like students) are generally barred from participating in the labor force to the degree necessary for establishing these credentials if they did not yet have them before leaving home. Many of those who manage to qualify are those who marry or beget U.S. citizens. That classification is much more likely to be obtained than one related to occupational experience by a young male or female who spends four, six, or more years on a modern American campus. Whatever the means of achieving status adjustment, this process tends to occur rather soon after arrival. A clear majority from each country of our interest who adjust to permanent resident status do so within three years of entry (table 8).

TABLE 8 *Adjustments during 1973 to permanent resident status by calendar year of entry (Percentages)*

Country	1972-1973 <sup>a</sup>	1971	1970	1969	1966-1968	Before 1965
Egypt	25.4	23.0	35.7	5.8	5.8	4.1
Iran	16.9	27.9	21.2	15.9	12.4	5.6
Iraq	25.0	23.5	23.1	10.8	12.3	5.2
Jordan	23.8	30.3	16.0	12.1	14.1	3.7
Lebanon	31.9	31.0	18.1	8.0	8.8	2.1
Syria	27.8	24.2	21.8	8.4	13.4	4.3

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

<sup>a</sup>Through June 30, 1973.

Available data indicate the important place of skilled persons in overall emigration from the Middle East. Of all entrants in 1973, those from Middle Eastern countries were from 10 to 70 percent more likely to fall in skilled labor categories (table 9). The difference is even more exaggerated among professional and managerial personnel, or if dependent immigrants (spouses, children, and others) are subtracted out of the total. Some idea of the specific nature of the skills these people bring to the United States is available from three sources.

First, the U.S. Immigration and Naturalization Service conducted three consecutive annual studies from 1967 to 1969 in response to a general interest in the brain drain problem. These studies concern professionals who migrated to this country or who changed to permanent resident status after entry. Nearly 131,000 people were covered by these studies; and slightly over 5 percent of them came from the six Middle Eastern countries considered above (table 10). Engineers, teachers, and medical doctors (including surgeons and dentists) comprise the bulk of these Middle Eastern migrants—more than 57 percent during the three-year period. More than a fifth of these professionals originally came to the United



TABLE 9 *Middle East immigrants admitted to the United States  
by major occupation group, 1973  
(Percentages)*

Country	Professional, technical, and related workers	Managers, officials, and proprietors	Skilled workers, craftsmen, foremen, and related workers	Housewives, children, and no occupation
Egypt	25.7	2.3	6.6	55.8
Iran	27.8	5.4	5.9	49.5
Iraq	13.5	4.1	14.1	56.7
Jordan	10.5	5.3	9.0	61.1
Lebanon	9.6	4.6	13.1	59.7
Syria	16.2	4.1	18.4	51.3
All Immigrants	10.2	2.3	10.1	60.9

SOURCE: United States, Immigration and Naturalization Service, *Annual Report of the Commissioner*, Washington, D.C.

States as university students. By comparison with the group as a whole, relatively few students were in medicine; some 37 percent were engineers, 22 percent were teachers, and 8 percent were natural scientists.<sup>7</sup>

The second source relates specifically to the medical profession,<sup>8</sup> where the implication of the migration of doctors and other health personnel for both the societies from whence they originate and the United States has been of particular concern to the American medical community. Foreign medical students have long traveled to the United States or to Europe for university training or hospital internships or residencies, but in the last fifteen or twenty years, the migration has increasingly shifted toward domination by doctors who have been educated already and who seek permanent status in their destinations and away from domination by students who do not return home. More than 70,000 doctors who have a foreign education are in the United States alone at the present time. The Middle East has supplied many of these doctors, if not many in proportion to the number of American practitioners, then certainly in proportion to those remaining at home. We can see the rapid recent escalation<sup>9</sup>—increases of nearly 100 percent for Syria, more than 50 percent for Egypt, roughly a third for Iran and

<sup>7</sup> Among *all* professional people migrating to the United States between 1967 and 1969, engineers, teachers, and doctors comprised about 44 percent; nurses and others in medical fields made up another 18 percent, compared with about 7 percent from the Middle East. About 25, 15, and 7 percent of all student status changers were engineers, teachers, and natural scientists respectively.

<sup>8</sup> J. N. Haug and B. C. Martin *Foreign Medical Graduates in the United States* (Chicago, 1971).

<sup>9</sup> At the time of the study, medical schools were found in only five of the countries concerned here: Egypt (Alexandria, Ain Shams, Ibrahim Pasha, and Cairo Universities), Iran (Teheran University and the Medical Faculties at Ahwaz, Isfahan, Mashhad, Shiraz, and Tabriz), Iraq (Baghdad University), Lebanon (American University of Beirut and St. Joseph's University),

Iraq, and nearly a sixth for Lebanon in only *three years* (table 11). It must again be stressed these figures do not include Middle Easterners who attended American medical schools but only those who migrated *after* their university training. These doctors are certainly important to the maintenance of health in the United States, but the relevant opportunity costs must be measured in relation to their home countries.

For example, in 1967 there were only 7,780 physicians in Iran and 1,537 in Lebanon. This indicates ratios of about 2.9 and 6.5 doctors per 10,000 population respectively. At the same time in the United States alone,<sup>10</sup> Iranian- and Lebanese-trained physicians reached levels equivalent to about one-fifth and two-fifths, respectively, of the numbers who practiced at home. The problem of migration to the United States is only somewhat less severe for the other three countries. Egypt had more than 16,000 doctors by the end of the 1960s, while in Iraq and Syria they totaled 2,424 and 1,513, respectively in 1969. At that time, of the doctors trained in their countries, Egypt, Iraq, and Syria saw about one, thirteen, and eight in twenty, respectively, practicing their professions in the United States. The doctors per 10,000 population were about 5.1 for Egypt, 2.8 for Iraq, and 2.6 for Syria.

Most of the graduate medical emigrants are young. They come to the United States often as interns or residents, then tend to settle in this country. Table 12 indicates the graduation year and present activities of these migrant physicians. They are younger and more likely to be in advanced training (internship and residency) than are migrant physicians in general.

A third data source, the Institute of International Education (I.I.E.), indicates what Middle Eastern students study in the United States, a reasonable, if not absolute, indicator of the professional backgrounds of those who eventually adjust to permanent resident status.<sup>11</sup> The vast majority of Middle Eastern students are male (table 13), and undergraduate students outnumber graduates by nearly two to one. What they study can be found in table 14: two-fifths of the students are engineers and clearly predominate; the next ranking disciplines are closely bunched—humanities, business administration, physical sciences, and social sciences each claiming about 10 percent apiece.<sup>12</sup> Table 15 shows that little change

and Syria (Damascus University). Only in Lebanon did the schools train significant numbers of medical students from other countries; in Lebanon, most of the foreign students were from neighboring Arab countries that lacked medical faculties.

<sup>10</sup> Where the number of physicians per 10,000 population was about 14.8 in 1969.

<sup>11</sup> It is not possible to present meaningful figures of the proportion of the students who become permanent residents as a result of the time lag. The Immigration and Naturalization Service presents annual statistics for the (first) entry of foreign students into the United States and for adjustments from student to permanent resident status. Such adjustments occur over many years following initial entry (table 8), and student entries from the Middle East have increased sharply in recent years (table 2).

<sup>12</sup> The Institute of International Education compiles its annual census of foreign students by surveying all American universities, colleges, and other institutions of higher learning.

TABLE 10 *New permanent residents in the United States by profession (major categories only), 1967-1969*

	Technological				Medicine			Education		
	Total professionals	Natural sciences	Engineers	Others	Physicians and dentists		Social scientists	University level	Others	
					Immigrants	Others				
Egypt	1,695	192	506	291	178	77	23	93	150	
Iran	1,357	86	357	169	339	128	9	55	102	
Iraq	314	23	77	68	24	10	3	29	46	
Jordan	344	12	58	66	14	42	5	21	99	
Lebanon	972	38	140	271	121	90	7	32	160	
Syria	220	9	63	35	26	12	3	15	34	
Status adjusters: Students										
Egypt	178	9	37	15	21	12	9	44	33	
Iran	647	64	279	76	24	38	8	33	65	
Iraq	177	17	55	37	3	4	1	14	21	
Jordan	107	6	32	18	—	4	3	13	22	
Lebanon	169	11	63	21	4	5	2	11	28	
Syria	116	6	51	14	4	3	2	12	13	
Status adjusters: Others										
Egypt	56	5	5	1	18	3	—	11	7	
Iran	139	—	1	1	126	2	—	3	1	
Iraq	11	2	1	—	5	—	—	1	—	
Jordan	8	1	1	—	5	—	—	—	—	
Lebanon	31	1	2	1	25	1	—	—	1	
Syria	14	1	—	1	9	—	—	—	—	

TABLE 10 (Continued)

	Technological				Medicine		Education		
	Total professionals	Natural sciences	Engineers	Others	Physicians and dentists	Others	Social scientists	University level	Others
Egypt	1,929	206	548	307	217	92	32	148	190
Iran	2,143	150	637	246	489	168	17	91	168
Iraq	502	42	133	105	32	14	4	44	67
Jordan	459	19	91	84	19	46	8	34	121
Lebanon	1,172	50	205	293	150	96	9	43	189
Syria	350	16	16	50	39	15	5	27	47
Six Countries	6,555	483	1,630	1,085	946	431	75	387	782

SOURCE: United States, Immigration and Naturalization Service, Council on International Educational and Cultural Affairs, *Annual Indicator of the Immigration into the United States of Aliens in Professional and Related Occupations*, Washington, D.C.

TABLE II *Middle Eastern educated medical doctors working in the United States*

Country	Dec. 1970	Dec. 1971	Dec. 1972	Dec. 1973
Egypt	732	901	1,006	1,103
Iraq	186	217	238	245
Iran	1,631	1,856	2,082	2,229
Lebanon	615	653	716	719
Syria	188	204	270	370

SOURCE: J. N. Haug and B. C. Martin, *Foreign Medical Graduates in the United States* (Chicago, 1971).

has been noted during the last twenty years in the sex composition or relative academic level of the Middle Eastern student body in the United States, but notable shifts toward engineering and business administration are apparent (table 15). A relative drop is indicated for the number of Middle Easterners studying agriculture and the social sciences or in attendance at American medical schools in the period of time.

The disparate data series presented emphasize a number of facts, even though an *exact* background profile remains vague. (1) Emigration of all types from the Middle East to the United States has accelerated in recent years, as has the number of nonimmigrants who have later adjusted their resident status to permanent. (2) The number of students from the countries of concern has grown rapidly. (3) Students are a major proportion of the Middle Easterners who eventually become permanent residents after their initial entry to the United States. (4) Individuals with high degrees of personal skills dominate the ranks<sup>13</sup> of both emigrants and status changers from the Middle East. Distinctions have not been made previously in this paper among the six countries with which most of our data have been concerned. Such factors are important to our eventual goal—policy recommendations. The first point to be made is emphasized in tables 13 and 14. Data concerning students in the United States show that a large number have migrated from the states of the peninsular region, that is, from countries where

Historically, the returns from these surveys have been very high, missing few schools with significant numbers of foreign students. The increasing use of computers by schools in their registration processes in recent years has led to serious problems for the I.I.E. census. Few registration cards ask all the same questions of foreign students as does I.I.E.; hence a growing proportion of the “no answer” category appearing in the resultant statistics. In the major areas of concern (country of origin, sex, academic level and field of study) the response level has been fairly steady in recent years. For other series of some interest here, this rising degree of inaccuracy is unfortunate. For example, the query concerning the first year of each student’s matriculation in the United States yielded, until the late 1960s, relatively accurate cumulative data as to the number of students from each country who had ever come to the United States (see n. 18).

<sup>13</sup> Especially when dependents are eliminated from the calculations.

TABLE 12 *Middle East graduate medical migrants to the United States  
general characteristics, 1970*

Category	Egypt	Iran	Iraq	Lebanon	Syria	All M.D. migrants
Sex						
Male	684	1,503	167	575	163	48,440
Female	48	128	21	40	10	8,777
Age						
Under 30	53	110	10	77	62	5,368
30 to 34	131	609	60	105	69	11,902
35 to 39	262	516	45	105	25	9,763
40 to 44	177	263	17	94	10	9,222
45 to 49	73	86	26	78	5	6,834
50 to 59	31	45	23	105	2	6,831
60 and older	5	2	7	51	—	7,297
Professional activities <sup>a</sup>						
Interns and residents	17	761	82	148	111	16,648
Hospital staff	226	313	34	88	24	10,563
Private practice	458	403	50	263	25	20,980
Medical teaching	16	30	5	15	1	1,006
Medical research	31	60	12	54	2	3,285
Total	732	1,631	188	615	173	57,217

SOURCE: J. N. Haug and B. C. Martin, *Foreign Medical Graduates in the United States* (Chicago, 1971).

<sup>a</sup> Some reportees indicated multiple activities and/or other activities not listed, including administration and retirement.

the numbers of emigrants and status-changers is generally too low to merit separate classifications by the Immigration and Naturalization Service. Saudi Arabia, Kuwait, and the states of the Arab Gulf have sent students to the United States, Canada, and Europe in numbers that increase at a nearly exponential rate.

Given a lack of direct contrary evidence, we may assume that most such students supported in their efforts by their governments, return home<sup>14</sup> to jobs to which their scholarships entitle them upon the completion of their intended degrees. But it should be remembered that past experience, at a time when the number of students from most of these countries in the United States, was fairly small, may not be an accurate indicator of conditions now, or in the immediate future, as this number rapidly escalates.<sup>15</sup>

<sup>14</sup> This assumption is substantiated by claims made in the answers to inquiries put by the authors to the U.S. embassies of several of these nations.

<sup>15</sup> For example, many student emigrants from Iran and Iraq—also major oil producers—for various reasons have eventually adjusted their student status to that of permanent U.S. resident.

TABLE 13 *Middle Eastern students by home country, sex and academic level, 1973-1974*

Country	Sex			Academic level		
	Total <sup>a</sup>	Male	Female	Undergraduate	Graduate	Special
Bahrain	11	9	2	8	2	1
Egypt	1,163	951	167	189	914	29
Iran	9,623	8,053	910	6,865	2,148	216
Iraq	376	318	43	112	247	5
Jordan	977	862	69	570	354	19
Kuwait	596	524	44	450	106	17
Lebanon	1,493	1,303	132	981	420	33
Libya	690	650	18	234	342	70
Oman	5	3	2	3	2	—
Qatar	61	61	—	56	—	5
Saudi Arabia	1,074	986	35	492	453	97
S. Yemen	21	19	—	12	9	—
Syria	416	349	41	247	143	9
United Arab Emirates	6	5	1	6	—	—
Yemen	25	21	3	8	9	8
Total	16,537	14,114	1,467	10,233	5,149	509

SOURCE: Institute of International Education, *Open Doors, 1974* (New York, 1974).

<sup>a</sup> Categories may not add up to total indicated because of the incompleteness of some responses.

We have considered specifically six countries relative to most of the data presented above: Egypt, Iran, Iraq, Jordan-Palestine, Lebanon, and Syria. In absolute numbers, the first two have led most of the statistical series concerning migration to America, as might be expected from their numerical domination of the population of the Middle East as a whole.<sup>16</sup> Differences arise in the data on the national level and these two largest states provide the most vivid contrasts.

It is obvious from the tables that Egyptian migrants have mostly completed their educations before they arrive in the United States. Iranians become permanent residents in large numbers after they arrive in this country, usually as students. Lebanon and Syria have similarly high proportions of post-entry status adjusters; they, plus those from Jordan, show as a group a notably high number who initially have student status (table 6).<sup>17</sup>

Though valid generalizations are always difficult to make and usually are sus-

<sup>16</sup> Recent population estimates (1975) are: Egypt, 37.1 million; Iran, 33.5 million; Iraq, 10.6 million; Saudi Arabia, 8.5 million; Syria, 7.0 million; Lebanon, 3.2 million; Jordan, 2.7 million; Libya, 2.3 million; and Kuwait, 1.0 million.

<sup>17</sup> Most studies on the brain-drain problem agree that a major source of the emigration of professionally trained personnel are individuals who, after being educated abroad, return home and subsequently find themselves unsatisfied, and then apply for immigrant visas to their countries of study or elsewhere. We have here no such data and it may be a serious limitation.

tainable only for short periods, we can attribute most of these distinctions to differences in the availability of professional education in the Middle East. Until very recently, two countries have stood out in this regard—Egypt and Lebanon. Each has attracted large numbers of foreign students (mostly from other parts of the Middle East), and each has the capacity to service most of the educational needs of its own nationals.

In Iran, university facilities have expanded rapidly in the last decade, yet many Iranians seeking professional degrees have continued to seek out European and North American campuses. In Egypt and Lebanon, students have been able to find good professional training at prices far below the cost of foreign training.<sup>18</sup> Once the education is obtained, however, citizens of these three countries face somewhat different futures: in Iran, with rapid, oil-financed economic development, a shortage of many types of trained personnel; in Egypt and Lebanon, slower growth and relatively more university graduates. The result in the latter countries is pressure to seek greener pastures after obtaining a degree.<sup>19</sup> By contrast, Iranian students are likely to find greater opportunities at home than would their neighbors, wherever they obtain their credentials. Nevertheless, many who are educated overseas put down roots which are not easy to transplant, and, until very recently, job availability has been high in Europe and America for people with professional qualifications.<sup>20</sup>

<sup>18</sup> Comparison of official immigration data with the census results compiled by I.I.E. yields the following estimates for students coming to the United States in the last twenty years:

Iran	30–35,000	Syria	2,800
Lebanon	8,000	Libya	1,600
Jordan	6,000	Kuwait	1,250
Egypt	5,000	Gulf States	200
Iraq	4,200	Yemen	100
Saudi Arabia	3,250	S. Yemen	100

The large proportion of Iranians who are nonpermanent resident aliens (i.e., mostly students) in the United States (table 4) is indicative of Iran's lead in this category.

<sup>19</sup> Migration to the United States or to Europe is only a small factor in this regard. In *The Brain Drain from Five Developing Countries* (New York, 1971), A. B. Fahlan estimates that emigration from Lebanon in the late 1960s amounted annually to about 1,000 each to the United States and Canada, 3,000 to 4,000 to other non-Arab countries (particularly to Australia, France, and Latin America), and 4,000 to 5,000 to Arab countries.

<sup>20</sup> Jordanian-Palestinians form a third category. Despite a recent increase in higher education facilities at home, large numbers still attend universities elsewhere—mostly in the Middle East, but also overseas. Employment opportunities for graduates in Jordan (including the west bank) are no more attractive than in Egypt; students outside the country have great incentive to look elsewhere for jobs. An analogous situation prevails generally for Palestinians; although a majority of them have had claim to Jordanian passports, 30 to 40 percent are domiciled permanently, usually stateless, elsewhere in the Middle East. Statistics are hard to come by, but Palestinians are held to be one of the world's best educated peoples in the Middle East, rivals in this way, as in so many others, only with the Israelis. Yet their lack of a homeland has tended to limit both the wherewithal to finance overseas education and the potentiality for attractive employment after university in their places of residence. In our context here, the



TABLE 14 Middle Eastern students: fields of major interest and academic level, 1973-1974

Home Country	Agriculture			Business administration			Education			Engineering			Humanities								
	Undergraduate	Graduate	Other	Undergraduate	Graduate	Other	Undergraduate	Graduate	Other	Undergraduate	Graduate	Other	Undergraduate	Graduate	Other						
Bahrain	—	—	—	3	—	—	—	2	—	—	—	—	—	—	—						
Egypt	—	33	1	26	231	3	4	19	2	25	2	5	26	55	17						
Iran	33	56	1	614	230	18	41	86	7	134	3,492	717	703	150	1,011						
Iraq	1	37	—	9	15	2	2	11	3	16	40	52	17	27	4						
Jordan	6	8	—	74	29	3	5	12	2	19	217	78	85	28	10						
Kuwait	8	—	3	29	13	2	5	7	—	12	294	21	35	13	20						
Lebanon	8	3	2	128	40	3	13	27	1	41	397	102	97	50	12						
Libya	1	32	1	20	28	1	2	36	1	39	164	67	4	22	64						
Oman	—	—	—	—	—	—	—	1	—	1	1	—	—	1	—						
Qatar	1	—	—	3	—	1	1	—	—	1	29	1	6	—	2						
Saudi Arabia	2	9	—	87	44	1	6	59	32	97	207	75	56	37	147						
Southern Yemen	—	—	—	—	—	—	1	2	—	3	4	1	1	—	—						
Syria	1	2	—	19	3	—	5	3	—	8	102	55	27	14	6						
United Arab Emirates	6	—	—	—	—	—	—	—	—	—	2	—	—	—	—						
Yemen	25	—	—	1	1	—	1	—	—	1	1	—	1	—	8						
Total	16,537	66	180	8	254	1,013	634	34	1,681	86	265	48	398	4,984	1,434	281	6,699	1,058	397	356	1,811

TABLE 14 (Continued)

Home Country	Medical sciences			Physical and life sciences			Social sciences			All other					
	Undergraduate	Graduate	Total	Undergraduate	Graduate	Other	Undergraduate	Graduate	Other	Undergraduate	Graduate	Other	Total		
Bahrain	1	—	1	—	—	—	—	—	—	—	—	—	—		
Egypt	17	23	42	31	154	6	191	10	95	2	107	—	2		
Iran	236	60	299	578	344	26	943	306	318	16	640	—	17		
Iraq	12	10	22	13	36	2	53	9	33	1	43	—	—		
Jordan	42	11	54	60	78	1	139	38	79	4	121	—	1		
Kuwait	9	4	14	11	12	1	24	16	16	2	34	—	—		
Lebanon	94	23	121	101	78	6	185	51	69	4	124	—	9		
Libya	3	3	6	9	58	1	68	7	61	1	69	—	2		
Oman	1	—	1	1	—	—	1	—	—	—	—	—	—		
Qatar	2	—	2	—	—	—	—	9	—	1	10	—	—		
Saudi Arabia	11	8	20	25	48	1	74	41	111	3	155	—	7		
Southern Yemen	1	—	1	—	2	—	2	1	3	—	4	—	—		
Syria	26	11	33	36	18	1	56	11	19	1	31	—	2		
United Arab Emirates	—	—	—	2	—	—	2	—	—	—	—	—	—		
Yemen	1	—	1	1	—	—	1	2	7	—	9	—	—		
Total	456	153	622	863	890	45	1,738	503	811	35	1,349	31	7	2	40

SOURCE: Institute of International Education, *Open Doors, 1974* (New York, 1974).

TABLE 15 *Selected characteristics of Middle Eastern students in the United States, 1955-1974 (Percentages)<sup>a</sup>*

Category	1955	1960	1965	1970	1974
Sex					
Male	90.7	90.8	91.6	89.1	90.6
Female	9.3	9.2	8.4	10.9	9.4
Academic level					
Undergraduate	64.3	68.8	60.0	61.8	64.4
Graduate	32.3	28.0	35.5	33.5	32.4
Special	3.4	3.2	4.5	4.7	3.2
Field of study					
Agriculture	6.0	5.0	4.6	2.3	1.8
Business administration	7.5	6.6	7.6	8.7	11.5
Education	3.4	4.0	2.4	2.5	2.7
Engineering	34.3	39.8	37.4	41.9	45.9
Humanities	9.1	11.9	12.3	12.7	12.4
Medical sciences	10.1	7.8	5.4	4.0	4.3
Physical sciences	13.3	13.6	17.0	15.1	11.9
Social sciences	15.5	10.8	12.9	12.2	9.2
Other	0.7	0.5	0.4	0.7	0.3

SOURCE: Institute of International Education, *Open Doors, 1974* (New York, 1974).

<sup>a</sup> Percentages are calculated on the basis of reporting returns.

Other limited information available<sup>21</sup> tends to confirm the somewhat different status of resident Iranians in the United States. They are heavily lumped in the college and post-college categories (in 1970, about 70 percent were between 15 and 35 years of age); they are overwhelmingly unmarried (61 percent); those who are employed are highly skilled (67 percent), while income levels are clearly bipolar in distribution (47 percent less than \$4,000 (i.e., students), and about 26 percent greater than \$25,000); most are aliens (about 73 percent) who arrived

relevant circumstance is one of education in the Middle East, generally in Lebanon, Jordan, or Syria, and émigré status later. Palestinians have been vital to the economies of the oil-rich and talent-short states along the gulf, as well as in Saudi Arabia; in smaller numbers, they have opted for America, Europe or Australia.

<sup>21</sup> Census Bureau, U.S. Dept. of Commerce, in *Public Use Sample-1970 Census*, gives detailed social and economic characteristics of the foreign-born population, but figures extracted from the general population survey are available only for those countries whose expatriates numbered 300,000 or more. Only rough estimates are available (without high cost special analysis) for other countries and these are further limited by the validity applicable to the 5 and 15 percent samples employed. Given these qualifications, estimates are available for Lebanon, Iran, and Syria, and they are subject to degrees of error abnormally above desirable levels because of rounding problems. These estimates pertain to populations of about 24,000, 22,000, and 13,000 Lebanese, Iranians, and Syrians, respectively.

in the last five years (41 percent) and are male (86 percent). By contrast, only about 36 percent of the Lebanese and Syrians reported in the census data were under thirty-five, and only 25 percent were unmarried; less than a quarter were aliens, but more than a third were female. About 70 percent of those employed, however, were in skilled categories, but the wage pattern was smoother: 11 percent below \$4,000, 32 percent between \$4,000 and \$10,000, 22 percent \$10,000 and \$15,000, and 35 percent over \$15,000.

## POLICY OPTIONS FOR THE FUTURE

There are many reasons (table 16) why individuals migrate: political, eco-

TABLE 16 *Factors in the migration decisions of Middle Eastern scientists and engineers*  
(Percentages)

Factor	Important	Unimportant	Not applicable or no answer
Obtain a higher standard of living	60.6	10.9	28.5
Improve opportunities for children	46.8	6.5	46.8
Insufficient research opportunities at home	43.8	11.8	44.4
Curiosity about U.S.A.	41.6	20.6	37.8
Dislike for political environment at home	37.5	14.2	48.4
Poor prospects for advancement at home	26.5	4.7	68.7
Relatives in U.S.A.	26.3	10.3	71.2
Improve cultural opportunities	25.5	20.2	54.3
Low pay in otherwise satisfactory jobs at home	25.1	16.8	58.1
Dislike of social class system at home	20.1	17.1	62.8
No job to utilize skills at home	17.1	15.8	71.8
Marriage to U.S. citizen	15.3	3.5	81.1
Insufficient professional independence at home	11.8	13.0	75.2
Low professional status at home	10.3	14.5	75.2
Improve spouse's employment opportunities	6.8	18.3	74.9
Taxes at home too high	6.5	27.1	66.4

SOURCE: National Science Foundation, *Immigrant Scientists and Engineers in the United States: A Study of Characteristics and Attitudes* (Washington, D.C., 1973).

nomie, educational, family, social, climate, and so on. In this context, it is not practical to discuss many of these, such as those related to the political or social system in the country of origin. Political and social systems are not very amenable to change as a result of policy decisions in the short- and medium-term. We focus instead on those areas where economic motivations are of some significance.

From a strictly economic viewpoint, there are two different approaches available for offering financial incentives to attract nationals living in the United States or elsewhere overseas home to the Middle East. The governments could offer a permanent or long-term subsidy in the form of higher salaries to returnees, or a large, one-time bonus could be granted at the time of return, subject to repayment conditions if the recipient subsequently changes his or her mind.<sup>22</sup>

The first option could lead to serious morale problems since returnees would be getting higher salaries than their immediate colleagues for comparable work. In addition, it might cause returnees to work for the government rather in jobs best suited to their abilities in the sector where such employment is available, because it is easier for a government to subsidize its own employees. The single bonus, on the other hand, can serve the basic purpose of financial incentives without diverting the returnee to a position of lower marginal productivity.

The use of such incentives assumes that they are likely to be attractive to the émigrés at which they are aimed. One recent study<sup>23</sup> has examined the motivations of professionally trained people who have come to the United States and their reactions to their new environment. Economic considerations are rated highly in this survey among Middle Easterners (table 16). They do not differ significantly in this respect from scientist and engineer migrants in general.<sup>24</sup> Although respondents were not asked to rank their motivations relative to one another, it is clear that economic concerns, while important, were not alone. Other work-related factors were mentioned frequently.

While desired improvements in economic status were apparently realized by the vast majority of Middle Easterners (table 18), other important goals were also achieved. Many of the improvements are work-related; these migrants seem to have had the opportunity to upgrade job status on a wide front. To the extent that we can generalize from this sample of professionals that Middle Eastern countries might want to entice home, it seems that money alone would not be enough. The total job environment is even more important.<sup>25</sup>

<sup>22</sup> Alternatively, a contracted lump-sum bonus could be paid in guaranteed annual installments relative to the terms of an initial contract.

<sup>23</sup> *Immigrant Scientists and Engineers in the United States: A Study of Characteristics and Attitudes* (Washington, D.C.: National Science Foundation, 1973). This study involved a sample of nearly 8,000 migrants who came to the United States between 1964 and 1969, about 14 percent of the total population in this category; this survey was not random, since it focused on those who resided in the northeast and in northern California. About 4.2 percent of those surveyed were born in the Middle East; their general characteristics are indicated in table 17.

<sup>24</sup> For example, 59.5 percent of all those surveyed said that hopes for a higher standard of living were important in their migration decisions. Of those surveyed, 35.5 percent expected to improve opportunities for their children and 33.5 percent complained that otherwise satisfactory jobs at home were too low paying.

<sup>25</sup> While nonemployment factors are also crucial, they are not really within the realm of potential solutions that can be realized through economic policy. For example, the preference indicated for the social and political systems of the new country of residence is obviously of major importance.

TABLE 17 *General characteristics of migrant scientists and engineers*  
(Percentages unless otherwise noted)

Category	Egypt	Iran	Other Middle East <sup>b</sup>	All migrants
Total number surveyed	111	54	173	7,986
Percentage of total <sup>a</sup>	1.4	0.6	2.2	100.0
Professional category				
Engineers	61.3	83.3	72.3	58.8
Physical scientists	36.9	16.7	17.9	38.5
Social scientists	1.8	0	9.8	2.7
Highest degree held				
Doctorate	26.1	16.7	17.3	28.0
Master's	18.9	38.9	43.4	28.6
Bachelor's and other	60.0	44.4	39.3	43.4
Place of education <sup>c</sup>				
Graduate level				
All in U.S.A.	29.7	51.9	49.7	22.4
Some in U.S.A.	10.8	3.7	6.9	12.7
Undergraduate level				
All in U.S.A.	3.6	68.5	35.8	6.2
Some in U.S.A.	3.6	0	12.1	6.4
Residence status-changers by entry status <sup>c</sup>				
Number of status changers	54	55	145	4,765
Percentage of total <sup>a</sup>	1.1	1.1	3.0	100.0
Student	33.3	78.2	72.4	27.0
Exchange visitor/student	22.2	10.9	9.7	10.0
Industrial trainee	0	3.6	2.8	2.0
Temporary visitor <sup>d</sup>	37.0	3.6	12.4	23.6
Job status immediately preceding migration <sup>c</sup>				
Full-time				
(Professional status)	82.0	23.8	77.4	72.0
Part-time				
(Professional status)	3.3	0	6.5	6.8
Student				
(No professional status)	4.9	50.0	9.7	14.4
Nonprofessional Work	0	4.8	2.2	2.4
Unemployed	0	0	2.2	1.3
Employment sector preceding migration <sup>c</sup>				
Manufacturing	34.4	14.3	17.2	33.3
University/other nonprofit	13.1	4.8	26.9	17.6
Other private	23.0	9.5	14.0	11.0
Government	16.4	2.4	25.8	10.1

TABLE 17 (Cont.)

Category	Egypt	Iran	Other Middle East <sup>b</sup>	All migrants
Salary changes after migration <sup>c</sup>				
Decrease	6.6	4.8	3.2	1.2
Increase				
Less than 100 percent	0	9.5	3.2	12.3
100 to 200 percent	6.6	4.8	10.8	11.4
More than 200 percent	29.5	0	33.3	24.5

SOURCE: National Science Foundation, *Immigrant Scientists in the United States: A Study of Characteristics and Attitudes* (Washington, D.C., 1973).

<sup>a</sup> Relative to all migrant scientists and engineers by country of birth; all other percentages are relative only to the total for the national category in question.

<sup>b</sup> Published data was differentiated in most categories only for Egypt and Iran; the relevant criterion was 50 or more sampled migrants born in that country. Ninety-three migrants last lived in Israel (1.2 percent of the total), but not enough were *born* in Israel to merit separate categorization. Survey results indicate that some 35 to 40 Israeli migrants were actually born in the Middle East; only these scientists and engineers are included in these figures.

<sup>c</sup> Percentages do not add to 100 because of omission of minor categories or answers which indicate nonapplicability.

<sup>d</sup> Mostly tourists or visitors for pleasure, which includes people visiting relatives.

One possible solution in this regard is a variety of the recruiting policy already employed by many Middle Eastern countries, for example, the term-contract offered to many European and American experts, consultants, and other professionals. Many former Middle Eastern nationals compare their American jobs favorably with what they have experienced or would expect to find at home.<sup>26</sup> Their negative anticipations tend to militate against accepting even a fairly rewarding job offer. The suspicion is probably strong that job descriptions are much more promising than the real situation actually warrants. Once the émigré returns home, disillusionment sets in, but at a time when it may be difficult to return to the United States or Europe.<sup>27</sup> Treating the former national with a needed skill like a foreigner recruited for similar reasons could eliminate many of these difficulties. Initial uncertainty would still be present, but that could be overcome by proffered financial rewards, and the defined term of the contract holds out an eventual "escape-clause" if the job proves disappointing.<sup>28</sup>

<sup>26</sup> Egyptians surveyed had generally been more advanced in professional status and experience upon their arrival in the United States, while most Iranians had not worked in their chosen fields at home, as can be gathered from earlier data and table 17.

<sup>27</sup> Attributable to any one (or more) of a myriad of methods traditionally employed to block migration of various groups (such as currency export restrictions or refusal of exit visas to individuals still technically subject to military conscription) or to difficulty in re-obtaining an American or European visa.

<sup>28</sup> Another consideration in this regard concerns the small but rapidly growing number of Middle Easterners who become naturalized U.S. citizens, a process occurring in Canada,

TABLE 18 *Changes noted by Middle Eastern scientists and engineers after migrating to the United States (Percentages)*

Category	Improvement	Worsening	No change, not applicable, or no answer
Living standards: Personal			
Chance to achieve personal goals	72.6	5.6	21.8
Personal status	32.2	21.8	46.0
Cultural opportunities	62.8	12.6	28.3
Opportunities for children	53.5	1.5	45.0
Education for children	44.2	7.9	47.8
Access to medical services	33.9	27.7	38.3
Quality of social services	53.3	18.6	28.1
Amount of leisure time	17.8	48.7	33.5
Living standards: Social and political			
Intellectual freedom	58.7	1.5	39.8
Congeniality of social system	31.7	18.8	49.6
Relationship between social classes	38.4	18.8	42.8
Urban conditions	46.6	25.7	39.3
Financial situation			
Standard of living	73.3	3.8	22.8
Annual income	75.0	5.6	19.4
Economic opportunities	76.7	5.9	17.4
Financial rewards for increases in skills	70.5	4.7	24.8
Economic security for retirement	43.5	31.4	25.1
Pressure of taxation	14.1	60.6	25.3
Employment: Professional aspects			
Intellectual stimulation	61.5	8.2	30.3
General level of technical know-how in society	58.7	7.7	33.6
Quality of own work	74.0	4.4	21.5
Opportunity for research	61.5	3.3	35.2
Time for research activities	49.1	6.8	44.1
Financial support for research	45.6	3.8	50.5
Opportunity to specialize	80.6	1.5	17.9
Opportunity to advance professionally	77.6	6.5	15.9
Quality of research equipment	62.2	0.6	37.2
Amount of available equipment	62.7	2.4	34.9
Employment: Other aspects			
Problems with red tape	36.6	12.1	51.3
Administrative freedom on jobs	39.5	14.7	45.7
Communication with superiors	43.5	12.4	43.5
Flexibility of work systems	60.4	6.2	33.4
General working conditions	62.7	7.1	30.2
Research administration	49.1	0.9	50.0
Anxiety about jobs	14.1	45.6	40.3

SOURCE: National Science Foundation, *Immigrant Scientists in the United States: A Study of Characteristics and Attitudes* (Washington, D.C., 1973).



Personal factors stressed by many of those who were surveyed by the National Science Foundation may also be counteracted by such a term-contract approach. Many of the respondents have married U.S. citizens; others (including migrant married couples), have children who are natural-born citizens, while still more have other close kin in the United States.

A return to the Middle East today means a serious, perhaps terminal, jolt to relationships with close relatives. The problem for spouses and/or children, who most likely have little idea of what life in the Middle East may be like, is even greater. In the beginning, any clarification of the conditions of employment makes the decision to accept or reject such offers easier. The American or other foreign spouse should see a term-contract in a more favorable light than present open-ended Middle East employment possibilities.

The options available to Iran or the Arab governments, whether related to financial payments or contract provisions, can be varied on a case-by-case basis depending upon particular skills, experience, personal status, or the requirements of the job to be filled. For example, terms could be made more attractive for jobs outside the more desirable locations, like the capital cities, or in less prestigious employment sectors; preferred premiums should also be offered to nonmigrant professionals.

Still other, potentially important means of attracting home professionally trained émigrés involve what might be termed "fringe benefits" in the more developed economies, but include a wider variety of attractions than are offered by most European or North American employers.

The limited N.S.F. survey indicates that respondents view their new homes with relative favor in such areas as health and social services, retirement benefits, educational facilities for children, and general cultural opportunities. Some of these benefits are provided in developed economies as employment adjuncts or as taxpayer services, but in many Middle Eastern countries, if they are available at all at the present time, it is only or primarily in the form of direct out-of-pocket ex-

Australia, and elsewhere (see n. 4). Some countries, including several in the Middle East, do not recognize the acquired nationalities of their natives (e.g., Iran). Others recognize a dual nationality (e.g., Lebanon), but this often means a definite legal precedence for the original citizenship. Individuals with such a status can often return home, but only at some risk; for example, the U.S. government warns its naturalized citizens that they may face military obligations in their native countries and that U.S. embassy officials in those countries can do little or nothing to protect them from the consequences of even a brief visit, let alone an extended stay. If the Iranian government recognized the American passports of former Iranians, and treated them like any other American visitors, they might actually attract home more professionally trained native sons and daughters. Dual-citizenship provisions, as long as they recognize the current intention of the involved individuals, might also help in the long-term prospects for recruiting first-generation Americans and Canadians (and others) for jobs in the Middle East. Such individuals often inherit Arab or Iranian citizenship by virtue of parentage, yet by birth, law, and upbringing they are North Americans, Australians, or Europeans, a basic status they usually prefer to retain under all temporary employment circumstances.

penses to the individual. Employment offers in the Middle East should include in one form or other allowances that afford the items rated so highly by many émigrés.<sup>29</sup>

In evaluating the potential of attracting these people, or even first-generation Americans of Arab or Iranian descent, back to the Middle East, it serves at this point to indicate some favorable circumstances. For example, though many students who attend U.S. schools become permanent residents, the available evidence indicates that even more return home. Those who do stay in the United States do not find their new residences uniformly advantageous; with regard to such factors as leisure, taxation, and job anxiety, the United States rates poorly (table 18).

Given the abundance of capital available in the coming years to the Middle East as a whole and to the oil-producing states in particular, development bottlenecks are likely to occur as a result of shortages in various labor categories. We have seen some indications of the extent to which overseas migration may aggravate these shortages. Their extent in the next few years will probably be too great to be relieved even if significant numbers of émigrés were induced to return home. Some of the gaps could be closed by professionally qualified individuals with more initial experience in the Middle East than foreign experts hired on term contracts. Though enough evidence is present to indicate that the pool of highly skilled Middle Easterners in the United States<sup>30</sup> is large, little hard information is available to the governments that might want to secure their services.<sup>31</sup> Table 19 gives an idea of the number of migrants who make the decision to remain in the United States after arriving, while table 18 catalogues most of the important reasons why they probably change their minds. If we look for policies that might attract émigrés back to the Middle East,<sup>32</sup> the first recommendation must be a more comprehensive study of these potential returnees—one aimed at Middle Easterners, rather than at immigrants to the United States in general, as have been the various official and private surveys quoted here. Such a study could explain why these people come to the United States, why they decide to stay, what might bring them home to work, at least temporarily, on the basis, for example, of a term contract.

<sup>29</sup> Health insurance and pension annuities are available in reliable markets. The problem of educating children might be solved through allowances for tuition charges in suitable schools, at least a short-run solution if public education is not attractive to present European or North American residents. The obvious long-run solution would be to duplicate what is found at present in the more developed economies—social security, general medical provision systems, and so on. These services have been recently initiated by most Middle East governments, but their reliability may not impress many potential returnees until their existence is of a longer duration.

<sup>30</sup> And by implication, in other Western countries.

<sup>31</sup> American residents from Egypt, Lebanon and other non-oil countries among those of our interest here have professional and experiential backgrounds that should be of interest to such skill-short oil producers as Saudi Arabia and the Gulf states.

<sup>32</sup> Or for stemming the future flow.

TABLE 19 *Future intentions of migrant scientists and engineers at time of entry to the United States and in 1970 (Percentages)<sup>a</sup>*

Category	Egypt	Iran	Other Middle East	All migrants
Intention at time of arrival				
Remain in U.S.A.	75.6	27.8	37.6	43.7
Return home	14.4	40.7	33.5	18.1
Undecided	9.0	31.5	27.7	36.7
1970 intention				
Remain in U.S.A.	96.4	66.7	63.0	56.9
Return home	—	—	6.4	7.2
Within 1 year	—	—	2.3	1.4
More than 1 year	—	—	1.2	2.5
Undecided when	—	—	2.9	3.3
Undecided	3.6	33.3	28.9	34.3

SOURCE: National Science Foundation, *Immigrant Scientists in the United States: A Study of Characteristics and Attitudes* (Washington, D.C., 1973).

<sup>a</sup> Totals may not add to 100 since nonresponses are omitted. Survey subjects in July, 1970, had been in the United States at least 1.5 years and no more than 6.5 years.

The gains to be realized are potentially quite large—for example, ten thousand returnees, whose marginal product is worth, say \$30,000 each, means an annual gain in productive capacity of some \$300 million. That amount may seem small relative to present oil revenues, but it represents a considerable gain, one even greater in real terms than oil revenues. Returns to oil and to skilled labor are both measured in dollar terms, which reflect relative productivities in the United States or Europe, where the skilled labor is considerably more abundant than in the Middle East. Particularly in Iran, Iraq, and Saudi Arabia, an influx of fairly large numbers of former Middle Easterners, who have obtained not only educational credentials but also professional experience overseas, could notably ease the inevitable bottlenecks that their development processes will encounter in the coming decade.

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