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The Brain Drain from Iran to the United States

Akbar E. Torbat

In this article, the underlying forces and the extent of brain drain from Iran to the United States are studied. The brain drain is measured by the migration rates of Iranian nationals to the US with tertiary education, including physicians and professors. The universities' admission policies and inclusion of Islamic subject matters in the academic curricula are reviewed to evaluate the quality of higher education. In addition, the possibility of reversing the brain drain and its impact on the economy are discussed.

INTRODUCTION

Emigration of the highly educated elite from the developing countries to the developed countries is an important issue that deserves attention. The Middle East with its vast oil resources needs educated professionals to enhance economic development and modernize the region. Iran, one of the oldest countries in the region, has lost a good portion of its educated professionals in the past few decades. The extent of the "brain drain" from Iran is a major concern. It is a vital matter in the US-Iranian relations due to the fact that educated elite are the medium for transferring technology and know how. This article brings to the fore the issue of the brain drain from Iran that has not been examined recently.

Educated and skilled workers are the scarcest resources of any developing country. They comprise the core workforce for sustainable economic development programs. Their training is time-consuming and expensive. The departure of a large number of highly educated elite from Iran has definitely caused a disastrous social loss to the country. In Iran, the government subsidizes students' higher education expenses by means of no-interest loans, little or no tuition, free accommodation in dormitories, various financial aids, grants, and scholarships for studying abroad. Even if education and training in Iran were privately financed, still there would have been

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significant national loss caused by the brain drain, due to the fact that education is a public good, and it has positive external benefits to the society. Educated people not only increase their own productivity but also contribute to the society's well being and knowledge; examples are the physicians and educators. The developed countries and especially the US have greatly benefited from the pool of the highly educated and experienced Iranian immigrants. These countries are getting a "free ride" from the education and expertise of the Iranian elite. Most of the Iranian immigrants in the US are working in fields such as education, engineering, medicine, and other professional services. Their work has important external social benefits for the host countries that are missed in Iran.

Carrington and Detragiache have done a comparative study of brain drain from developing countries to the United States and the other member countries of the Organization for Economic Cooperation and Development.¹ They show that brain drain from Iran to the US, measured by migration rates of the individuals with tertiary education, is the highest in Asia. After Iran, sizable brain drains to the US are from Korea, the Philippines, and Taiwan, while the brain drain from other Middle Eastern countries is low. The subject of international migration of manpower from the Middle East has been under scrutiny since the 1960s. George B. Baldwin has studied this problem for the case of Iran. He examined whether the high-level brain drain was an obstacle to Iran's economic development.² He found that brain drain from Iran was not a serious problem at the time and some foreign educated Iranians could be repatriated home by the efforts of public institutions. Askari and Cummings also have studied the brain drain from Iran and several other Middle Eastern countries to the United States.³ They point out that, given the need for high-level manpower in these countries, it is essential to adopt policies to reverse the brain drain. They suggest economic incentive policies for encouraging expatriates to return. Bozorgmehr and Sabagh have investigated the profile of Iranians to the United States.⁴ Their study reveals that Iranians are one of the high status immigrant groups, whose educational achievements are significantly higher than those of other immigrants. Also Maboud Ansari has conducted a good sociological study of the Iranian immigrants in the US⁵ His research indicates that the Iranians are one of the most educated foreign-born groups in the US who have achieved rapid success.

1. William Carrington, and Enrica Detraiache, *Finance and Development*, Volume 36, No. 2, June 1999, pp. 46-49. The tiny country of Fiji that has a higher rate than Iran was ignored due to its very small size.

2. George B. Baldwin, "Four Studies On the Iranian Brain Drain," in *The International Migration of High-Level Manpower: Its Impact on the Development Process*, The Committee on the International Migration of Talent, (New York: Praeger Publishers, 1970.) pp. 374-396.

3. Hossein Askari, and John Thomas Cummings, The Middle East and the United States: A Problem of "Brain Drain," *International Journal of Middle East Studies*, Vol. 8, 1977, pp. 65-90.

4. Mehdi Bozorgmehr and Georges Sabagh, High Status Immigrants: A Statistical profile of Iranians in the United States, *Iranian Studies* Volume XXI, No. 3-4, 1988, pp. 5-36.

5. Ansari Maboud, *The Making of the Iranian Community in America*, (New York, NY: Pardis Press, 1992.)

This article examines the problem of brain drain from post-revolutionary Iran. It contains an analysis of the problem, its underlying causes, its impact on the Iranian economy, and a discussion of the possibility to reverse it. The migration of Iranian physicians and professors to the United States are specifically studied in order to understand the magnitude of brain drain in these two groups of highly-educated professionals, which have very high cost of training.

THE POLITICAL IMPETUS OF THE BRAIN DRAIN

Economic-related factors are normally the main driving force for migration of individuals from developing countries to the developed nations. In the case of Iran, political factors are found to be the main push force. Economic, social, and professional factors are the secondary contributing forces.⁶ The following is a brief look at the political events that have contributed to the massive brain drain from Iran.

In March 1975, Shah Mohammad Reza Pahlavi dissolved all existing political parties in Iran and established a single party called the Iranian People's Resurgence Party (*Hezb-e Rastakhiz-e Mellat-e Iran*). He asked all Iranians, including government and university employees, to become members of this party.⁷ Only the armed forces personnel were excluded from membership.⁸ The Shah, in a speech, said those who did not want to join the party because of rejection of its principles should leave the country.⁹ As a result, a number of political activists and academics who could not tolerate the Shah's repression gradually started to leave the country. The Iranian Revolution brought down the Shah's regime in February 1979. Ayatollah Ruhollah Khomeini, who had been exiled by the Shah, for his oppositions to the Shah's reform programs since 1964,¹⁰ returned from exile on February 1, 1979. He headed a newly established provisional government on February 11, 1979.¹¹ Immediately after, most of the top officials in the Shah's government were arrested and tried by the Revolutionary Court and were executed. A number of educated elite who had self-exiled themselves returned home to participate in the transfer of power. In a matter of a few months, Muslim fundamentalists led by Khomeini were able to turn the revolution in their favor and established the Islamic Republic.

6. For analysis of brain drain due to economic causes see Paul Krugman, and Jagdish Bhagwati, "The Decision to Migrate," *The Brain Drain and Taxation: Theory and Empirical Analysis*, edited by Jagdish Bhagwati, (New York: North-Holland Publishing, 1975,) pp. 31-51.

7. Nikki R. Keddie, *Roots of Revolution: An Interpretive History of Modern Iran*, (Yale University: 1981,) p. 179.

8. Gail Cook Johnson, *High-Level Manpower in Iran: From Hidden Conflict to Crisis*, (Praeger Publishers, 1980,) p. 28.

9. Ali Banuazizi, "Iran: The Making of a Regional Power," in *The Middle East: Oil, Conflict & Hope*, edited by A. L. Udovitch, (Lexington, Massachusetts: Lexington Books, 1976,) P. 476.

invented a new farewell ceremony to send soldiers off to southeast Anatolia.

10. Marvin Zonis, *The Political Elite of Iran*, (Princeton: Princeton University Press 1971,) pp.44-47.

11. Nikki R. Keddie, *Roots of Revolution*, p. 257.

Shortly after, the Islamic government began to purge the previous regime's professionals and experienced administrators. In a systematic government cleansing campaign called *Paksazi* (cleansing), those who had important posts in the Shah's regime were removed from their positions and were replaced by those who were committed to the Islamist ideologies. The key government and the universities' administrative positions were given to those who were dedicated to Islamic thought. Although most of them were not qualified for the positions, it was their ideology rather than their technical competence that met the requirements of the Islamic Republic. Some of those who were dismissed through the *Paksazi* were permitted to leave the country; others who remained were unemployed.

Islamic fundamentalism gained popularity among the general public but it did not receive much support from the intellectual circles that were centered in the universities. Only a small fraction of the faculty was in favor of the Islamic system. From the beginning, Ayatollah Khomeini was hostile to the Western-educated professors who were advocates of the modern-style higher education system in Iran. He called them Westoxicated (*gharbzadeh*).¹² He believed Western-style higher education was not compatible with Islam. In April 1980, Khomeini voiced, "our university students are Westoxicated ... Many of our professors are at the service of the West. They brainwash our youth."¹³ The universities were considered "nests of intellectual corruption" that must be rejuvenated by the Islamic principles.

To de-Westernize the higher education system and make it compatible with Islamic fundamentals, in April 1980, Khomeini ordered the closure of all universities and launched the so-called "Cultural Revolution" (*Enghelab-e Farhangi*), imitated from Mao Zedong's Cultural Revolution (1966-76). He ordered forming of the Council for Cultural Revolution, whose mission was developing new curricula and course materials for the Islamic university system. The main task of the Council was to choose paradigms and methodologies in social sciences, humanities, law, philosophy and related fields which were in agreement with Islamic principles and beliefs. The Islamic principles were to be defined by the Center for Cooperation of Seminaries and Universities headed by Muhammad Tagi Mesbah-Yazdi, an instructor in a Qum seminary.¹⁴ That laid out the plan for mingling Islamic beliefs with academic disciplines in Iran's higher education.

To implement the Islamization plan and prevent dissent from professors and students, the universities were officially closed for about three years. During this period the Islamization plan of the university curricula was achieved. The secular students and professors who opposed Islamization were entirely purged. Consequently, a good portion of Iran's highly qualified professors left the country. Islamic ideology

12. Al-e Ahmad, Jalal *Weststruckness (Gharbzadegi)*, translated from Farsi by John Green and Ahmad Alizadeh. Lexington, KY, Mazda Publishers, 1982.

13. Sohrab Behdad, "Islamization of Economics in Iranian Universities," *International Journal of Middle East Studies*, 27, 1995, p. 193.

14. Behdad, "Islamization of Economics," p. 194.

became the government-dictated philosophy in the institutions of higher learning in Iran. As a physical landmark of an Islamic university, the site of the soccer field at the University of Tehran was converted to a permanent site for Friday's weekly prayers. To date, this site has been the forum for the Islamic Republic's top clerics to make speeches and announce their political views.

At the same time, the newly established Islamic regime began a large-scale crackdown against its political opponents. The main opponents were two guerrilla organizations: the Marxist oriented *Feda'ian-e Khalg* and the Islamic rooted *Mojahedin-e Khalg*, which had both greatly contributed to the overthrow of the Shah's regime. The active members of these organizations fled the country to save their lives. Those who remained went into hiding, but were later arrested, imprisoned, and executed.

The continued political oppression and the interference of the Islamic Republic in people's private affairs subsequently pushed a greater number of Iranians to migrate. The exact number of Iranians who left the country is not known, but some media have stated it to be about 3 million.¹⁵ They were mostly educated elite, political activists, intellectuals, emancipated women, people associated with the previous regime, and members of religious minorities, especially Baha'is and Jews. Some young Iranians also fled the country because of the fear of being drafted to the military for the War with Iraq. Some Iranians who did not have necessary skills to find jobs and/or could not live abroad started to return home after a temporary stay outside the country. The number of Iranian refugees nevertheless remained high. In the 1981-1996 period, Iran was ranked fifth among countries with the highest number of refugees admitted to the US, respectively after Vietnam, the former Soviet Union, Laos, and Cambodia.¹⁶ Iranians also have constituted one of the highest levels of asylum seekers in Europe. The present population of Iranians abroad is now estimated to be in the range of 1.5 to 2.5 million, who are mostly settled in North America and Europe. Many are highly educated, and have advanced degrees from American and Western European universities. Included are many of Iran's best-educated elite, professionals, technocrats, and wealthy entrepreneurs. Their exodus has caused a severe social loss to Iran. Their knowledge, expertise, and wealth are certainly needed to modernize Iran.

EXTENT OF THE BRAIN DRAIN TO THE UNITED STATES

Before the revolution, American universities were very popular in Iran for their quality of education, and this was a major force in drawing a large number of Iranian students to the United States. In the 1977/78 academic year, there were about 100,000 Iranian students abroad¹⁷ of whom 36,220 were enrolled in the US institutes of higher learning; the rest were mainly in the United Kingdom, West Germany, France, Aus-

15. *The Economist (UK)* mentioned the figure of 3 million; "Iranian Exiles Come Home All is Forgiven," May 2, 1992, p. 51.

16. US Immigration and Naturalization Service, *Top Ten Countries Refugees, 1981-96*.

17. Jahangir Amuzegar, *Iran: An Economic Profile*, (Washington, DC: The Middle East Institute, 1977), p.183.

tria, and Italy. In the 1978/79 academic year, just on the verge of the revolution, the number of Iranian students enrolled in the US was 45,340, and in 1979/80 reached its peak of 51,310. Iran had the highest number of students in the US compared to any other country.¹⁸ From a total foreign student enrolment in the United States of 263,938 in the 1978/79 academic year, 17% were from Iran. Nigeria ranked second with 16,340 students or 6% of the enrollments. The number of students from other oil-exporting countries was also high in that period due to the rapid increase of petroleum prices in the 1970's. The increase in oil prices brought higher oil revenues to the Iranian economy, and as a result, part of it was invested in students' education abroad, either directly by government financial aid¹⁹ and/or indirectly by the students' families. This investment paid off and resulted in an excellent cohort of Western-educated professionals. Because Iran had a shortage of high-level manpower at that time,²⁰ a number of students were returning home after graduation to work. Some had to return because they had received financial aid in exchange for obligation to serve the government or industry upon graduation. Those who were politically dissatisfied with the former regime remained abroad.²¹ After the revolution, some of them returned to Iran to serve the country, but were gradually purged out of the newly established Islamic Republic. Some of the students who graduated abroad after the revolution also did not return because of the oppression of the ruling clergy in Iran. Therefore, the educated elite who left Iran and the new graduates abroad who chose not to return home created a large pool of highly educated and skilled Iranian professionals in the United States. The size of this pool can be revealed by looking at some statistics in the sources below.

One source of data to examine is the US Immigration and Naturalization Service (INS) statistics. INS figures show the number of persons who have been officially admitted to the United States. Figure 1 shows the flow of Iranians to the US since 1970.²² As is shown, since 1995, on the average the number of Iranian immigrants admitted to the US has declined. This is attributed to the comprehensive US sanctions that have been imposed on Iran, which prohibit granting temporary-work permits to Iranians who want to enter the US. These figures show the INS admitted 45,136 Iranian immigrants in 1971-80, 116,172 in 1981-90, and 96,875 in the 1991-98 period. The total is 258,183 persons, of whom about 90% were admitted after the February 1979 Iranian revolution.²³ There is also a considerable number of nonim-

18. *Open doors 1978/79, International Education Exchange*, (New York, NY: the Institute of International Education), pp. 11-13. Also *Open Doors 1979/80*.

19. Homa Katouzian, *The Political Economy of Modern Iran*, (New York: New York University Press, 1981,) p. 290.

20. Gail Cook Johnson, pp. 17-20.

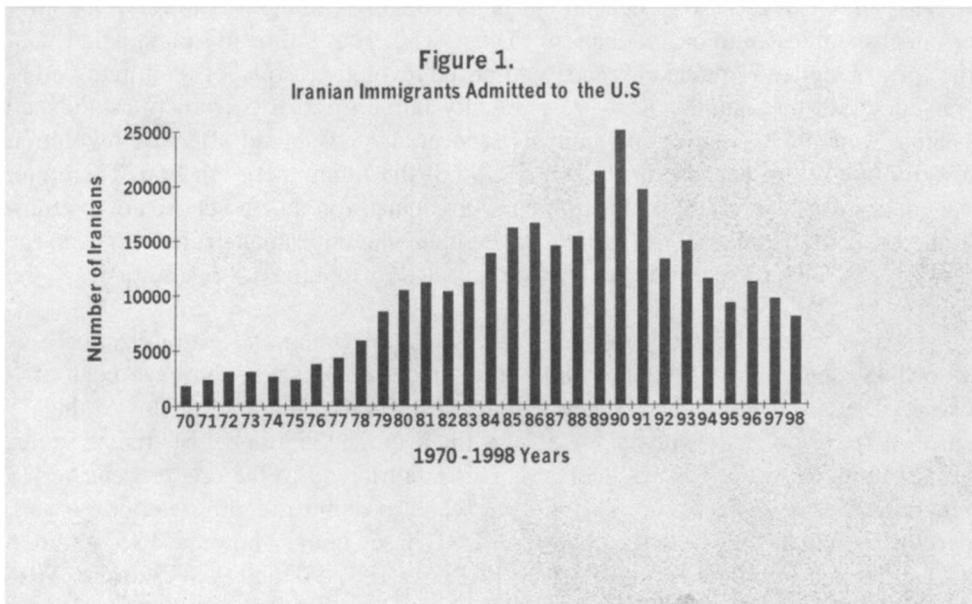
21. Marvin Zonis, p.52.

22. "U.S. Immigration and Naturalization Service, *Statistical Yearbook of Immigration and Naturalization Service 1996*, U.S. Government Printing Office, Washington D.C., 1997." The Annual Report for 1998 is available at <http://www.ins.usdoj.gov/graphics/publicaffairs/newsrels/98Legal.pdf>.

23. US Immigration and Naturalization Service, *Statistical Yearbook of the US Immigration and Naturalization Service*, 1998, (Washington DC: US Government Printing Office, Washington D.C., 2000).

migrant Iranians who are presently living in the US, but their exact number is not known.²⁴ The INS figures give information about the flow of the immigrants but it does not give a good depiction of the stock of immigrants and their level of education.

Another source of statistics is the US Census Bureau. In 1990, the US census showed that there were 235,521 persons in the US whose ancestry was Iranian, of whom 210,963 persons were born in Iran.²⁵ Almost half of them were residing in California. In 1997, an annual Census Bureau survey estimated that the Iran-born population in the US was about 290,000 with an upper bound of 380,000.²⁶ These figures normally underestimate the actual numbers because they are based on voluntary revelation of information, and some Iranians might have not identified themselves as Iranians. Furthermore, the second generation Iranians who have been born in the US are not included in the foreign born figures. The size of the Iranian community 2000 Census has not been released to this date.²⁷



The Iranian community population in the US on the average is older than the population in Iran. Based on the 1990 US census, the median age of the Iranian population in the US was 35.1. This indicates about 50% were older than the age of 35. Since 1990, the population has aged. In 1996, the median age of the 11,084

24. INS reports a number of non-immigrants such as visitors, students, and others but it is not known how many times the same person might have left and re-entered to the US.

25. US Department of Commerce, Bureau of the Census, Ethnic and Hispanic Branch, 1990 Census Special Tabulation.

26. US Bureau of the Census, *March 1997 Current Population Survey*, point estimate with 95% confidence level.

27. The result of the year 2000 Census for foreign born will be available in late 2002.

Table 1. Major Foreign Born Populations from Asia in the United States

	Iran	China	Hong Kong	India	Korea	Philippines	Taiwan	Vietnam
EDUCATIONAL ATTAINMENT								
Persons 18 to 24 Years	20,322	32,785	26,554	49,074	74,047	96,083	29,095	97,350
High School Graduates (including equivalency)	4,363	7,319	5,733	8,890	19,747	24,063	7,277	21,793
Some College or Associate Degree	10,016	11,018	12,604	18,235	32,426	44,613	12,999	37,168
Bachelor's Degree or Higher	3,382	4,218	5,446	16,431	9,239	11,775	5,803	7,486
Persons 25 Years and Over								
Less than 5th grade	167,611	463,221	102,209	356,591	427,258	733,008	183,091	345,596
5th to 8th grade	5,406	72,391	3,401	10,847	20,039	33,528	3,723	44,401
9th to 12th grade, no diploma	5,396	52,402	4,635	10,436	23,928	48,605	5,071	33,048
High School Graduates (including equivalency)	11,418	57,837	8,983	24,411	41,048	45,971	6,500	64,496
Some College, no degree	25,588	71,465	13,802	34,098	106,937	104,609	21,161	59,733
Associate Degree, Occupational Program	23,403	43,244	15,915	29,174	58,779	124,273	16,787	55,232
Associate Degree, Academic Program	5,497	11,370	3,573	9,096	13,964	28,288	7,356	19,747
Bachelor's Degree	6,023	11,428	4,092	7,271	15,746	32,657	8,649	13,820
Master's Degree	46,266	71,502	28,576	94,799	95,055	253,470	47,708	41,143
Professional School Degree	24,050	45,603	12,863	78,315	34,091	26,274	47,995	8,374
Doctorate Degree	6,972	9,448	3,399	32,530	9,981	31,547	5,698	4,016
	7,692	16,531	2,970	25,614	7,690	3,786	12,443	1,586
EDUCATIONAL ATTAINMENT								
Persons 25 Years and Over (percentage)	Iran	China	Hong Kong	India	Korea	Philippines	Taiwan	Vietnam
Less than 5th grade	100	100	100	100	100	100	100	100
5th to 8th grade	3.2	15.6	3.3	3.0	4.7	4.6	2.0	12.8
9th to 12th grade, no diploma	3.2	11.3	4.5	2.9	5.6	6.6	2.8	9.6
High School Graduates (including equivalency)	6.8	12.5	8.8	6.8	9.6	6.3	3.6	18.7
Some College, no degree	15.3	15.4	13.5	9.6	25.0	14.3	11.6	17.3
Associate Degree, Occupational Program	14.0	9.3	15.6	8.2	13.8	17.0	9.2	16.0
Associate Degree, Academic Program	3.3	2.5	3.5	2.6	3.3	3.9	4.0	5.7
Bachelor's Degree	3.6	2.5	4.0	2.0	3.7	4.5	4.7	4.0
Master's Degree	27.6	15.4	28.0	26.6	22.2	34.6	26.1	11.9
Professional School Degree	14.3	9.8	12.6	22.0	8.0	3.6	26.2	2.4
Doctorate Degree	4.2	2.0	3.3	9.1	2.3	4.3	3.1	1.2
	4.6	3.6	2.9	7.2	1.8	0.5	6.8	0.5
Total Ethnic Population in the U.S.	210,941	529,837	147,131	450,406	568,397	912,674	244,102	543,262
Country's Total Population in million	60	1196	6.8	955.2	46	73.5	21.6	76.5
Ethnic Population / Home Country Population %	0.35	0.04	2.16	0.05	1.24	1.24	1.13	0.71

Source: U.S. Bureau of Census, 1990 Foreign Born Population. The countries total populations were obtained from other sources.

Iranian immigrants who were admitted to the US was 40.7 year.²⁸ Based on this one-year figure, more than 50% of Iranians in the US were older than the age of 40. In 1996, about 20% of the 60 million population in Iran were over the age of 40. Higher age is normally an indication of a higher level of professional experience and education.

The education level of the Iranian community in the US is available in detail from the 1990 census. The educational attainments of Iranians in comparison to other ethnic minorities are shown in Table 1.²⁹ More than 50 percent of Iranians in the US have a bachelor's degree and higher, they are ranked third after Indians and Taiwanese. To understand the extent of brain drain from Iran, the migration rate of individuals with higher education must be determined. This can be measured by the ratio of immigrants with tertiary education in the host country divided by the number of individuals with the tertiary education in the home country. The available data is inadequate to give an accurate measure of the brain drain. Because the census years are different in the two countries and the data are classified in different ways, the results therefore are approximate.

Based on Iran's census in 1987, there were 769,783 individuals with tertiary education in Iran.³⁰ This figure can be added to the college graduates for the 3-year period (1987–1990) to get an estimate equal to 878,661 for the year 1990.³¹ In the 1997 census, this figure reached 1,501,000, an increase of about 70%.³² In 1990, the US population census showed there were 119,000, or 57% of the Iranians who were 25 years and older, with tertiary education in the US. Dividing 119,000 by 878,661 results in a brain drain rate of about 13.5% for the year 1990. Multiplying 0.57 by 290,000—that is an estimate of the Iranian born population in the 1997 survey³³—gives an approximate figure of 165,000 for the Iranians who were 25 years+ and older with tertiary education in that year. Dividing 165,000 by 1,501,000 gives a migration rate of about 11.5% for the year 1997.³⁴ This shows that the rate of brain drain from Iran to the US has declined. The reason for the slowdown in Iranian immigration is the US sanctions, which have made it difficult for them to get US visa. Iranians nevertheless go to other countries, especially to Canada and Australia. Carington and Detragiache estimated the rate of brain drain from Iran for persons with tertiary

28. Immigration and Naturalization Service, *Statistical Yearbook*, 1996, p. 56.

29. This table was obtained from the Social Characteristics of Foreign-Born Persons population in 1990 Census.

30. *Iran in Aeineh Amar (Iran in the Mirror of Statistics)*, #10, 1991, (Statistical Center of Iran), p. 42.

31. The university graduates in 1987/88 were 28,637, in 1988/89 data was not available, in 1989/90 there were 37,384, and in 1990/91 there were 42,857. The sum for the three years is 108,878. Source: *Statistical Yearbook of Iran 1992/93*, p. 162.

32. Statistical Center of Iran, *Iran Statistical Yearbook 1999/2000*, p. 614.

33. Annual survey estimate by the US Census bureau, 1997.

34. *US Population Census for Foreign Born*, computed for persons with more than 12 years of education. Comparable data are not available for the earlier years.

education at 15%. Their estimate showed the rate of brain drain from other major counties in Asia is under 9%, which is substantially less than Iran (that is 15%).³⁵

Table 2
Rates of Brain Drain from Iran to the United States

	Year 1990	Percent	1997
Iranian born population in the US	210,000	100%	290,000
Iranians 25 years and older	167,000	80%	232,000*
Iranians 25 years and over with tertiary education	119,000	57%	165,000*
Iranians with tertiary education in Iran	878,661*		1,501,000
Rate of Brain Drain to the US	13.5%*		11%*

* Author estimates

Sources: The US Census Bureau and Statistical Center of Iran.

The detailed occupational characteristics of the Iranian population in the US are shown in Table 3.³⁶ As is seen, 41.9% of the employed persons have managerial and professional occupations and 35.0% are engaged in technical and administrative work. This indicates that the distribution of the Iranian labor force is highly weighted toward professional occupations that require higher education.

Iranian immigrants have established various professional associations in the United States. In Southern California, which is the largest population center of Iranians abroad, there are about a dozen of these associations. Included are the Network of Iranian Professionals of Orange County, Society of Iranian Engineers and Architects, Iranian Lawyers Association, the Persian American Society of Certified Public Accountants, Iranian Press Club, Society of Iranian Medical Doctors, Association of Iranian Professors and Scholars, Iranian Nurses Association, Iranian Dental Association of California, and some other organizations. Similar organizations are found in a few other states in which Iranians are concentrated.³⁷ For example, the Iranian Academic Association in North America, and the Iranian American Medical Association,

35. Carrington and Detragiache, p. 48.

36. The US Census in 1990. Table for Social Characteristics of Foreign-Born Persons, p. 149.

37. For the membership size of these organizations see Akbar Torbat, "Niaz Eqtesade Iran be Bazgashte Motokhasessan" ("Iranian Economy Needs Experts Back") in the *Persian Journal For Science and Society* ('Elm va Jame'a'), Vol. 15, No. 113, Oct./Nov. 1993, pp. 7-13.

both located in New York City, and also the Society of Iranian Professionals in North Texas, Dallas, Texas. Information from these associations indicates that most Iranians are engaged in highly professional jobs.

Table 3
*Occupational Characteristics of the Iranian Population
in the United States 1990*

Persons 16 years and over	192,041	
Total In labor force	130,439	
Total Employed Persons 16 years and over	121,098	100.0%
Managerial and professional specialty occupations	50,734	41.9%
Professional specialty occupations	29,123	
Technical, sales, and administrative support occupations	42,378	35.0%
Administrative support occupations	8,774	
Service Occupations	11,287	9.3%
Farming, forestry, and fishing occupations	332	0.3%
Precision production, craft, and repair occupations	8,774	7.2%
Operators, fabricators, and laborers	7,593	6.3%
Machine operators, assemblers, and inspectors	3,007	
Transportation and material moving occupations	3,073	
Handlers, equipment cleaners, helper, and laborers	1,513	

Source: US Bureau of Census 1990, Foreign-Born Population.

Based on the 165,000 figure for the Iran-born population of 25 years of age and older with tertiary education in 1997, shown in Table 2, it is possible to approximate the extent of Iran's social cost of brain drain. The US government spends about \$7,000 per pupil for elementary and secondary education. In the 1997-98 academic year, the average cost for a private college, including tuition, fees, room and board, books, transportation, and other expenses was about \$22,500 per year in the US.³⁸

38. College Costs and Family Income, US Department of Education, National Center for Education Statistics. The data is available at nces.ed.gov/pubs/ce/c9712a01.html.

The total cost for 12 years of pre-college and four years of college education in the US is about \$174,000 per person.³⁹ The total cost of training 165,000 college graduates is about \$28.7 billion, that is, equivalent to foreign aid of that magnitude to the US from Iran. The amount goes higher if additional costs are considered for those with graduate degrees. What is more, the external benefits of these graduates to society is not included because it is not quantifiable. Moreover, it has been shown that higher education's costs per student as a percentage of per capita GNP is substantially higher in the developing countries as compared to the developed countries.⁴⁰ This means that the burden of training college graduates is greater in a developing country like Iran than it is in a developed country.

The higher the level of education, the greater its cost. Training of physicians and university professors is especially very costly because of the lengthy training time and the investment of other resources that are involved. The following information reveals the extent of brain drain from Iran in these two groups of highly trained professionals.

The earliest Iranian professionals in the US before the revolution were the physicians. They were mostly young temporary trainees who were working as medical interns or residents. Some could establish themselves to continue to practice beyond the residency stage. Their motives to stay in the US were more for professional, social and political reasons than from economic incentives.⁴¹ The total number of Iranian physicians in the US before the revolution grew to 2,306 in 1978.⁴² The physicians who migrated to the US after the revolution were mostly experienced and came with their families for a permanent stay. At present, there are about 5,000 Iranian physicians working in the United States who have their own practice and/or work in medical institutions. About 4,000 of them obtained their primary medical education in Iran, and have gone through advanced training in the US⁴³ There are also about of a 3,000 new generation of Iranian physicians who have received their entire training in some aspects of the field in the US. This increases the total number of Iranian medical doctors in the US to about 8,000.⁴⁴ This number of physicians abroad is substantial, compared to the total number of physicians who are now in Iran. Moreover, the quality of their training and experience is generally better than that of those in Iran. Before that of the revolution, there were about 15,000 physicians and dentists in

39. For the reason of simplicity and lack of appropriate data, in this computation the time value of money and the effect of inflation were ignored. For complexities involve in measuring imputed capital flows implicit in skilled emigration see Bhagwati pp. 9-14.

40. Beth V. Yarbrough, and Robert Yarbrough, *The World Economy: Trade and Finance*, 2nd edition, (Chicago: the Dryden Press, 1990), pp. 191-193.

41. See: Mehrassa Farjad, *Brain Drain: Migration of Iranian Physicians to the United States*, doctoral dissertation, the George Washington University, 1981. Farjad, who studied the migration of Iranian Physicians before the revolution found income was not a significant factor in the physicians' decision to stay in the US.

42. Mehrassa Farjad; the total number of Iranian physicians in the US were 2,306 in 1978, 2,560 in 1979, and 2600 in 1980, P. 58.

43. American Medical Association, Statistical Data, Medical Marketing Services, 2001.

44. Iranian American Medical Association, New York, N.Y. 1999.

Iran.⁴⁵ Dividing 15,000 by the 2,306 mentioned above yields a rate of brain drain equal to 15% for the physicians before the revolution. After the revolution about 5,000 of them left the country, reducing the total to about 10,000.⁴⁶ This number started to increase when the newly graduated physicians steadily joined the profession. In 1991, the total number of physicians in Iran, including 2,862 from foreign countries reached to 19,565.⁴⁷ Adding about 4,470 dentists makes the total 26,770.⁴⁸ In the year 2000, there were 24,770 physicians working in the public sector, including dentists, veterinarians, and pharmacists.⁴⁹ In the private sector there were about 13,000 physicians.⁵⁰ That gives a total of 39,770. Dividing the 8,000 US medical doctors of Iranian origin by 39,770 equals 0.20. This indicates that the Iranian medical doctors in the U.S are about 20% of those in Iran, which is higher than the 15% for the year before the revolution. This is quite a high magnitude of brain drain, especially in a field that has the most costly training.

In recent years the quantity of medical school graduates in Iran has increased, but the quality of their training is mediocre. The newly-established medical institutions in less populated cities do not have adequate equipment and facilities. Some faculty members of these schools have to commute by plane from the capital city, to teach for a day or two and then leave. An Iranian professor, Camran Nezhat at Stanford University Medical School, who visited Iran in 1998, commented that after the revolution, "Iran suffered a severe brain drain as many of its physicians and other professionals fled to the US and Europe." He indicated that the quality of care in public hospitals in Iran is poor due to inadequate equipment and physician training, compared to the private hospitals that are well equipped and are only affordable by the rich.⁵¹

There is on the average 0.3 doctors for every 1,000 persons in Iran compared to the international average of 1.4.⁵² Despite that the number of practicing physicians in Iran is below the international average; there are over 8,000 recently graduated physicians who are unemployed.⁵³ The government does not have enough funds to employ them and some are driving taxicabs in Tehran. The economy is so depressed that

45. Amuzegar, Jahangir, 1977, P. 240.

46. *Iran Times*, Islamic Government Disappointed from Physicians Not Returning, p. 1, May 21, 1993.

47. *Iran in Aeineh Amar (Iran in the Mirror of Statistics)* No. 10, 1991, p. 27.

48. Central Bank of the Islamic Republic of Iran, *Annual Review*, 1991-92, p. 52.

49. *Iran Statistical Yearbook*, 1999/2000, p. 682.

50. *Nimrooz* (London, England), No. 615, December 8, 2000, reported the total of 40,000 physicians in Iran.

51. Ruth ann Richter, *Stanford On Line Report*, "Stanford Surgeons Hopeful After Visit to Tehran," January 6, 1999. The report is available at: <http://news-service.stanford.edu/news/january6/iranmed16.html>.

52. The World Bank, *World Development Indicators*, table 2.13, pp.91-92, 1999. This ratio has recently improved.

53. *Iran Times*, "The Number of Unemployed Physicians in Iran Exceed 8,000" "*Tadad Pezeshgan becar dar Iran az 8,000 Nafar Tajavoz kard*" July 7, 2000, p. 5.

most patients cannot afford to visit private doctors and hospitals. Before the revolution, about 50% of the physicians were working in Tehran;⁵⁴ this has not changed and about half of the physicians still reside in the greater Tehran. As a result, distribution of physicians in the country is uneven. In the rural areas there is shortage of physicians while the capital city has surplus of newly-graduated physicians. Because of lack of qualified native physicians in the remote locations in the rural areas, some immigrant physicians from Pakistan and Bangladesh have been practicing in those areas.

Another major group of highly trained Iranian professionals in the US are university professors. As shown in Table 1, Iranian immigrants with doctoral degrees in the US are 4.6% of the persons who are 25 years and older. The table shows that this percentage is the third highest after Indians and Taiwanese, compared to other ethnic minorities from Asia. Based on a report that was published by the National Science Foundation in 1998, 1,369 Iranian born professors were teaching engineering and science on a full-time basis in the US⁵⁵. The total number of Iranian professors in the US is substantially higher if the Iranians, who teach in other fields and part-time lecturers are added. In 1990, 7,692 Iranians, or 4.6% of those 25 years and older in the US, had a doctoral degree. Multiplying 0.046 by 232,000, which is an estimate of the similar population in the year 1997 in Table 2, yields 10,672. This figure is an approximate number of the Iranians with doctorate degrees in 1997. Since there are approximately 5,000 medical doctors, the remaining 5,672 persons have doctoral degrees in other areas. Based on this figure and the partial count of the NSF, and the fact that some are working in industry, it is reasonable to assume that the total number of Iranian professors who teach and research in higher education institutions in the United States should be close to 4,000.

In 1980, right before the university professors were purged, there were 16,222 professors teaching in Iran's higher education institutions.⁵⁶ When the universities reopened in 1982, this figure declined to 9,042. The newly-hired professors gradually increased this figure to 17,447 in 1989.⁵⁷ In the pre-revolutionary period a good portion of university professors had been educated in the United States and/or Europe, especially in science and engineering. For example, in Shiraz University (formerly Pahlavi University), there were about 400 out of 670 faculty members who had Ph.Ds from US or British universities.⁵⁸ Since the big purge, the new professors have been mostly graduates of domestic universities, and have to undergo ideological investigation by the regime before being hired. In the year 1999/2000, the total number of teaching staff, including part-time faculty in public universities reached 29,158, of which only 13,464 were in the rank of assistant professor and higher, and the rest

54. Jahangir Amuzegar, p. 240.

55. National Science Foundation, *Science and Engineering Indicators*, 1998, pp. 2-30.

56. *Iran Higher Education Statistics (Amar Amuzesh Ali Iran)*, Volume 1, 1979/80, Institute for Research and Planning in Science and Education, Ministry of Culture and Higher Education.

57. Iran Statistical Yearbook, various years, part-time included.

58. William Forbis, *Fall of Peacock Throne: The Story of Iran*, (New York: McGraw-Hill Book Company, 1981,) p.193.

were instructors. The Islamic Azad University, which is a private university with various campuses throughout the nation, had 16,164 teaching staff, of which 3,948 were in the rank of assistant professor and higher, and the rest were instructors.⁵⁹ A good portion of Azad University teaching staff is part-time, who are moonlighting while employed in public universities or other institutions. The top faculty of Azad University are professors (age range 55 to 85) who have been retired from public universities.⁶⁰ The total number of professors both in the public and private universities, including the part-time teaching staff is 17,445. Dividing the estimated 4,000 Iranians who work for academic institutions in the US by 17,412 professors in Iran indicates the Iranian professors in the US amount to 22% of all the professors in Iran. This is another indication of the extent of brain drain at the highest level of the educational echelon. Moreover, because of academic freedom, lack of censorship, and the wealth of knowledge that is available through access to advanced technology in the US, the professors are more active and up-to-date in their field, and hence the quality of their research and experience is generally better than that of those in Iran.

TRAINING OF THE NEW BRAINS

A brief look at the Islamic higher education's curricula and the student admissions procedures will help to understand how the new brains are trained.

When the universities were reopened in 1982, general education curricula were filled with Islamic related courses such as history of Islam, Islamic studies, Islamic ethics, Islamic education, Islamic texts, Islamic values, and Imam's (Khomeini's) testaments. Moreover, non-Islamic history and secular philosophy were eliminated from the general education curricula. The Council for Cultural Revolution opposed incorporating in the universities' curricula any subjects that could call into question the validity of Islamic principles. The professors' teachings were constrained by the Islamic beliefs dictated by the Council. As a result, the quality of academic education began to decline throughout the higher education system.

After achieving the Islamization of the curricula, the next phase was to emphasize Islam in the university entrance examinations by screening the applicants based on their religious beliefs. In the national entrance examination (*concours*) to the universities, the students are tested on general subject matters as well as the fundamentals of Islam and/or one of the religions of Zoroastrianism, Christianity, and Judaism. Only Muslims and followers of the latter three religions are officially recognized in the Islamic Republic constitution.⁶¹ Students who believe in any other religion, or no religion at all, do not have equal opportunity to be considered for college education in

59. Iran Statistical Yearbook, pp.654-656. 1999/2000.

60. *Ashmaei Ba Asatid Daneshgah Azad-e Islami* (Introducing Professors of Islamic Azad University), Volume 1 & 2, Center for Islamic University Publication, 1999.

61. *Ghanoon Asasi Jomhori-e Eslami-e Iran* (Islamic Republic Constitution), 2nd edition, 1997 (1376), Agah Institute Publishers, Tehran, Iran, Article 13, p. 28. An English translation of the constitution is available on the Internet. The URL is: <http://www.cyberiran.com/government/constitution.html#01>.

Iran. A secret memorandum issued by the Supreme Revolutionary Council stated in 1991 that Baha'is should be barred from Iran's universities. The memorandum was made public in 1993 by the United Nations special representative, Renaldo Galindo Pohl, who was investigating human rights abuses in Iran. The Baha'is, due to this highly discriminatory ruling, organized their own underground university in private homes and offices throughout the country to educate their students. That university, however, was raided by the Ministry of Intelligence in October 1998, its faculty members were arrested, and its properties were confiscated.⁶²

The students are generally opposed to religious questions in the universities entrance examinations and some are discouraged from taking the examination because of its religious contents. Professors as well believe that the university is the place for studying academic disciplines that can contribute to students' understanding of the real world and not religious beliefs as is dictated by the Islamic Republic. A good portion of the universities' admission capacity is politically reserved for members of the mobilization force (*basij*), Islamic Revolution Guards units (*Pasdaran*), high-level government officials, and those who belongs to the War martyrs' (*shohada'*) families. They get favorable treatment for admission to the universities. Also, persons who know the Qur'an by heart are exempt from taking the entrance examination. Students who belong to the government quota normally cannot compete well academically with the commonly brighter students who are passing the entrance examination with no favoritism. The number of applicants who are selected initially is much greater than the universities' capacities. In a follow up selection (*gozinesh*) the applicants' background is investigated and the students are screened based on their ideological and Islamic beliefs. Some applicants who have good scores in *concours* are illogically rejected in the *gozinesh* stage without any official reason given. University professors are very critical of the government's political favoritism and ideological investigation in selecting candidates for admission to the universities.

Despite Islamization of curricula, inadequate teaching staff, and the inclusion of religious questions in the entrance examination, the demand for higher education in Iran has mushroomed due to the increase in population of the youth. To cope with increase in demand, the government has increased the universities' enrolment without increasing the required resources in appropriate proportion. In 1993, about 1,180,000 students applied for admission to Iran's state colleges and universities, but only 130,000, or about 11%, were selected by an entrance examination for the higher education institutions.⁶³ This puts the percentage of accepted students lower than what it was in 1964, when 29,335 applicants took the university entrance exams, of whom about 4,000 or 13% were accepted.⁶⁴ The rapid rise in the number of new high school graduates and accumulation of the rejected participants from the previous years have substantially increased the number of applicants. In 1999, the number of applicants

62. *The Chronicle of Higher Education*, "36 Faculty Arrested in Iranian Crackdown on Underground Bahai University," November 13, 1998, p. A44

63. *Iran Times*, May 5, 1993.

64. Marvin Zonis, p. 35-36.

was 1.7 million, that is, about 44% higher than 1993. The universities' capacities are very limited and the number of the faculties is very small compared to the huge number of students. Before the revolution the higher education enrollment was 160,308.⁶⁵ In 2000, there were 678,000 enrolled in the public universities plus 726,228 in Azad University, for a total of about 1.4 million, or more than eight times that in the year before the revolution.⁶⁶ Dividing the student enrolment figures by the number of teaching staff at the universities, mentioned in the previous section shows that the student / teaching staff ratio has substantially deteriorated, from 11 to 1 before the big purge in 1980, to about 31 to 1 in year 2000.

The university students are frustrated because of inadequate university staff and unscientific curricula. They feel that their time is being wasted with study of too many Islamic ideological materials, which do not have any applications in the real world. They believe that they are not being prepared to compete with their cohorts from other countries in the new era of global economy.

After over two decades of Islamization, it is evident that the systematic efforts of the regime to implement its own ideological dogma in the universities have failed. A new generation of secular students has emerged within the same Islamic system of education that the regime has created. A number of student leaders who were initially promoted by the government to lead the students have become gradually secular and nationalistic, and have openly criticized the status quo. Examples are the outspoken Heshmatolah Tabarzadi and Manochehr Mohammadi, who led the student uprising in July 1999; both along with many other students are in prison at present.⁶⁷

Frustration of students with the Islamization system, suppression of the press, and lack of freedom and democracy, finally burst into open opposition to the regime on July 8, 1999. In response to the regime's closure of a pro-reformist newspaper, a few hundred students peacefully protested against closure of the newspaper and a new law that had been ratified by the parliament to suppress the liberal press. On July 9, the police and Islamic vigilantes attacked Tehran University dormitories overnight, killed one and injured about 200 persons.⁶⁸ The bloody raid was immediately condemned by the Higher Education Minister Mustafa Moi'n and the University's Chancellor, Mehdi Khalili Araghi. Both submitted their resignations to President Muhammad Khatami and other top university officials' resignations also followed. The President however, did not accept the resignations.

The tension between the regime and university students reached its climax on July 13, when the government announced that it would not permit any group or political organization to hold any demonstrations. Despite the announcement, thousands of students took to the street and condemned the bloody attack on the university

65. *Iran Higher Education Statistics*, 16.

66. *Iran Statistical Yearbook, 1999/2000*, pp. 658-659.

67. Ali Akbar Mahdi, *The Student Movement in the Islamic Republic of Iran*, *Journal of Iranian Research and Analysis*, Vol. 15, No. 2, Nov. 1999 P.15-16.

68. Cyrus Bina, "The Hot Summer of Defiance: The Students Protests for Freedom and Democracy in Iran," *Journal of Iranian Research and Analysis*, Vol. 15, No. 2, Nov. 1999 pp. 47-53.

ormitories and asked for punishment of those who were involved in the raid and resignation of Hedayat Lotfiyan, the Commander of Law Enforcement Forces. The students dared to the point that they asked for eradication of the Supreme Religious Leadership (*Velayat-e Faqih*). The students' protests also spread to a dozen other cities. The regime responded with force. The security police and Islamic militia, along with Islamic vigilantes, attacked the students. The bloody crackdown resulted in a few deaths, hundreds of injuries, and 1,500 reported arrests.⁶⁹ They also evacuated the students from the university and its dormitories and closed the campus. At a glance, the bloody crackdown proved to the world that the kind of Islamic egalitarianism prescribed by Ayatollah Khomeini was nothing but Islamic fascism. Instead of investigating and punishing those who were involved in the dormitory-raid, the regime brutally punished the students. On July 15, the regime organized its own counter-demonstration; it transported thousands of its loyal from various locations to Tehran in order to organize a pro-government rally. The regime blamed the exiled Iranians, mercenaries, and the foreign powers for instigating the pro-democracy demonstrations.

Since the July 1999 student uprising, the brain drain from Iran has accelerated. The students' crackdown in Iran similar to its counterpart in China's Tianamen Square, on June 4, 1989, has intensified the brain drain. Educated Iranians are leaving Iran in massive numbers as is reported by the press.⁷⁰ They leave Iran any way they can and do not return. Because of the US sanctions that have created some obstacles for Iranian to come to the US, the new Iranian emigrants are now going to Canada, Australia, and some other countries.

THE BRAIN DRAIN'S IMPACTS ON THE ECONOMY

Human and physical capital is both vital determinants of economic growth.⁷¹ Empirical research has proven that investment in human capital contributes even more to economic growth than that in physical capital.⁷² Since the revolution, Iran has experienced a huge amount of human and financial capital flight. These two important factors of economic growth have been drained from the country, leaving the economy without sufficient resources to grow. The expatriates' expertise and capital are needed to promote economic growth.

Iranian emigrants mostly left Iran because of the political oppression of the Islamic Republic, and not primarily for higher income in the destination countries. Most of the Iranians who migrated to the US after the revolution brought their families and as many of their financial assets as possible. This is not the case for other

69. Bian, "Hot Summer of Defiance," p. 51.

70. For example see "The Educated Can't Wait to LeaveBut a Few Are Trickling Back," *Business Week*, Feb. 28, 2000.

71. Gregory Mankiw, David Romer, and David N. Weil, "A Contribution to the Empirics of Economic Growth," *Quarterly Journal of Economics*, May 1992, pp. 407-437. See also Mark Blaug, *An Introduction to the Economics of Education*, (Middlesex, England: Penguin Books), 1970, pp. 61-100.

72. Mark Blaug, *An Introduction to Economics of Education*, Penguin Books, 1970, pp. 61-100.

recent US immigrants such as those from Central America, who normally leave their families at home and send a part of their monthly income for their support. Therefore, Iranian immigrants have caused capital inflow to the US, while the reverse is true for some other immigrants — including those who come illegally. It has been estimated that the capital flight from Iran shortly before and after the revolution is in the range of \$30 to \$40 billion.⁷³ The process of net capital outflow from Iran has been on a continuous basis since the revolution and it has increased the demand for foreign exchange in the free market. The increase in demand for foreign exchange has been mostly for transferring financial assets abroad and not for the purpose of importing physical goods. This is because foreign goods have been imported either directly by the government using the exported oil's foreign exchange earnings and/or by the private sector that obtains foreign exchange from the state banks at the lower rate for imported goods. The purchase of foreign currency by the emigrants in the free market has inflated the rial exchange rates. Hence there is a tremendous disparity between the free market nominal exchange rates and the real purchasing power of the rial.

The 8-year war with Iraq severely damaged Iran's infrastructures and left the economy in ruin. After the end of the war in 1988, the Islamic Republic began to rebuild its economy.

It launched its First Five-Year Development Plan in March 1989, which was financed mostly by borrowed funds from abroad. Implementation of the Plan partly expanded the economy. The temporary economic expansion was finally stalled by a severe financial crisis due to accumulation of some \$30 billion dollar short-term debt in 1993.⁷⁴ The Plan ended in March 1994 with mixed results. Consequently, the huge debt *forced* Iran to attract foreign investments by offering some of its oil fields to international oil companies in the form of oil buyback contracts. In 1995, the comprehensive US economic sanctions made the situation more difficult by cutting the flow of American funds to Iran. This includes US based multinational corporations' direct investments and the mutual fund companies' portfolio investments. The Tehran Stock Exchange is highly illiquid and has thirst for foreign investors. Capital shortage has stagnated the privatization of the government enterprises and liquidity of the stock exchange. In the absence of the US mutual fund companies, other countries' portfolio investments in Iran are insignificant. The Iranian expatriates abroad who have funds are wary of investing in Iran, because of the regime's bad records of confiscating people's assets and the overall political instability of the country. It has been reported that Iranian expatriates have invested about \$200 to \$400 billion in the U.S, Europe, and China, but almost nothing in Iran.⁷⁵ Since the Iranians abroad are doubtful to invest in Iran, there is little hope for the regime to absorb capital from foreign investors. In addition, the regime's severe control of foreign exchange is

73. Maboud Ansari, p.127.

74. "Reinforcing The Gains," *Euromoney*, September 1993, P. 269. Also see, Iran: Waking Up From A Nightmare, *The Banker*, September 1993, PP.43-48.

75. Iran Press Service, July 24, 2000.

incompatible with the requirements of free capital mobility in the globalized economy today.

Iran needs capital, technical know-how, and skilled-managers to rejuvenate its economy. There are numerous recently graduated youths in Iran who are desperately looking for work but there are not enough investments and entrepreneurs to create jobs. The rate of unemployment in the last three years has been very high, officially in the range of 13%-14%.⁷⁶ Private economists' estimates are higher, in the range of 20 %-22%.⁷⁷ The migration of some 2 million Afghani and Iraqi refugees into the country, who are mostly unskilled labor, have further worsened the unemployment in the past few years. In addition, exogenous factors, low oil prices in 1998 and early 1999, the US economic sanctions, and a severe drought have put more pressure on the economy. The point is that the country is not benefiting from its pool of experts at home who are unemployed and its educated elite abroad who are self-exiled.

REVERSING THE BRAIN DRAIN?

The Islamic Republic's stance in the Khomeini era was that it does not need the Westoxicated Iranians who fled the country. After Khomeini's death in June 1989, the attitude of the Islamic Republic toward Western-educated elite changed. When 'Ali Akbar Hashemi-Rafasanjani became President in 1989, he called on the Iranian expatriates to help to rebuild the war-ruined economy. The country needed expertise and physical capital to implement its First Five-year Development Plan, which had been launched in March 1989. Consequently, in April 1991, Rafsanjani dispatched to New York Mohsen Norbakhsh, his Economic and Finance Minister, along with Mohammad-Hossein 'Adeli, the Governor of Central Bank, to invite the Iranian expatriates to return home. In a meeting with some 400 Iranian industrialists, the officials promised that expatriates would be safe and their properties would be protected upon returning home. They promised to give back the factories and properties which had been confiscated from the owners at the onset of the Revolution. In due course, some expatriate industrialists went home to investigate business opportunities in Iran. They noticed that the confiscated factories were in the state of ruin and the uncertain political and economic conditions did not prompt any new investment commitments.

In 1992, the Head of Judiciary Muhammad Yazdi said "Iranians residing abroad, specialists in particular, who have no criminal record, can freely return home and come under the protection of law and religion All individuals enjoy an equal status and legal protection as long as they do not act against the government and believe in the sanctity of the exalted Islamic values."⁷⁸ The Islamic Republic needs the assistance of Iranian professionals abroad, but wants them to comply with Islamic rules. Iranians who live in the West are accustomed to Western democracies' rule of codified

76. *Iran Statistical Yearbook, 1999/2000.*

77. Economic Intelligence Unit, *Country Report, Iran*, various issues in 1999-2000.

78. "Iranian Residing Abroad Welcome Home," *Kayhan Havai*, October 28, 1992.

law, freedom of ideas, speech, and other rights which are not honored in the Islamic Republic. It is doubtful that they can be protected under the Islamic Republic's laws considering the regime's records of interrogation, torture, and the murder of thousands of Iranians throughout its reign. Amnesty International has confirmed that in the summer of 1988 alone, more than 2,500 political prisoners were secretly hanged in prisons for the reasons of "fighting with God" and/or not believing in the resurrection day, and life after death.⁷⁹ Since the 1979 Islamic revolution, it has been strictly forbidden to question Islamic laws (*Sharia*) which are largely the basis of civil and criminal laws in Iran. On September 1, 1999, religious leader Ayatollah 'Ali Khamene'i reaffirmed, in a large gathering, "any newspaper or writer wanting to renounce the fundamental principles of Islam or questioning the vengeance law (*Qesas*) is an apostate and liable to the death penalty."⁸⁰

Purging of the university professors in the early 1980s caused a shortage of qualified university professors, especially in medicine, science, and engineering. The Islamic Republic initiated a plan in 1991 to absorb some Iranian professors from abroad to reduce the shortage.⁸¹ The government, however, has not been successful in absorbing the professors on permanent appointment. Hence, it hires Iranian professors who teach in the US for a temporary period while they are on summer vacation or sabbatical leave. Few Iranian professors who live in the US and Europe visit Iran for temporary periods of 1 to 6 months in order to teach in Iran's universities. The United Nations has a program called Transfer of Knowledge Through Expatriate Nationals (TOKTEN), which is designed to compensate for the brain drain from developing countries by financing the volunteer expatriate experts to visit their countries for a temporary period of 3 to 12 weeks. During this period they can serve the government, universities, public and private enterprises. The program pays a round-trip airfare ticket and living expenses for the period of the service. Under this program some Iranian professors have gone to Iran during the summer to teach in universities. Although these professors are not publicly commenting on the university atmosphere in Iran, privately, they are very critical of the government for pushing Islamic ideologies through the university curricula.

The Islamic Republic is also interested in hiring high-level scientists to promote research in advanced defense and nuclear technology. There are some highly-trained Iranian scientists and engineers who are working in prestigious scientific research centers in the US such as the Jet Propulsion Laboratory, Bell Labs, and some top university research centers. Some are very capable of leading advanced research in various scientific and engineering fields. The highly trained and successful Iranian expatriates, however, do not want to go home under the circumstances that the Islamic

79. Ervand Abrahamian, *Koshtar Tabestan 1367 (The Killing in Summer of 1988)*, Mehregan, Vol. 7, No. 2, 1998, p.26.

80. Agence France-Presse, Khamenei's speech in City of Mashhad, September 1, 1999.

81. *Kozaresh Eghtesadi Sal-e 1370 (Economic Report of 1991/1992)*, Plan and Budget Organization, Islamic Republic of Iran, pp. 406-407, 1992.

Republic has created in Iran. For this purpose, the Islamic Republic has hired a number of scientists from the former Soviet Unions's Republics.⁸² In 1993, it was reported that only 2,600 Iranian experts returned home since the government policy of absorbing experts from abroad was initiated.⁸³ Overall, the government's efforts to bring professionals home have not been successful.

Some expatriates who worked in Iran after the revolution say they could not adapt themselves to the Islamic Republic way of social life. They feel like strangers in Iran because they have to act as dedicated Muslims who are devoted to the ideologies of the regime. They have to believe in Islamic values to be acceptable citizens; otherwise they are being treated as second class citizens who have no place in the establishment. The regime has divided the Iranian people into two groups: "ourselves" (*khodi*) and "not ourselves" (*gheire-khodi*). The demarcation of the two groups is not clearly defined. In his speeches, President Khatami calls *khodi* those who are loyal to the Islamic Republic constitution and to the Supreme Leader, who is the pillar and orbit of the regime.⁸⁴ There are two main factions within the *khodi* category that are referred to as reformists and conservatives in the press.⁸⁵ Those who support President Muhammad Khatami's policies are reformists. Those who support the Supreme Leader Ali Khamene'i's strict Islamic rules are the conservatives. Those who are critical of the Islamic constitution and demand separation of religion and state are presumably *gheire-kodi*. Individuals from the *gheire-khodi* group are not welcome for employment in public institutions. The clerics who belong to the *khodi* group are holding the key public jobs. They generally do not have the relevant training and qualifications for the positions they occupy. In reality, they have occupied the positions that should have gone to the more qualified individuals from the large spectrum of Iranian society.

A new wave of brain drain has started since Khatami became President May 23 (2nd of Khordad) 1997. The brain drain from universities and research institutions has been especially intensified. To prevent brain drain, the Higher Education Minister, Mostafa Mo'in, a physician by education, has pledged to increase academic freedom.⁸⁶ He, however, has not been successful. The brain drain in academia has continued at an alarming rate.

President Khatami has tried to improve the Islamic Republic's relations with Iranians abroad. In September 1998, during his first trip to the US, he spoke in front of an Iranian audience in New York. He posed himself as an authentic Iranian nation-

82. "Iran Hires Soviet Defense Scientists," *Iran Times* p. 15, April, 93.

83. *Iran Times*, p. 11.

84. There is a good discussion of *Khodi* and *Gheire-Khodi* in the Farsi newspaper *Neshat*, No. 120, Vol. 1, August 1, 1999, p. 1.

85. The four factions of Traditional Right, the Left, the Modern Right, and the Radical Right mentioned by Farhang Rajaee, "A Thermidor of Islamic Yuppies? Conflict and Compromise in Iran's Politics," *The Middle East Journal*, Spring 1999, p. 218, are not the only classifications used in Iranian media.

86. "More Academic Freedom Expected in Iran," *The Chronicle of Higher Education*, Sep. 1997, Vol.44, No.4, p. A50.

alist by reading a story from *Epic of Kings (Shahnameh)* in order to appease the audience.⁸⁷ He emphasized mutual respect and national pride and was delighted to receive the Iranian expatriates. In his second trip to New York, he attended the UN Millennium Summit, in September 4, 2000. In that visit, Khatami expressed concern about the brain drain from Iran.⁸⁸ He expressed interest in attracting wealthy Iranians in the US to invest in Iran. Since he was re-elected for the second term on June 8, 2001, Khatami has not offered any specific policy to reverse or even lessen the brain drain from Iran.

A "reverse brain drain" will provide a major human resource for economic development in Iran. But a "reverse brain drain" is not likely given the present political environment in Iran. There are about 165,000 Iranian professionals with university degrees who are now working for industries and academic institutions in the US. Most of them have several years of experience in high technology and/or other technical fields that Iran badly needs. To encourage some of them to go home, suitable conditions have to emerge. First, the political environment in Iran has to change. Under the present power structure of the Islamic Republic, nobody can oppose the desires and wishes of the Supreme Leader. Western-educated elites must be able to participate freely in the political process. This is not possible due to lack of democracy, as it is known in the West. Second, there must be a secure environment for their safety and freedom, as in the West. Their safety cannot be guaranteed if their views are not in agreement with those of the fundamentalist clergy. Their individual freedom and lifestyle, as they have been accustomed to in the West, cannot be provided in Iran because of the restrictions enforced on individuals' social life under strict Islamic laws. Third, to absorb the highly skilled expatriates, favorable economic conditions have to emerge. Political reforms, however, are prerequisite to favorable economic conditions. The lack of political stability and uncertain future of the Islamic Republic does not prompt the Iranian expatriates to return.

During his first term, Khatami was able to implement elections for local councils. That was a requirement of the constitution, but had been ignored since the revolution. The formation of local councils has not made any significant change in the political structure of the Islamic Republic. A gradual political development, nevertheless, is a favorite of political scientists. As has been stated by Samuel Huntington: "political reform succeeds best if it occurs incrementally, in the spirit of one soul at a time."⁸⁹ Incremental change in the Islamic Republic, however will gradually convert the theocratic regime to a secular technocratic government under which the clergy will no longer be able to rule.

87. *The Epic of Kings (Shahnameh)* by the great poet Abol-Ghasem Ferdowsi, The epic stories' theme is based on the dualism of good and evil in men's character that is the essence of Zoroastrian, the Iranian religion before Islam.

88. Associated Press, "Khatami To Expatriates: Help Iran," September 4, 2000.

89. Samuel Huntington, "One Soul at a Time: Political Science and Political Reform," *The American Political Science Review*, Volume 82, Issue 1, March 1988, p. 3.

CONCLUSION

In this study, it has been argued that political factors rather than economic factors were the main cause of brain drain from Iran. The Islamic Republic's suppression of democracy, hostile attitudes toward the Western-educated, inclusion of Islamic beliefs in the academic curricula, and holding of the top public positions by the mullah strata were the main reasons for the emigration of Iranians. It was argued that the magnitude of brain drain from Iran to the US is very high, especially for the physicians and university professors, whose training is very costly. In general, the Islamic Republic's efforts to attract Iranian expatriates and their capital home have failed. To encourage the exiled Iranians to return home and to prevent further brain drain in the future, a genuine, outright democratization must take place in Iran. This requires a secure political environment for people, industry, and commerce to work.

