

# The Flow of Talented People between US and Asia

Luwei Xie

**Abstract**—This paper discusses the flow of talented people between US and Asia and how it affects the US economy and evaluation mechanism. Brain drain is a term used to describe the movement of highly skilled and educated migrants from one country to another, typically from a less developed to a more developed country that offers greater employment opportunities, higher wages, and/or greater political stability. When skilled workers migrate from developing economies, a phenomenon known as brain drain, they do so for professional opportunities and economic reasons. They are drawn to the United States by many factors: top-quality universities, dynamic companies, an open, merit-based economic system, the social environment, and the standard of living.

**Index Terms**—Brain Drain, US Economy, Increased Emigration, Evaluation Mechanism, Immigration, Talented people between US and Asia, Restriction

## 1 INTRODUCTION

Brain drain is a term used to describe the movement of highly skilled and educated migrants from one country to another, typically from a less developed to a more developed country that offers greater employment opportunities, higher wages, and/or greater political stability. When skilled workers migrate from developing economies, a phenomenon known as brain drain, they do so for professional opportunities and economic reasons. They are drawn to the United States by many factors: top-quality universities, dynamic companies, an open, merit-based economic system, the social environment, and the standard of living. This “brain drain” has become a serious problem for developing countries[1].

The prime minister of Bangladesh, a nation that has lost up to 50 percent of its most highly trained citizens (over 8,000 top professionals), noted that the education of these people cost his nation \$168.5 million, at \$20,000 per person. Yet the U.S. foreign aid Bangladesh received during the same period totalled \$116.3 million. Brain drain frequently represents a net loss to developing nations. Especially noteworthy is the emigration of scientists, IT specialists and engineers from India, Pakistan, China, Egypt, and Korea. This paper discusses the flow of talented people between US and Asia and how it affects the US economy and evaluation mechanism.

## 2 DISCUSSIONS

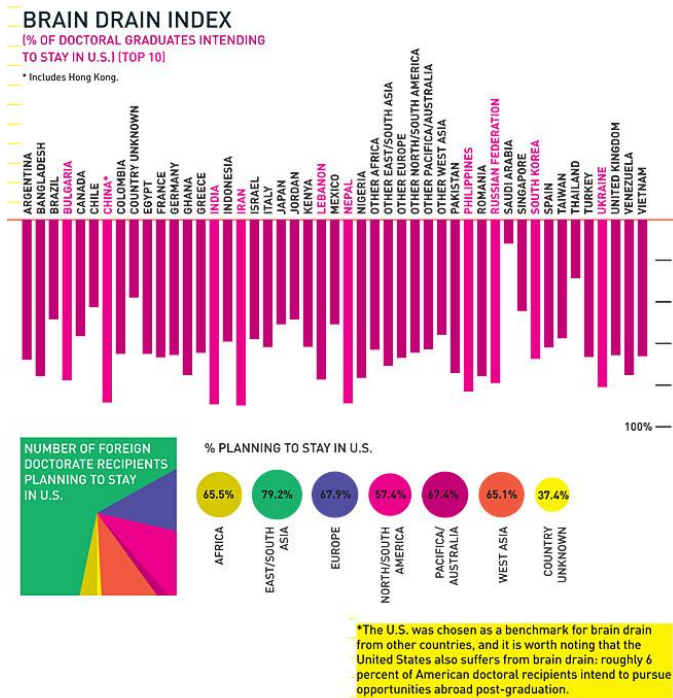
Because of the salary and research opportunities available, the United States continues to attract scientists and engineers from other countries (Table A). It should be noted that the biggest amount of the engineers and

scientists entering the USA as full time inhabitants came from Asia (Figure A). In 2009, among foreign-born science and engineering degree holders living in the United States, the top two places of birth were India and China. Table B illustrates the scope of the brain drain [2].

## 3 REASON BEHIND BRAIN DRAIN

Brain Drain is mainly caused by pull factors that are developments and circumstances that attract people to specific areas or countries. Freedom has always been a significant pull factor, both within countries and across international boundaries. Freedom, associated with cities, enticed many individuals to leave the countryside with its relative lack of freedom. Freedom in Britain, Holland, and the United States has served as a magnet for European migrants and, more recently, for migrants from the developing world. Religious, artistic, economic, political, and scientific freedoms remain almost irresistible pull factors, which, in turn, usually enhance the degree of freedom that existed. New York, London, Paris, Sydney, Toronto, Los Angeles, Seattle, Chicago, Miami, and Boston are vibrant and dynamic because of the freedom that characterizes them and attracts talent and financial resources from around the world. Economic opportunities are one of the most powerful pull factors. People have historically migrated to industrial areas that offered employment and financial and entrepreneurial opportunities. Income inequality between rural and urban areas or between developing and developed countries generally induces people to migrate to seek higher income [3].

• Luwei Xie is currently pursuing MBA in Management at Silicon Valley University, US, PH-1.620.222.0307. E-mail: aquaxie@gmail.com



#### 4 IMPACT OF BRAIN DRAIN ON THE UNITED STATES

The United States permits temporary admission of scientists and engineers (S&E) from Canada and Mexico under NAFTA's entry provisions. The numerical cap for Mexicans in this category ended in 2004. Statistically, about 54% of foreign students stay in the USA after receiving PhD degrees in science. The UN expected 100,000 high-tech professionals per year to leave India in the early 2000s[4].

Government authorities are concerned about the loss of skills and have come to realize that there must be faster creation of new jobs not only to stop the costly loss but also to avoid serious political repercussions. The pressure of the unemployed educated is also forcing officials in many areas to soften the terms for foreign investment.

More than any country in the world, the United States is known as an immigrant country. Consequently, most Americans—with the exception of Native Americans and Americans of English and African descent—are descendents of people who migrated to the United States less than three hundred years ago. Historically, the demand for labor in the United States, together with poverty, conflict, and oppression in Europe, led to the migration of millions of Europeans to America. Rapid westward expansion and the need for a growing population to develop agriculture as well as industry attracted emigrants primarily from Western and Northern Europe until the early 1900s. Agricultural problems in Scandinavia, for example, prompted Swedes, Danes, Norwegians, and Finns to emigrate and settle in agricultural states in the Midwest.

By 1901, most emigrants came from Southern and Eastern Europe [5].

The United States adopted policies that excluded Asians and restricted immigrants from non-European countries. Growing fears about America's changing ethnic composition and about competition from new arrivals among "old stock" Americans led to the passage of legislation in 1921 that initiated the national quota system, which remained in place until 1965. The national quota system was designed to preserve the ethnic or national composition of the United States as of 1920. Quotas for emigrants from any one country were calculated in terms of 1/16 of 1 percent of persons of that national origin already in the United States. There was an absolute ceiling of two thousand emigrants from the Asia-Pacific region. Improved economic conditions in Europe and the abolishment of the national quota system in 1965 changed the pattern of U.S. immigration. Most of the new arrivals are from the developing world, with various groups dominating particular parts of the country. For example, Mexicans comprise the majority of new immigrants in Illinois, Texas, and California; Chinese, Indians and Dominicans are major in New York; and Cubans are the leading group in Florida. Immigrants make up a large proportion of America's population, and demographic projections indicate that they will be largely responsible for the country's population growth[6].

#### 5 ASIA

The nations of central and South Asia are dominated by emigration to both the West and East; considerable intraregional migration also occurs. Nearly 9 million Asian workers reside in the Middle East, with Bangladesh, India, and Pakistan supplying the majority of laborers for infrastructure projects in the Gulf States. India's vast population includes approximately 5.7 million migrants, representing only 0.5 percent of its total population. India is also a country of emigration, with large numbers leaving for Australia, Canada, and the United States. India sent approximately 80,000 students to the United States in the mid-2000s[7].

Similarly, Nepal is both a country of immigration and emigration. Over 800,000 international migrants live in Nepal, and approximately 465,000 Nepalese live in the Gulf States and more than 200,000 live in other parts of Asia, Europe, and the United States. One out of every eleven Nepalese adult males works abroad, sending home remittances that have helped decrease Nepal's poverty rate. Central Asians have migrated in large numbers to Russia, as already described. Kazakhstan is a magnet for migration because of its relative wealth compared to other central Asian states. Yet migrants there complain of violent attacks, substandard working conditions, limited freedom of movement, and uncertain compensation[8].

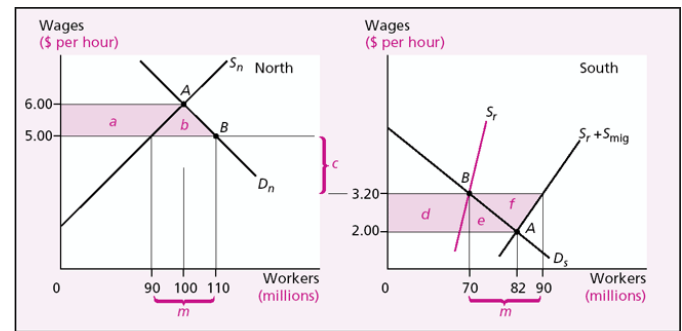
Asia has long been a source of immigrants, but is also emerging as a destination for intraregional migration. An estimated 25 million Asian migrants live and work outside their countries of origin. They are spread around the world, with approximately 7.5 million of the 25 million residing in foreign lands without lawful status. The city-state of Singapore boasts the highest number of immigrants per capita, at forty-three migrants per one hundred inhabitants. China experienced a massive internal movement of migrants—with estimates ranging from 130 to 200 million—from rural villages to industrial centers in the mid-2000s as the demand for factory workers surged. With the economic downturn in 2009, 20 million of those workers were let go and returned to their villages.

Asia sends many of its highly skilled immigrants to the United States, Canada, Australia, and Europe, but certain countries have enticed their nationals to return home in a “reverse brain drain.” Hong Kong and Singapore, in particular, have attracted highly skilled workers to high-tech and other professional centers. Middle- and lower-skilled workers often leave the region to work in the Middle East or Gulf States in health care, construction, domestic and hospitality industries (see the Middle East and North Africa regional summary). Irregular workers often move within the region, such as the majority of the millions of Myanmar nationals working in Malaysia and Thailand [9].

## 6 HOW BRAIN DRAIN AFFECTS THE US ECONOMY AND EVALUATION MECHANISM

To see some important economic effects of migration, let's squeeze as much as we can out of a thrice-squeezed orange, the familiar demand-supply framework already used extensively. To simplify the analysis, we aggregate the whole world into 02 grouped countries: a high-income “North” and a low-income “South”. Let's start with a situation in which no migration is allowed, as at the points A in the two sides of Figure B. In this preliminary state southern workers of similar skill earn \$2.00 per hour and northern workers earn \$6.00 per hour[10].

[FIGURE B: Labor-Market Effects of Migration]



Group	Their Economic Gains or Losses
Migrants	Gain area (e + f)
Workers remaining in the South	Gain area d
Southern employers	Lose area (d + e)
Native northern workers	Lose area a
Northern employers	Gain area (a + b)
The world	Gains area (b + f)

$m$  = Number of migrants = 20 million

$c$  = Amortized cost of migrating, both economic and psychic (being uprooted, etc.), which offsets \$1.80 per hour of extra pay

(By holding the labor demand curves fixed, we gloss over the small shifts in them that would result from the migrants' own spending.)

Yet brain drain also brings costs to the migrants. They may have to endure hostility in their new country. All these things matter, so much so that we should imagine that wide wage gaps would persist even with complete legal freedom to move. The case of restricting immigration cannot lie in any net national economic loss unless we can introduce substantial negative effects not shown in Figure B.

The sending country, defined as those who remain in the South after the migrants' departure, clearly loses. Employers' losses of  $d + e$  exceed workers' gain of  $d$  alone. So far it looks as though receiving countries and the migrants gain, while sending countries lose. The overall world gets profit, certainly, since liberty to travel transmits persons toward countries where they will build a greater net input to global development. Does migration really work that way? Does it make wage rates more equal in different countries? Are competing workers harmed in receiving countries? Do talented immigrant workers catch up with them in pay? Does the world as a whole gain? Several studies have shown that the predictions of Figure B are borne out by the history of migration, both in the great integration of the world economy before 1914 and again in experience since the mid-1970s. Here are some of the main findings of the practical studies:

- World output is raised by allowing more migration.
- Talented immigrant workers' earnings catch up partly, but not completely, within their own lifetimes. Numerous studies have traced their convergence toward the better pay enjoyed by native-born workers, but the deficit is not erased in the first generation after migration. The pay deficit has grown more pronounced in Canada and the United States since the 1970s.
- Freer migration makes wage rates in the migrant-related occupations more equal between countries.

- Directly competing workers in the receiving countries do have their pay lowered, relative to less talented immigrant workers-threatened occupations and relative to such nonlabor incomes as land rents. However, these directly competing workers are now fewer in number than most people think because talented immigrant workers often take jobs that are increasingly unpopular with natives of the prosperous receiving countries (taxi driving, long hours in small convenience stores, etc.). In the United States the major group of workers hurt by rising immigration since 1980 consists of the least-skilled American workers (e.g., high school dropouts) [11].

## 7 SHOULD THE SENDING COUNTRY RESTRICT EMIGRATION?

The analysis of the labor market shows that the sending country loses economic well-being because of emigration. Employers (and consumers of the products produced by these firms) lose more than the remaining workers gain. Before deciding that this means that the sending countries should try to restrict outmigration, it is important to look at several other important costs and benefits of emigration for the sending country [12].

First, let's look at the effects on the government budget. The sending-country government loses the future tax payments that the emigrants would have made (and perhaps also their military service). At the same time, those who emigrate no longer require government goods, services, and public assistance, so government spending also goes down. However, many public-expenditure items are true "public goods" in the economic sense that one person's enjoyment does not increase if there are fewer other users. That is, to provide the same level of benefits to the people who do not emigrate, the government has to continue spending the same amount of money. Examples of true public goods include national defence or flood-control levels[13].

Because some government spending is for true public goods, the loss of future tax contributions is expected to be larger than the lessening in future government spending as persons travel from the sending state. For this age group, the net loss to the sending country is likely to be largest for highly skilled emigrants—the brain drain. They have received substantial education at public expense, and they would pay substantial taxes on their above-average earnings if they stayed. For example, in some of the poorest state in the globe, nearly all the medical doctors emigrate to Europe and North America soon after they complete their training[14].

There is one monetary benefit to the sending country that is not captured in the examination of the labor market effects of migration. Those who emigrate often send

voluntary remittances back to relatives and friends in their home country. The remittances are often large, as Italian and Mexican experiences have shown. One estimate is that globally emigrants send home about \$100 billion in remittances per year. Sending countries that do not receive much in the way of remittances probably lose well-being, but those that receive substantial remittances probably gain well-being [15].

What could the sending country do to try to restrict emigration or its negative effects? It could simply block departures. However, this would probably require severe restrictions on any foreign travel, with all of the losses that such travel restrictions would impose on the businesses and people of the country. A more defensible policy would be a tax on emigrants that is roughly equal to the net contributions the country has made to them through public schooling and the like. An alternative policy approach is to encourage return after the emigrant has been gone for a while, by appealing to national pride, offering good employment, and so forth. Taiwan and South Korea have encouraged the return of their scientists and engineers to work in their rapidly developing high-tech industries[16].

## 8 THE IMPACT OF BRAIN DRAIN

The movement of people within countries and across national boundaries tells various stories that underscore the growing interdependence of nation-states, NGOs, and individuals. Because globalization is a manifestation of complex relationships among states and non-state actors, migration as a central component of this process is also complicated. Both gains and losses result when large numbers of people migrate, especially since those who leave are usually the best educated, the most ambitious, and enterprising individuals. However, by leaving, these individuals also position themselves to make significant contributions to their original homes[17].

Brain drain (i.e., the migration of highly educated and trained people) is widely regarded as a serious problem and a major impediment to development in poor countries. Many doctors, nurses, teachers, and university professors leave poorer countries and rural areas for higher paying jobs and better opportunities in neighbouring countries as well as in rich industrial countries. As many as 70,000 educated and skilled Africans migrate to Western Europe, Canada, the United States, and elsewhere each year. This brain drain has significant implications for poor countries. Many medical problems in poor countries are negatively impacted by a shortage of medical personnel. For example, countries such as Tanzania, Malawi, and Sierra Leone had three or fewer doctors per 100,000 people, compared to 256 doctors per 100,000 people in the United States. Many European countries, especially following World War II, were concerned about losing talented individuals who were attracted to better opportunities in the United States. Canada faces brain drain to the United States, a problem



that is solved partly by encouraging brain drain from developing countries. Many small towns in the United States suffer from the loss of their most talented residents to urban areas [18].

It is estimated that half of the recent graduates from the prestigious Indian Institute of Technology migrate to the United States. They are driven out by push factors such as overregulation, higher taxes, stagnant career paths, and numerous impediments to entrepreneurship. Many are attracted to the United States by better economic opportunities and a dynamic environment conducive to economic success and personal growth. The fact that most Indian immigrants speak English enables them to easily integrate into American society. It is estimated that one-third of the engineers in Silicon Valley are of Indian origin. About 7 percent of Silicon Valley's high-tech firms are managed by Indians. Sabeer Bhatia, for example, founded Hotmail and sold it to Microsoft, and Vinod Khosla is a co-founder of Sun Microsystems. But the migration of talented individuals is seen as detrimental to India's economic development. On the other hand, many countries have a problem of brain overflow, which is essentially an oversupply of skilled individuals. Many poor countries, such as the Philippines, India, and Egypt, have become exporters of highly educated people because of their inability to utilize their talents[19].

Remittances (i.e., money earned abroad that is sent by migrants to their home countries) play a crucial role in the economic development of poor societies. Given the fact that remittances are transferred by millions of migrants in various ways, it is extremely difficult to know how much money migrants send to their families or invest in their home countries. Remittances clearly create networks of interdependence among countries, NGOs, and individuals. The growing number of migrants challenges traditional international relations theories of citizenship. It also forces many poorer countries to embrace dual citizenship, which enables their citizens to find better jobs abroad and to send even more money home. Some organizations, for example, the U.S. Agency for International Development (USAID) and the Inter-American Development Bank (IDB) have developed strategies to assist migrants to transmit remittances more economically. This development reflects the growing economic impact of remittances on developing countries. For example, it is estimated that Indian migrants

and Indian-Americans sent approximately 24.7 billion in 2007 to India, which was twice the value of India's agricultural exports and over a third more than India's tourist revenues. However, the global economic recession and the decline of Indians migrating to the United States led to a significant reduction in remittances. Migrants sent \$1.8 billion in April 2009, which was 18 percent less than in April 2008. The complexity of migration in an increasingly global age makes it difficult to assess its costs and benefits for sending countries[20].

## 9 CONCLUSION

In conclusion, it can be said that brain drain is an important issue throughout many countries and regions of the world today. It has greatly contributed to globalization and to an increased interdependence among many countries and peoples. Population issues are an increasing problem in the developed and developing countries as they hinder economic growth and place great pressures on already strained populations. Under-population has become a major problem due to a rapid increase in aging populations throughout developed countries. In an attempt to rectify this problem, some states have attempted to increase fertility rates domestically and encourage immigration from abroad. High rates of population growth have had devastating consequences in the developed world as well. In an effort to ease overpopulation, many developing countries have resorted to strict population controls; an example is China's one-child policy. Other countries have encouraged their citizens to migrate to other states.

Migration has various forms. It can be forced or induced. Sometimes it is temporary, as when workers return to their countries of origin. Migration can be regional or transcontinental, and it can be seasonal or permanent. Many factors have contributed to increased migration. Push factors—such as environmental disasters, high unemployment, high population growth rates, state repression, and discrimination—have encouraged many to look for safer homes where they can pursue prosperous futures. Pull factors have also enticed many to migrate, seeking economic and political freedoms, a safer environment for themselves and their families, educational opportunities, and a chance to earn higher wages.

## Appendix

TABLE A: Immigrants (aged 25 and older) from Selected Labor-Exporting Countries to OECD, by Education Level, 2010

Home Country	Total Number of Immigrants	Level of Schooling		
		Primary or Less	Secondary	College
India	375,283	18,471	57,199	299,613
		(4.9)	(15.3)	(79.8)
China	722,400	148,029	185,295	389,076
		(20.5)	(25.6)	(53.9)
Indonesia	142,540	3,910	32,347	106,283
		(2.7)	(22.7)	(74.6)
Philippines	356,134	27,604	70,079	258,451
		(7.7)	(19.7)	(72.6)

FIGURE A: Place of Birth of Foreign-Born Science and Engineering Degree Holders

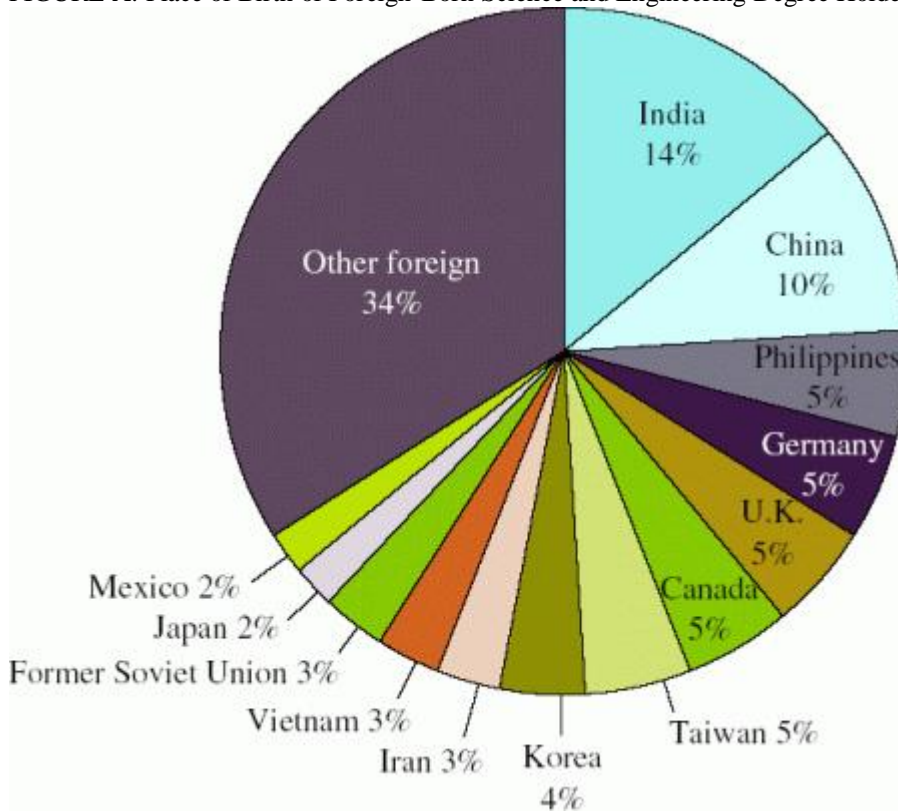


TABLE B: USCIS Permanent Visas Issued, by S&E Occupation (thousands)

Year	Total	Engineers	Mathematical/ Natural Scientists	Computer Scientists	Social Scientists
1988	11.0	8.1	1.2	1.2	0.5
1989	11.8	8.7	1.2	1.5	0.4
1990	12.6	9.3	1.2	1.6	0.5
1991	14.1	10.5	1.3	1.7	0.6
1992	22.9	15.6	2.8	3.4	1.1
1993	23.6	14.5	3.9	4.2	1.0
1994	17.2	10.7	3.1	2.8	0.7
1995	14.1	9.0	2.4	2.1	0.6

Year	Total	Engineers	Mathematical/ Natural Scientists	Computer Scientists	Social Scientists
1996	19.4	11.6	3.7	3.3	0.8
1997	17.1	10.3	3.5	2.6	0.7
1998	13.5	7.9	2.5	2.5	0.6
1999	7.0	3.2	1.8	1.4	0.5
2000	15.8	7.3	3.2	4.7	0.5
2001	33.9	16.1	4.6	12.7	0.5

Table 1: Immigration by Destination Country

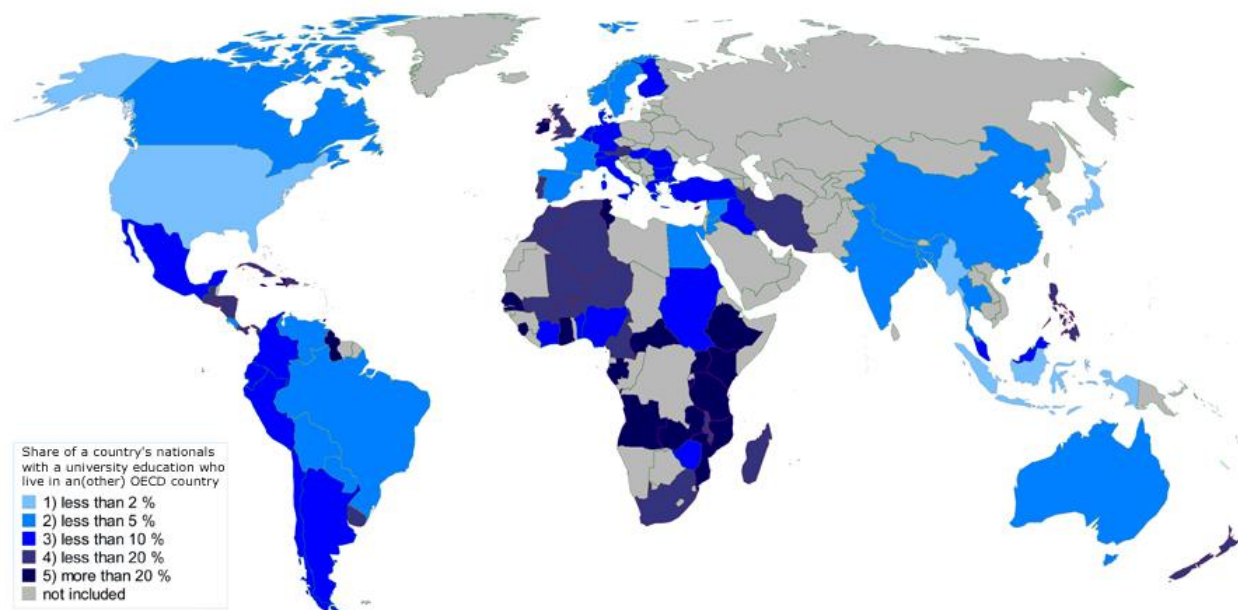
Destination country	Number of immigrants per country (millions)	Immigrants as percentage of population
United States	38.3	12.9
Russia	12.0	8.4
Germany	10.1	12.3*
Ukraine	6.8	14.7
France	6.5	10.1*
Canada	6.1	18.9
India	5.7	0.5
United Kingdom	5.4	8.8*
Spain	4.8	11.8*
Australia	4.1	20.3
Pakistan	3.3	2.1
Hong Kong	3.0	42.6
Italy	2.5	4.3*
Kazakhstan	2.5	16.9
Côte d'Ivoire	2.3	13.1
Jordan	2.2	39.0
Japan	2.0	1.6
Iran	1.9	2.8
Singapore	1.8	42.6
Palestinian Territories	1.7	45.4

Region	2008 (in billions of US\$)	2009 (in billions of US\$)	2010 (in billions of US\$)
East Asia and Pacific Rim	53	58	62
Europe and central Asia	39	51	54
Latin America	57	61	61

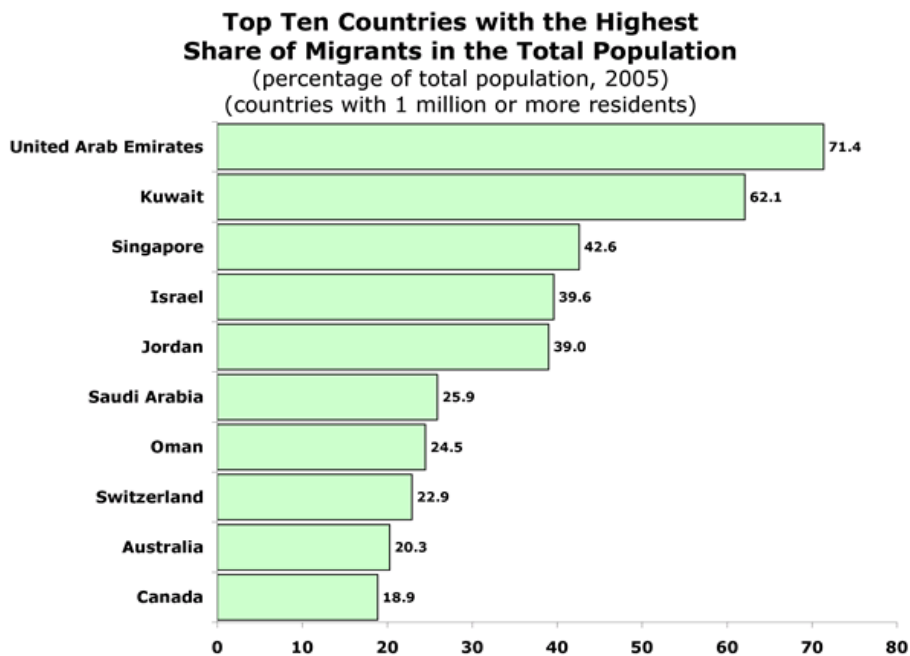
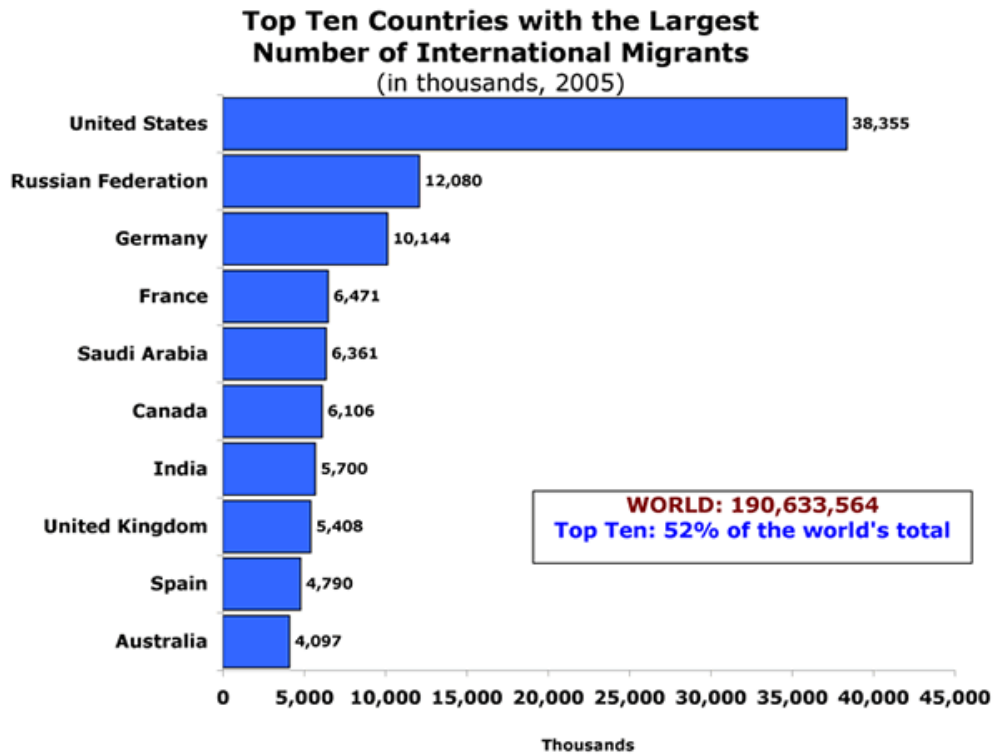
Region	2008 (in billions of US\$)	2009 (in billions of US\$)	2010 (in billions of US\$)
Middle East and North Africa	27	32	35
Asia (South)	40	44	51
Sub-Saharan Africa	13	19	20
Total	228	265	283
Percentage of GDP	2.1	2.0	1.8

Table 3: Leading Remittance-Recipient Countries, 2010 (billions of US\$)

Receiving country	Amount of remittances
India	30.0
China	27.0
Mexico	23.8
Philippines	18.7
Poland	11.0
Nigeria	10.0
Egypt	9.5
Romania	9.0
Bangladesh	8.9
Pakistan	7.1







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