

Migration of international students and mobilizing skills in the MENA Region

Citation for published version (APA):

Nour, S. (2014). *Migration of international students and mobilizing skills in the MENA Region*. UNU-MERIT. UNU-MERIT Working Papers No. 031 <http://www.merit.unu.edu/publications/wppdf/2014/wp2014-031.pdf>

Document status and date:

Published: 01/01/2014

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.



**UNITED NATIONS
UNIVERSITY**

UNU-MERIT

UNU-MERIT Working Paper Series

#2014-031

Migration of international students and mobilizing skills in the MENA Region

Samia Satti Osman Mohamed Nour

Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT)

email: info@merit.unu.edu | website: <http://www.merit.unu.edu>

Maastricht Graduate School of Governance (MGSoG)

email: info-governance@maastrichtuniversity.nl | website: <http://mgsog.merit.unu.edu>

Keizer Karelplein 19, 6211 TC Maastricht, The Netherlands

Tel: (31) (43) 388 4400, Fax: (31) (43) 388 4499

UNU-MERIT Working Papers

ISSN 1871-9872

**Maastricht Economic and social Research Institute on Innovation and Technology,
UNU-MERIT**

**Maastricht Graduate School of Governance
MGSOG**

UNU-MERIT Working Papers intend to disseminate preliminary results of research carried out at UNU-MERIT and MGSOG to stimulate discussion on the issues raised.

**Migration of international students and mobilizing skills in the
MENA Region**

By Dr. Samia Satti Osman Mohamed Nour

(April 2014)

Migration of international students and mobilizing skills in the MENA Region

By Dr. Samia Satti Osman Mohamed Nour ¹

(April 2014)

Abstract

This paper uses both the descriptive and comparative approaches to provide an overview of migration of international students from the Middle East and North Africa (MENA) region and mobilizing skills in the MENA Region. We fill the gap in the MENA literature and present a more comprehensive and updated analysis of migration of international students from the MENA region. Our findings support the first hypothesis that the number of international students from the MENA region increased substantially over the past years. Our results corroborate the second hypothesis that international students from the MENA region are concentrated in few countries. Our findings support the third hypothesis that skills of international students can be better mobilized in their countries of origin by addressing the push-pull factors that determine migration of skills from the MENA region.

Keywords: migration, international students' mobility, mobilizing skills, MENA region

JEL classification: J60, J61, I25

¹ Corresponding Author: Dr. Samia Satti Osman Mohamed Nour, Affiliated Researcher – UNU-MERIT, School of Business and Economics, University of Maastricht, Maastricht, the Netherlands; and Associate Professor of Economics, Economics Department, Faculty of Economics and Administration, King Abdulaziz University, Jeddah, Saudi Arabia.; and Associate Professor of Economics, Economics Department, Faculty of Economic and Social Studies, Khartoum University, Khartoum, Sudan (on leave). E-mail: samiasatti@yahoo.com; samia_satti@hotmail.com. The research work presented in this paper was originally prepared for and presented in the OECD-UNFPA Conference "Mobilising Migrants' Skills for Development in the MENA Region. Making the most out of young migrants skills" Conference jointly organized by UNFPA and the OECD, Tunis, 13-14 May 2013. The author gratefully acknowledges the OECD-UNFPA for the research grants. The author would like to thank Dr. Jean-Christophe Dumont (OECD), Dr. Theodora Xenogiani (OECD) and the participants for their useful comments on this paper. All the usual disclaimers apply.

Migration of international students and mobilizing skills in the MENA Region

1. Introduction

This paper presents overview of migration of international students from the Middle East and North Africa (MENA) region and contributes to recently studies in mobilizing skills in the MENA Region.² This paper addresses the following questions: What are the available evidence concerning international students from the region? How many are they? Where are they? What are they doing? Do they come back? How can the skills of international students be better mobilized in their countries of origin? How can recognition of foreign qualifications, including that of technical degrees, be promoted to improve the labour market opportunities of students wishing to return to their home countries? We examine three hypotheses; the first hypothesis argues that the international students from the MENA region increased substantially over the past years. The second hypothesis argues that the international students from the MENA region are concentrated in few countries. The third hypothesis argues that skills of international students can be better mobilized in their countries of origin by addressing several issues related to mobility of students, migration of skill and brain drain in the MENA region.

We fill the gap in the MENA literature and present a more comprehensive analysis concerning the migration of international students from the MENA region. Different from earlier studies in the MENA literature (cf. Gubert and Nordman, 2006; Baldwin-Edwards, 2005), an interesting element in our analysis is that we examine the recent development of the size, quantity, trend and distribution of international students from the MENA region. Moreover, we use updated data from the UNESCO database and provide a more updated study compared to few earlier studies on the MENA region (cf. Gubert and Nordman, 2006; Baldwin-Edwards, 2005). Moreover, we support the efforts aim to enhance the mobilization of skills of international students in their countries of origin in the MENA region.

Regarding research method, we use the descriptive and comparative methods of analysis. Similar to the studies in the international literature, we use the UIS-UNESCO Education Digest (2012), which provides definition of student mobility and data on international/mobile students that are reported by host countries. We use the outbound mobility ratio and inbound mobility ratio to examine the size, quantity, trend and distribution of international mobile students from the MENA region compared to other world regions.³

² According to the World Bank classification and definition of world regions, the Middle East and North Africa (MENA) region includes Algeria, Djibouti, Arab Republic of Egypt, Islamic Republic of Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Syrian Arab Republic, Tunisia, West Bank and Gaza and Republic of Yemen. According to other studies, the MENA Region includes 19 countries: Algeria, Bahrain, Djibouti, the Arab Republic of Egypt, the Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Occupied Palestinian Territories, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, the United Arab Emirates (UAE), and the Republic of Yemen. The Gulf Cooperation Council Countries (GCC) are: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE.

³ According to UIS-UNESCO (2012) Education Digest (2012), the international/mobile students are defined as foreign students who have crossed a national border and moved to another country with the objective to study and for the purpose of education and are now

The rest of this paper is organized as follows: Section 2 presents the literature review. Section 3 shows the general socio-economic characteristics of the MENA region. Section 4 discusses the major development and shows the available evidence concerning the mobility of international students from the MENA region compared to other world regions. Finally, Section 5 provides the conclusions and policy recommendations.

2. Literature review

The Mediterranean and Middle East constitute probably the most remarkable geographical region of the world with respect to labour migration movements. From the post-World War II discouragement of emigration by Maghrebian and other countries, followed by Europe's 1960s labour immigration from Turkey and the Maghreb, through the oil-financed economic expansion of GCC countries with labour shortages and massive guest worker programmes, later followed by two Gulf crises and mass expulsions of Arab guest workers, and now with surplus labour supplies and high unemployment throughout the MENA region, the migration of peoples has been massive and in continuous flux. We have not even mentioned forced migration, and the large-scale refugee movements which have impacted on many states in the region – usually those which have been the least able to accommodate them.⁴

Some studies in the MENA literature examine some economic aspects of migration in the MENA region. Migration has dominated the economic landscape of the MENA countries for the last 40 years or so, although in several different ways. For the Maghreb, emigration was a solution to labour supply growth which outstripped economic development (Khachani, 2004: 35). Within this region, though, the two oil-producing countries of Algeria and Libya have not had the economic pressures of their poorer neighbours. For the Mashrek countries, emigration was also favoured since about 1970 – although short-term labour migration to the Gulf countries was envisaged, rather than to the USA or Europe. For the GCC countries, however, their own insufficient labour supply led them to import more and more temporary foreign workers – initially from the Arab world, then more from Asia. Current pressures lead them to attempt reductions in their foreign workforces, but these attempts are frustrated by the lack of labour

enrolled outside their country of origin. In order to estimate the number of students from a given country who are studying abroad, the outbound mobility ratios as well as regional totals (Table 2) for the most recent year since 1999 are used. The Gross outbound enrolment ratio is defined as the total number of tertiary students from a given country studying abroad expressed as a percentage of the population of tertiary age in that country. As for the mobility ratios, inbound mobility rate is defined as the total number of students from abroad studying in a given country, expressed as a percentage of total tertiary enrolment in that country. Outbound mobility ratio is defined by the total number of students from a given country studying abroad, expressed as a percentage of total tertiary enrolment in that country. Net flow of mobile students is defined as the number of tertiary students from abroad (inbound students) studying in a given country minus the number of students at the same level from a given country studying abroad (outbound students). Net flow ratio of mobile students is defined as the total number of tertiary students from abroad (inbound students) studying in a given country minus the number of students at the same level of education from that country studying abroad (outbound students), expressed as a percentage of total tertiary enrolment in that country. See UIS-UNESCO (2012) Education Digest (2012), p. 67-68, 80.

⁴ See Baldwin-Edwards (2005), p. 2.

market reforms and other structural economic problems (World Bank, 2004a; UNDP, 2002 and 2003).⁵

Gubert and Nordman (2006) shed light on the trends, determinants, and prospects of migration from the Middle East and North Africa (MENA) Region to OECD countries. Based on statistical analyses using these data sets, their findings are as follows. First, migrants from the MENA Region represent a small share of the migrant population in most OECD countries. Second, their skill composition strongly varies between receiving countries because of differing migration and labour market policies. Migrants from the MENA Region are much more educated on average in Anglo-Saxon destination countries than in the traditional destination countries of Continental Europe. Given the skill composition of the migrants, “brain drain” appears to be non-negligible in Algeria, the Islamic Republic of Iran, Lebanon, Morocco, and Tunisia although estimates strongly vary. Furthermore, for all MENA countries, the overall level of education of the migrants increased between 1990 and 2000. Third, destination also strongly varies with origin. Emigration from the Maghreb to OECD countries is strongly concentrated toward Continental Europe, while emigration from the other MENA countries is focused on Anglo-Saxon countries. This second stylized fact suggests that past colonial links and common language are strong pull factors. Compared with other developing regions belonging to the middle-income group, based on the World Bank classification, the size of the brain drain is higher in the MENA Region (10.5 percent) than in Latin America (7.5 percent), East Asia and the Pacific (6.1 percent), and Eastern Europe and Central Asia (3.9 percent).⁶

The UNDP- MBRA Foundation AKR Report (2009) discusses flight of human capital from the Arab region and argues that the flight of human capital forms an important component of the flow of knowledge in the age of globalization, and is affected by both the push and the pull elements of its enabling environments. The attitudes of countries toward human capital flight has changed over time, for the need for skills, experience, and human resources has grown considerably during the last ten years all over the world, including in Europe and the USA, which are no longer capable of generating sufficient skills locally and thus have begun to search for them elsewhere, and particularly in developing countries. These global orientations strengthen the notion of “stealing” human capital, including those Arab human intellectual assets that are prepared to migrate to countries of the North. The Arab region is considered one of the most active in terms of the export of highly qualified human capital equipped with university degrees. Indeed, human capital is among its major exports, possibly equalling oil and gas in value.⁷

⁵ See Baldwin-Edwards (2005), p. 23. See also Khachani (2004), p. 37, and World Bank (2003), pp. 171-172.

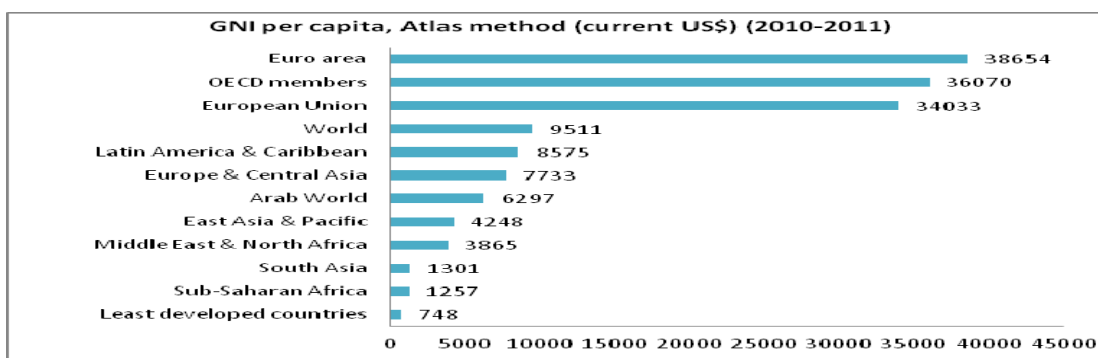
⁶ See Gubert and Nordman (2006), pp. 1-2, 9, 10.

⁷ See UNDP-MBA Foundation AKR (2009)- pp. 207-209: Arab Performance in Research and Innovation.

3. General socio-economic characteristics of the MENA region

According to the World Bank (2013) the MENA region has a population of 336.6 million in 2011. While according to the World Bank (2012) in 2010 the MENA region has a population of 355 million, with 85 percent living in middle-income countries, 8 percent in high-income countries and 7 percent in low-income countries.⁸ In 2010 the current GDP in the MENA region account for US\$1.202 trillion and GNI per capita in the MENA region account for US\$3,865, fall below the standard rates of the OECD, European Union, World, Latin America and the Caribbean, Europe and Central Asia, Arab World and East Asia and Pacific – see Figure 1.

Figure 1- GNI per capita, Atlas method (current US\$) (2010-2011)



Source: the World Bank (2012a)

There is considerable diversity between the MENA countries in terms of demographic composition and standards of economic development as indicated by GDP per capita and the Human Development Index (HDI). The Gulf Arab countries exhibit higher standards of economic development and growth indicators (as measured by GDP per capita) compared to other MENA countries. According to World Bank classifications, all of the Gulf Arab countries rank as high income countries. Among the MENA countries, however, six countries rank as higher medium income group: Lebanon, Algeria, Iran, Jordan, Libya and Tunisia, but eight countries: Djibouti, Egypt, Iraq, Morocco, Palestinian, Syria, Sudan and Yemen are in the lower medium income group. Moreover, the UNDP human development indicators show that the average GDP per capita in all the Gulf countries is higher than both the world average and the average for Arab and MENA countries generally. The average GDP per capita in other MENA countries ranks among world medium income countries, and is on average lower than the average for Gulf countries and that of all Arab countries. These differences also appear in terms of HDI, for instance, according to UNDP-HDR (2011) classification ten of the MENA countries: all of the Gulf Arab countries in addition to Lebanon, Iran, Libya and Tunisia rank as high human development countries. Among the MENA countries, however, seven countries: Algeria, Jordan, Egypt, Palestine, Syria, Morocco and Iraq are in the medium human development group, while three of the MENA countries: Djibouti, Yemen and Sudan are in the low human development group.

⁸ See the World Bank (2012b).

There are certain features of the MENA region that distinguish it from the rest of the developing world, namely: high income from hydrocarbon exports, which drive a wedge between individual productivity and consumption; demographic factors, such as delayed fertility transition and rapid growth of youth population. In addition to imbalances in the labour markets, evidenced by high rates of youth unemployment and low participation of women in the labour market and high investment in schooling but with low productivity of education. There are enough similarities between the countries of the region in terms of common language and culture. However, there is high degree of heterogeneity in most aspects of human development in the region, disparities in per capita income, due to differences in endowments of oil and gas resources are well known and there are in addition large disparities in health and education, some of which are related to income while others result from differences in institutions, such as the degree of reliance on markets and the effectiveness of public services. ... Because of wide disparities in income, the countries of Middle East and North Africa (MENA) form a heterogeneous group of countries from the standpoint of per capita income [that can be classified into] three groups of countries. The oil-rich GCC countries (Bahrain, Oman, Qatar, UAE, and Saudi Arabia) along with Libya enjoy high levels of per capita income. This group accounts for only 9 percent of the region's 725 million population. A second group, by far the largest, consists of middle income countries, including oil exporters Iran and Iraq, and accounts for 78 percent of total MENA population. The third group, which accounts for the remaining 13 percent, consists of the three lowest income countries of the region -- Djibouti, Sudan, and Yemen.⁹

4. Migration of population and the international students in the MENA region

Based on the above background, another significant feature of the MENA region that distinguishes it from the rest of the developing world is related to labour migration movements and student mobility. This section first shows the stylized facts on migration of population in the MENA region and then explains the stylized facts and available evidence concerning migration and mobility of international students from the MENA region compared to other world regions.

4.1 Migration of population in the MENA region

According to the World Bank Migration and Remittances Factbook (2011), the MENA region emigration data for 2010, implies several stylized facts that the stock of emigrants account for 18.1 million or 5.3 percent of population. The top 10 emigration countries are: Egypt, Morocco, West Bank and Gaza, Iraq, Iran, Algeria, Yemen, Syria, Jordan, and Lebanon. The main destinations include: high-income OECD countries (40.2 percent), high-income non-OECD countries (23.2 percent), intra-regional (31.5 percent), other developing countries (1.2 percent), unidentified (4.0 percent). The top 10 migration corridors: West Bank and Gaza-Syria, Egypt-

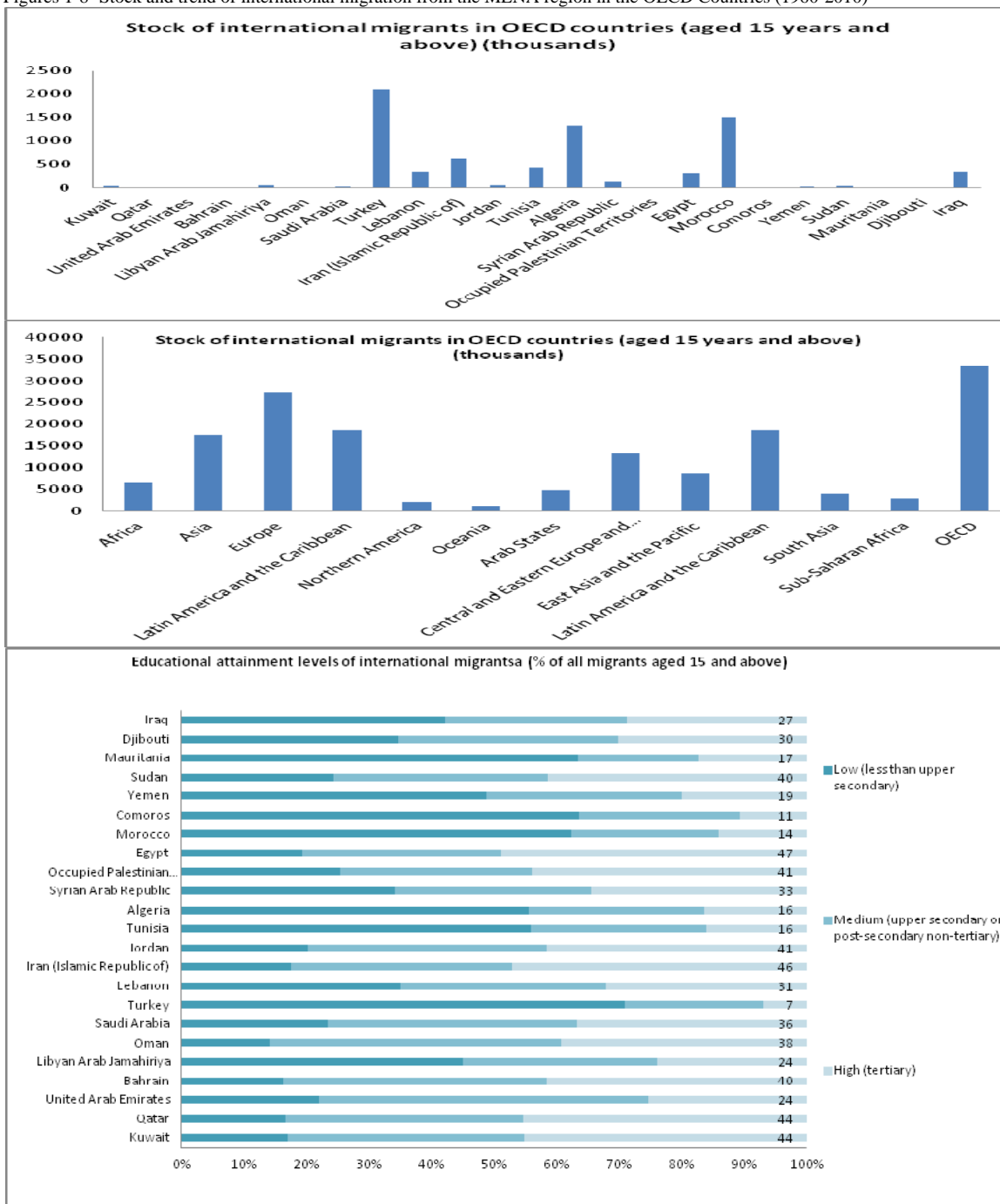
⁹ See Salehi-Isfahani (2010), pp. 1, 2, 3, 4.

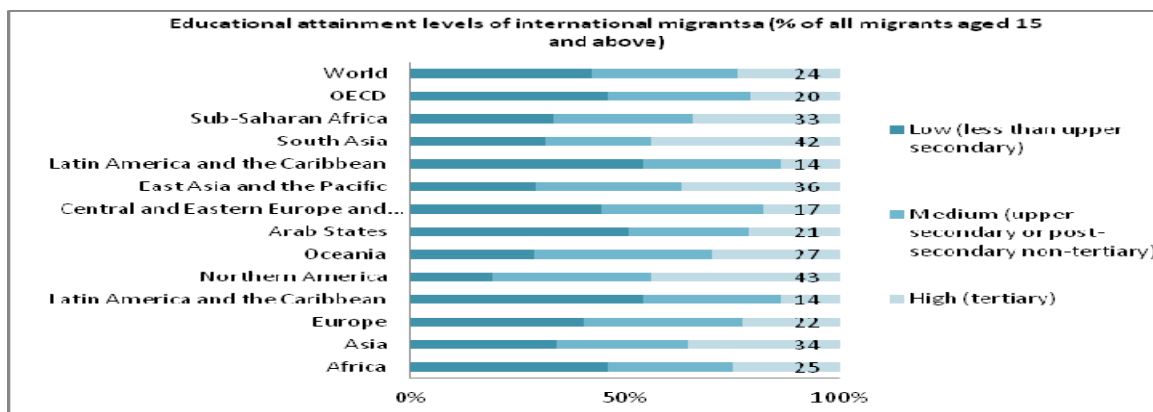
Saudi Arabia, Algeria–France, Yemen–Saudi Arabia, West Bank and Gaza–Jordan, Egypt–Jordan, Morocco–France, Morocco–Spain and Morocco–Italy, Egypt–Libya. Moreover, data on skilled emigration, for 2000 implies two stylized facts. First, the top 10 countries in terms of emigration rate of tertiary-educated population are: Lebanon (38.6 percent), Morocco (17.0 percent), Iran (14.5 percent), Tunisia (12.5 percent), Iraq (11.1 percent), Djibouti (11.0 percent), Algeria (9.4 percent), Jordan (7.2 percent), West Bank and Gaza (7.2 percent) and Syria (6.1 percent). Second, the large emigration of physicians that account for 27,265 or 7.8 percent of physicians trained in the region. Furthermore, data on immigration for 2010 implies several stylized facts. That the stock of immigrants account for 12 million or 3.5 percent of population (compared to 215.8 million or 3.2 percent for the world). The percentage of Females immigrants account for 45.7 percent (compared to 48.4 percent for the world). The percentage of Refugees immigrants account for 65.3 percent (compared to 7.6 percent for the world). The top 10 immigration countries are: Jordan, Syria, Iran, West Bank and Gaza, Lebanon, Libya, Yemen, Egypt, Algeria and Djibouti.¹⁰

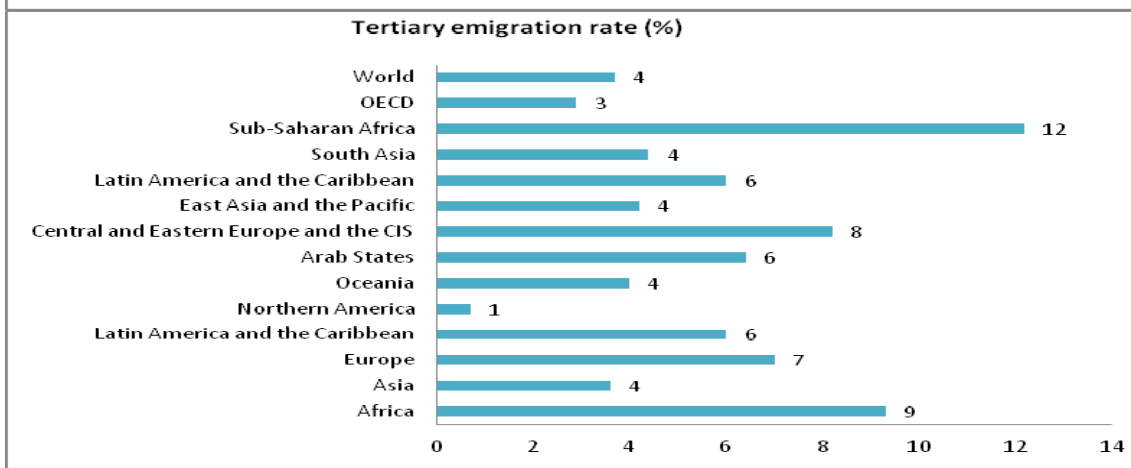
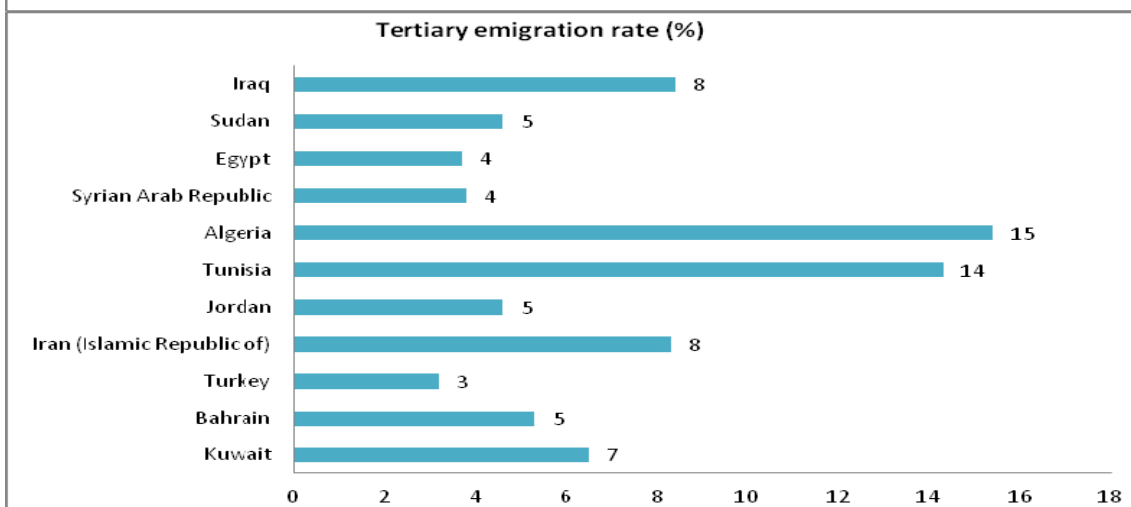
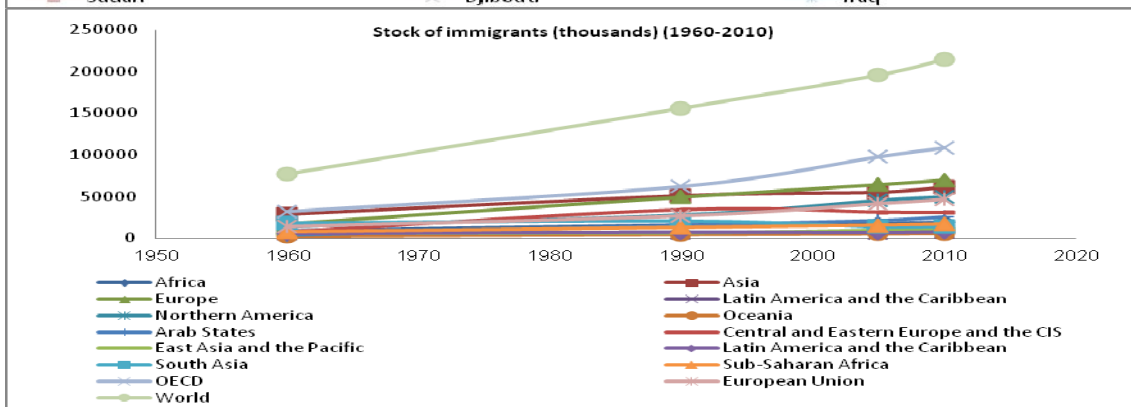
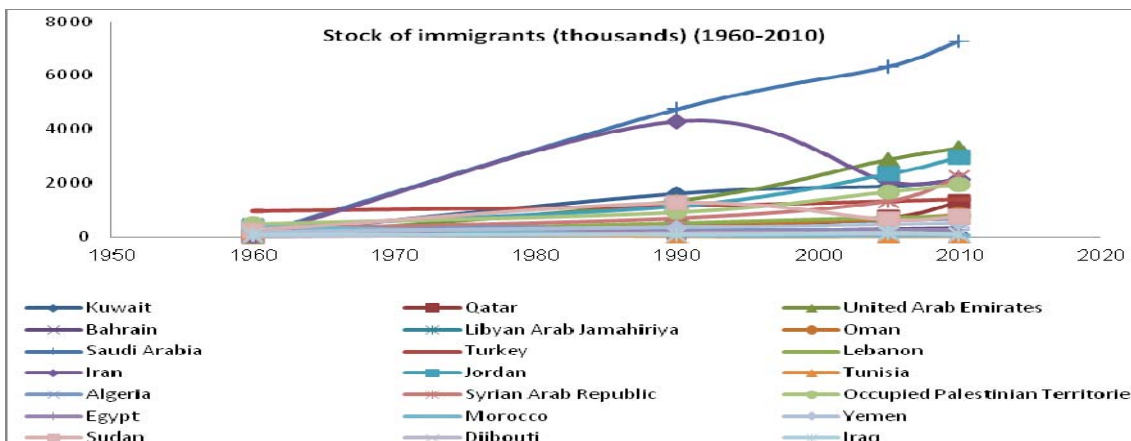
According to UNDP-HDR (2009), Arab countries emigration data for 2010, implies several stylized facts. It implies that the stock of emigrants increased from 3.3 million in 1960 to 15.35 million in 1990, to 21.327 million in 2005 and to 25.7 million in 2010 and the share of emigrants doubled and increased from 3.4 percent of population in 1960 to 6.8 percent of population in 2005. The main destination or the continent of residence for Arab emigrants over the period (2000-2002) was distributed between Asia (43.6 per cent); Europe (36.1 per cent); Africa (11.9 per cent); Northern America (6.6 per cent); Oceania (1.2 per cent) and Latin America and the Caribbean (0.6 per cent) respectively. Data on Arab migrants in OECD countries (aged 15 years and above), implies that the stock of Arab international migrants in OECD countries (aged 15 years and above) account for 4.80 million, the tertiary emigration rate account for 6.4 per cent. The UNDP-HDR (2009) data on migration from the MENA region shows that the educational attainment levels of migrants from Arab states in OECD countries implies that the majority or near to a half of Arab migrants (49.5 per cent) obtained low educational attainment levels (less than upper secondary), this is followed by near to a quarter of Arab migrants obtained medium educational attainment levels (upper secondary or post-secondary non-tertiary) (27.4 per cent), and few or near to only one fifth of Arab migrants obtained high educational attainment levels (tertiary) (20.8 per cent)- see Figures 1-8.

¹⁰ See the World Bank Migration and Remittances Factbook (2011), p. 29.

Figures 1-8- Stock and trend of international migration from the MENA region in the OECD Countries (1960-2010)







Sources: Adapted from UNDP-HDR (2009)

4.2 Migration of the international students in the MENA region

This section focuses on the international students' mobility and addresses the following questions: What are the available evidence concerning international students from the region? How many are they? Where are they? What are they doing? Do they come back? How can the skills of international students be better mobilized in their countries of origin? How can recognition of foreign qualifications, including that of technical degrees, be promoted to improve the labour market opportunities of students wishing to return to their home countries? It examines three hypotheses; the first hypothesis argues that the international students from the MENA region increased substantially over the past years. The second hypothesis argues that the international students from the MENA region are concentrated in few countries. The third hypothesis argues that skills of international students can be better mobilized in their countries of origin by addressing several issues related to mobility of students, migration of skill and brain drain in the MENA region – see Tables 1-3 and Figures 9-14.

Table 1 illustrates the increasing trend in total outbound mobile students from the Arab and MENA regions studying abroad over the period (1998-2011) that increased substantially from 160419 in 1998 to 281575 in 2011 for the Arab region and from 182742 in 1998 to 323136 in 2011 for the MENA region. This increasing trend varies enormously across the different Arab and MENA countries. These results support the first hypothesis that the international students from the MENA region increased substantially over the past years- see Table 1 and Figure 9.

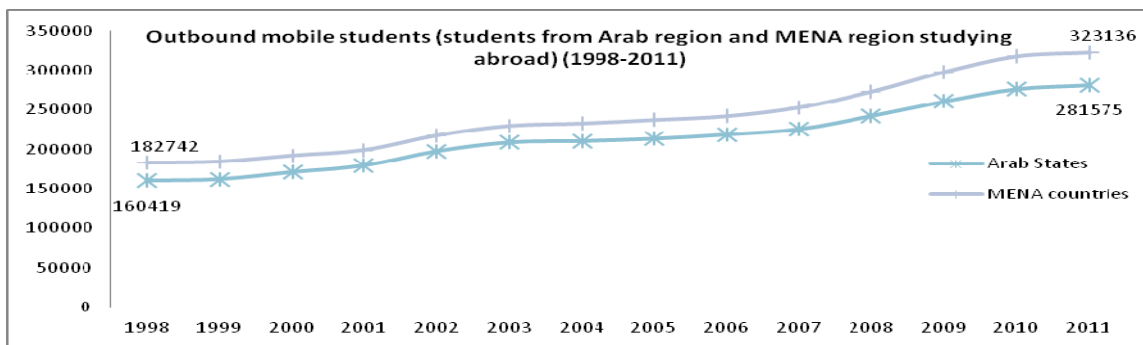
Table 1–Total outbound mobile students (students from a given country studying abroad) in the Arab and MENA regions (1998-2011)

Country/Year	1998	2000	2001	2002	2005	2006	2008	2010	2011
Algeria	17157	16316.393	15367.596	17131.679	24682.84	24930.633	21911.1	22755.333	22765
Bahrain	1794	1952	2110.6067	2358.8333	3269.5	3366.8333	3872	4187	4093
Djibouti	1143	1209.4167	1351.3567	1556.4167	2088	2426.3333	1415.8333	1671	1692
Egypt	8180	8585	9491.9767	9592.8333	9401.9357	9761.5619	11893.314	13953	15093
Iraq	4896	4929.75	5022.94	5016.75	5580.3	6842.4333	8907.5333	11709	11318
Jordan	11721	11955.25	11973.84	12542.25	12413.5	12687.167	13380	14721	15767
Kuwait	5139	5508.25	5455.6667	6216.0833	6349.3	6400.6	10055.2	13098	10549
Lebanon	8260	8796.5	9854.98	11699	13334.25	13624.833	14189.667	13246.667	13677
Libya	1590	1700.25	2206.8333	2601.4167	3495.8	3279.7667	3769.8667	7139.6667	7138
Mauritania	1475	2015.1429	2008.2624	1980.2619	2372.5905	2682.3	3022.2667	3574.3333	3807
Morocco	37325	42670.857	45856.041	52717.405	45991.943	43737.767	41611.2	43008	43090
Oman	8036	8759.5	9139.86	9639	10204.5	10492	10634.5	10152	10066
Palestine	9412	9723.75	10130.727	10392.083	11580.986	11962.495	13866.348	15142.333	15880
Qatar	1049	1168	1215.9033	1247.1667	1802.7	1772.4	2240.6333	3019	2884
Saudi Arabia	9855	10540	11005.557	12075.833	12308.15	13674.967	25201.767	42696	40716
Sudan	3053	3215.5	3009.94	3269	2818.0667	2723.8	3698.2	4314.8667	4694
Syria	11443	11715.25	12299.4	13256.25	16279.7	16222.733	17916.133	15625	17473
Tunisia	9151	10203.714	11158.515	12563.976	14972.486	16680.567	18008.633	19636	19700
United Arab Emirates	3914	4136.25	4478.8767	4442.0833	5567.85	6373.7	6808.4	8487	8569
Yemen	5826	6208	6446.1367	7446.8333	9126.8	9254.9333	10056.2	8528	12604
Iran	22323	20676.143	19470.292	19925.262	23555.207	23172.7	30908.567	41655.667	41561
Arab Region	160419	171308.77	179585.01	197745.15	213641.2	218897.82	242458.8	276663.2	281575
MENA Region	182742	191984.92	199055.31	217670.42	237196.4	242070.52	273367.36	318318.87	323136

Source: UIS-UNESCO (2012)¹¹

¹¹ See UIS-UNESCO (2012).

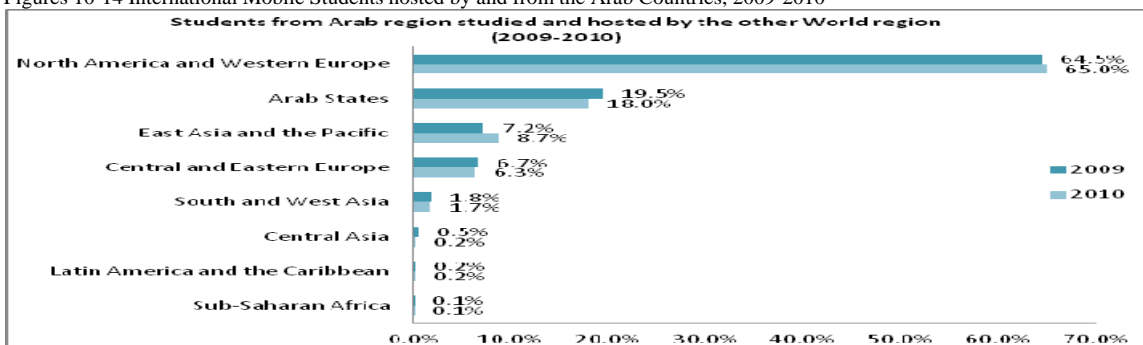
Figure 9- Total outbound international mobile students from the Arab region and MENA region over the period (1998-2011)

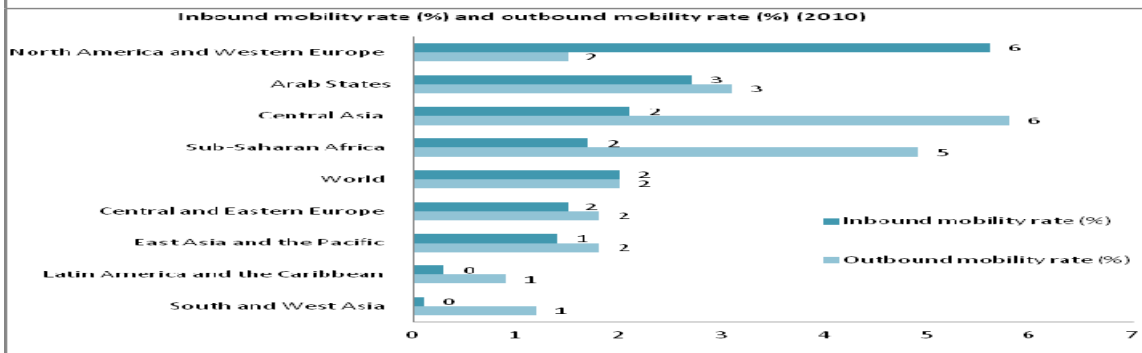
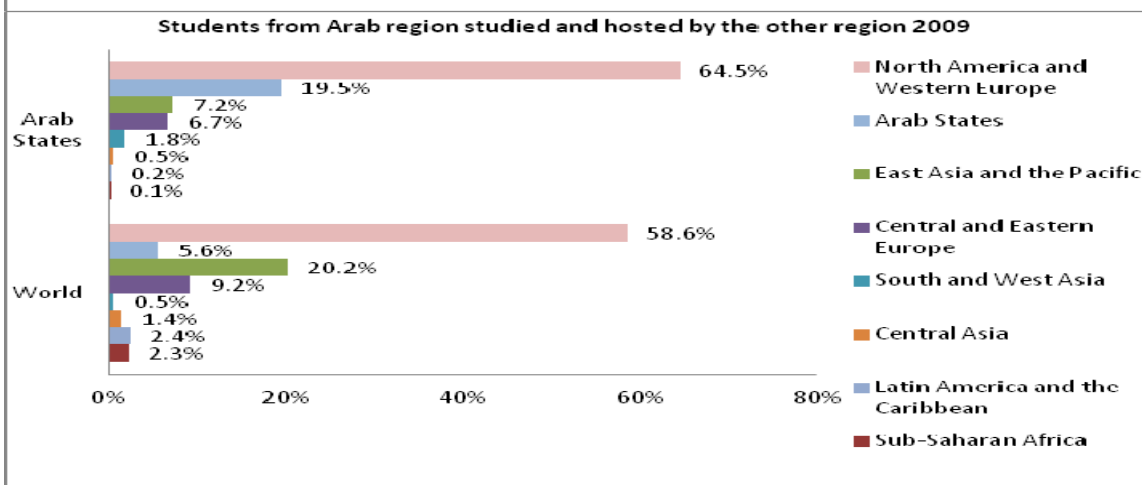
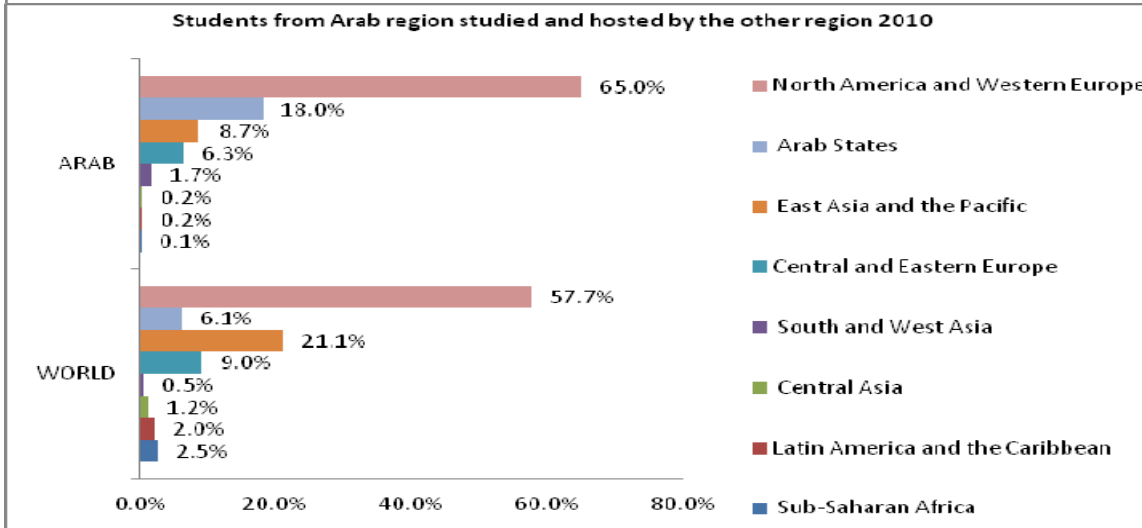
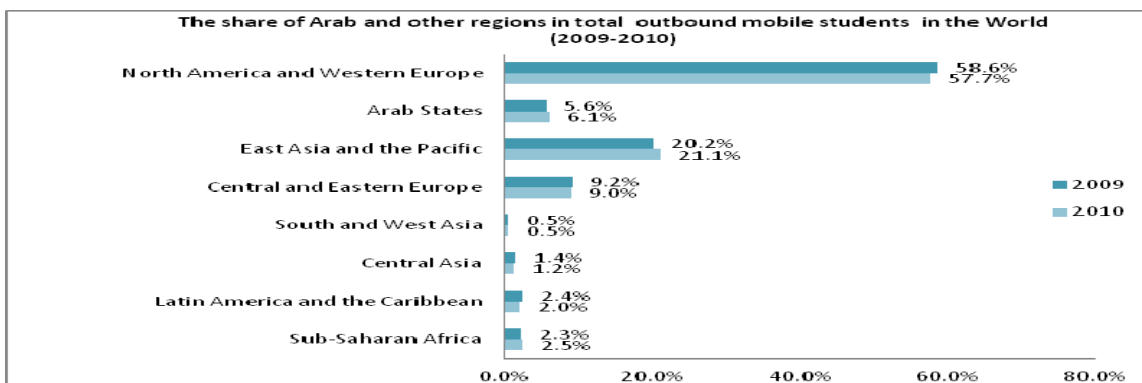


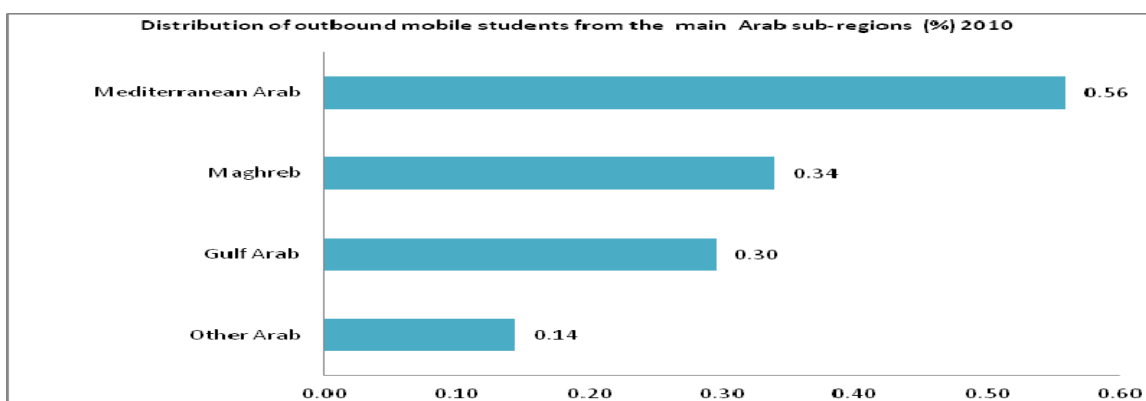
Source: Adapted from UIS-UNESCO (2012)

Furthermore, the distribution of the international students from the Arab region studied and hosted by other World region over the period (2009-2010) implies heavy concentration of Arab students studied in North America and Western Europe (64.5 per cent; 65.0 per cent), followed by Arab States (19.5 per cent; 18.0 per cent); East Asia and the Pacific (7.2 per cent; 8.7 per cent); and Central and Eastern Europe (6.7 per cent; 6.3 per cent) in 2009 and 2010 respectively. We observe slight increase in the share of Arab students studied in North America and Western Europe (64.5 per cent; 65.0 per cent) and East Asia and the Pacific (7.2 per cent; 8.7 per cent); compared to slight decline of Arab student studied in Arab States (19.5 per cent; 18.0 per cent); and Central and Eastern Europe (6.7 per cent; 6.3 per cent) in 2009 and 2010 respectively. Moreover, the share of Arab in total outbound mobile students in the World (2009-2010) shows slight increase from 5.6 per cent in 2009 to 6.1 per cent in 2010. Moreover, in terms of inbound mobility rate (per cent) and outbound mobility rate (per cent), the Arab states rank second and third respectively compared to other world regions in 2010- see Table 2 and Figures 10-13. These results support the second hypothesis that the international students from the MENA region are concentrated in few countries.

Figures 10-14 International Mobile Students hosted by and from the Arab Countries, 2009-2010







Source: Adapted from (a) UNESCO-UIS Global Education Digest (2011), Table 11, pp. 190-191, 198-199, (b) UNESCO Institute for Statistics (UIS) Global Education Digest (GED) 2012 - Table 10- pp. 134, 137. Source: UIS-UNESCO (2012) - <http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=3968>, Accessed on 14 February 2013.

Table 2 - International flows of mobile students from the Arab region compared to World (2010) (Tertiary Education/ISCED 5 and 6)

Region	Students from given country studying abroad (outbound mobile students)		Number of students from abroad studying in given country (inbound mobile students)		Net flow of mobile students (inbound - outbound)		Top five destinations (host countries) for outbound mobile students (the number of students from given country studying in the host countries is shown in brackets)
	MF	Outbound mobility ratio (%)	MF	Inbound mobility ratio (%)	MF	Net flow ratio (%)	
Arab States							
Algeria	22,465	2.0	6,544	0.6	-15,921	-1.4	France (20,066), Canada (366) ⁻¹ , U.K. (237), Spain (180), U.S.A. (176)
Bahrain	3,831	10.7	8,640	24.1	4,809	13.4	U.K. (1,042), Jordan (739), India (435) ⁻⁴ , U.S.A. (411), Saudi Arabia (248)
Djibouti	1,635	51.6	...	...	-1,635	-34.8	France (989), Morocco (309), Cuba (93), Malaysia (73) ⁻¹ , India (54) ⁻⁴
Egypt	11,627	0.4	49,011	1.9	37,384	1.4	U.S.A. (2,251), U.K. (1,396), Germany (1,275), France (1,256), Saudi Arabia (891)
Iraq	9,640	...	...	...	...	...	Jordan (3,363), Malaysia (1,442) ⁻¹ , U.K. (779), U.S.A. (419), Germany (364)
Jordan	10,922	4.4	27,437	11.1	16,515	6.7	Ukraine (2,236), U.S.A. (1,977), U.K. (1,355), Saudi Arabia (752), Malaysia (640) ⁻¹
Kuwait	12,350	...	7,984	...	-4,401	...	Bahrain (4,852), U.S.A. (2,420), Jordan (1,661), U.K. (1,643), Australia (268)
Lebanon	12,109	6.0	30,436	15.0	18,327	9.1	France (5,137), U.S.A. (1,594), Germany (726), Italy (686), Canada (594) ⁻¹
Libya	7,009	...	...	...	...	...	U.K. (2,827), Malaysia (1,453) ⁻¹ , U.S.A. (1,055), France (277), Canada (243) ⁻¹
Mauritania	3,527	24.3	...	...	...	...	France (1,357), Morocco (1,326), Tunisia (346) ⁻¹ , Saudi Arabia (109), Germany (109)
Morocco	42,800	10.1	8,604	...	- 34,196	...	France (27,467), Spain (3,514), Germany (3,306), Italy (1,554), Canada (1,440) ⁻¹
Oman	4,891	6.3	1,787	2.3	-3,104	-4.0	Jordan (7,755), Qatar (654), Malaysia (363) ⁻¹ , Russian Fed. (311) ⁻¹ , Germany (302)
Palestine	11,249	5.7	...	...	-11,249	-5.7	U.K. (1,212), Jordan (1,051), Australia (517), India (432) ⁻⁴ , U.S.A. (283)
Qatar	2,798	20.2	5,387	38.9	2,589	18.7	U.K. (1,059), U.S.A. (657), Jordan (247), India (231) ⁻⁴ , Bahrain (164)
Saudi Arabia	41,532	4.6	26,871	3.0	...	-1.6	U.S.A. (15,670), U.K. (8,055), Australia (5,403), Jordan (4,350), Bahrain (1,639)
Sudan	4,291	...	...	...	...	...	Malaysia (1,449) ⁻¹ , Saudi Arabia (378), U.K. (352), Qatar (321), Germany (214)
Syria	12,651	...	...	...	...	...	France (2,166), Germany (2,021), Jordan (1,810), Ukraine (1,455), Russian Fed. (988) ⁻
Tunisia	19,506	5.2	2,404	0.7	-16,383	-4.5	France (11,659), Germany (2,657), Romania (1,282), Italy (753), Canada (750) ⁻¹
United Arab Emirates	8,485	8.6	34,122	39.2	26,674	30.7	U.K. (2,975), U.S.A. (1,638), Australia (1,433), India (1,110) ⁻⁴ , France (265)
Yemen	5,959	...	...	...	...	...	Malaysia (2,353) ⁻¹ , Jordan (969), Germany (431), Qatar (367), Russian Fed. (316) ⁻¹
Arab States	249,277	3.1	219,389	2.7	-29,888	-0.4	North America and Western Europe (65.0%), Arab States (18.0%), East Asia and the Pacific (8.7%), Central and Eastern Europe (6.3%), South and West Asia (1.7%), Central Asia (0.2%), Latin America and

							the Caribbean (0.2%), Sub-Saharan Africa (0.1%)
WORLD	3,572,840	2.0	3,572,840	2.0	...	...	North America and Western Europe (57.7%), East Asia and the Pacific (21.1%), Central and Eastern Europe (9.0%), Arab States (6.1%), Sub-Saharan Africa (2.5%), Latin America and the Caribbean (2.0%), Central Asia (1.2%), South and West Asia (0.5%)

Source: the UNESCO Institute for Statistics (UIS) *Global Education Digest (GED) 2012* - Table 10- tertiary education / ISCED 5 and 6 / international flows of mobile students / 2010 - Opportunities lost: the impact of grade repetition and early school leaving- Mobile students-pp. 134, 137.

Table 3 explains that in 2010 the UK, US, France, Germany, and Australia receive around 57 per cent of all international Arab students, 59 per cent of international Gulf Arab students, 64 per cent of international Mediterranean Arab students, 77 per cent of international Maghreb Arab students, and 23 per cent of the other non-Gulf-non-Mediterranean Arab students. This implies that, with regard to the distribution of internationally mobile students from the Arab countries, the majority of Arab students in the UK, US, France, Germany, and Australia are from Mediterranean (63 per cent), Gulf (31 per cent), and other non-Gulf-non-Mediterranean Arab (6 per cent) countries, mainly, majority of Arab students are from Maghreb countries (46 per cent). The distribution of outbound mobile students from the main Arab sub-regions implies that in 2010 the majority of Arab students in the top five destinations are from Mediterranean (56 per cent) (Maghreb (34 per cent)), Gulf (30 per cent), and other non-Gulf-non-Mediterranean Arab countries (14 per cent) - see Figure 14 and Table 3. It is worthy to note that intra-regional mobility of students, between Arab countries, is significantly weaker than the international mobility of Arab students (see Table 3). Regional mobility within the Arab region is generally limited to Jordan, Saudi Arabia, Qatar, Bahrain, Morocco and Tunisia. For instance, of all Arab students, only 4.1 per cent move to the Gulf countries (Saudi Arabia, Qatar and Bahrain), 0.1 per cent to the Mediterranean countries (Morocco and Tunisia), and 6.4 per cent to other non-Gulf-non-Mediterranean Arab countries (Jordan); in total, only 10.6 per cent are moving in all Arab countries compared to 57 per cent moving to the USA, UK, France, Germany, and Australia. Among all Arab Gulf students, only 10 per cent move within Gulf countries, and 12 per cent to other non- Gulf-non-Mediterranean Arab countries; this amounts to 22 per cent moving to any Arab country compared to 59 per cent moving to the USA, UK, France, Germany, and Australia. Similarly, among all Mediterranean Arab students, only 1 per cent move to Gulf countries, 2 per cent to other non-Gulf-non-Mediterranean Arab countries; only 3 per cent move to any Arab country compared to 64 per cent moving to the USA, UK, France, Germany, and Australia. Among all other non-Gulf-non-Mediterranean Arab students, only 5 per cent move to Gulf countries, 1 per cent to Mediterranean countries, 12 per cent within the other non-Gulf-non- Mediterranean Arab countries; thus, 18 per cent move to any Arab country compared to 23 per cent moving to the USA, UK, France,

Germany, and Australia – see Table 3.¹² These results support the second hypothesis that the international students from the MENA region are concentrated in few countries.

The above results for 2010 are consistent with earlier results over the period (1999-2004) that discussed in Nour,(2011) that finds that the UK, US, France, Germany, and Australia receive around 74 per cent of all international Arab students, 54 per cent of international Gulf Arab students, 82 per cent of international Mediterranean Arab students, and 50 per cent of the other non-Gulf-non-Mediterranean Arab students. This implies that, with regard to the distribution of internationally mobile students from the Arab countries, the majority of Arab students in the UK, US, France, Germany, and Australia are from Mediterranean (68 per cent), Gulf (20 per cent), and other non-Gulf-non-Mediterranean Arab (12 per cent) countries. These students are overwhelmingly men, given the restrictions imposed on women who wish to travel abroad, particularly in the Gulf countries. This has implications regarding the marginalization of women, particularly those who wish to access S&T disciplines or fields within and across the two regions. It is worthy to note that intra-regional mobility of students, between Arab countries, is significantly weaker than the international mobility of Arab students (see Table 2). Regional mobility within the Arab region is generally limited to Jordan and Morocco. For instance, of all Arab students, only 3 per cent move to the Gulf countries, 1 per cent to the Mediterranean countries, and 3 per cent to other non-Gulf-non-Mediterranean Arab countries; in total, only 7 per cent are moving in all Arab countries compared to 73 per cent moving to the USA, UK, France, Germany, and Australia. Among all Arab Gulf students, only 3 per cent move within Gulf countries, 0.3 per cent to Mediterranean Arab countries, and 7 per cent to other non- Gulf-non-Mediterranean Arab countries; this amounts to 10 per cent moving to any Arab country compared to 54 per cent moving to the USA, UK, France, Germany, and Australia. Similarly, among all Mediterranean Arab students, only 1 per cent move to Gulf countries, 1 per cent within Mediterranean countries, 2 per cent to other non-Gulf-non-Mediterranean Arab countries; only 4 per cent move to any Arab country compared to 82 per cent moving to the USA, UK, France, Germany, and Australia. Among all other non-Gulf-non-Mediterranean Arab students, only 11 per cent move to Gulf countries, 4 per cent to Mediterranean countries, 7 per cent within the other non-Gulf-non- Mediterranean Arab countries; thus, 22 per cent move to any Arab country compared to 50 per cent moving to the USA, UK, France, Germany, and Australia.¹³

Table 3- Intra-regional and International Mobility of Students from Arab Countries and sub-regions, 2010 (%)

Total (all countries)	Intra Regional Mobility (within the Arab region)				International (or internationally mobile) students. Total: Students from a given country studying abroad						
	Gulf/ total (%)	Med/ total (%)	Other/ total (%)	All Arab/ total	U.K. / Total (%)	U.S.A. / Total (%)	France/ Total (%)	Germany/ Total (%)	Australia/ Total (%)	Studying in USA, UK, France, Germany and Australia / Total	Total Other/ Total

¹² The Mediterranean includes eight Arab countries: Algeria, Egypt, Lebanon, Libya, Morocco, Palestine, Syria, and Tunisia. The Arab Gulf includes six Arab countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). The other non-Gulf-non-Mediterranean Arab countries are: Djibouti, Iraq, Jordan, Mauritania, Sudan, and Yemen. The Maghreb sub-region includes Algeria, Morocco and Tunisia, the Machreq sub-region includes: Lebanon, Jordan and Syria.

¹³ See Nour (2011), pp. 412-414.

		(%)						Students from a given country studying abroad		(%)	
Gulf Arab											
Bahrain	0.065		0.193	0.258	0.272	0.107			0.379	0.114	
Kuwait	0.393		0.135	0.527	0.133	0.196		0.022	0.351		
Oman	0.134		0.363	0.497				0.062	0.062	0.138	
Qatar	0.059		0.088	0.147	0.379	0.235			0.613	0.083	
Saudi Arabia	0.040		0.105	0.144	0.194	0.377		0.130	0.701		
United Arab Emirates					0.351	0.193	0.031	0.169	0.744	0.131	
Gulf Arab	0.102	-	0.119	0.221	0.200	0.281	0.004	-	0.100	0.585	0.033
Mediterranean Arab											
Palestine			0.093	0.093	0.108	0.025		0.046	0.179	0.038	
Egypt	0.077			0.077	0.120	0.194	0.108	0.110	0.531		
Lebanon						0.132	0.424	0.060	0.616	0.106	
Syria			0.143	0.143			0.171	0.160	0.331	0.193	
Libya					0.403	0.151	0.040		0.593	0.242	
Morocco							0.642	0.077	0.719	0.152	
Algeria					0.011	0.008	0.893		0.912		
Tunisia							0.598	0.136	0.734	0.143	
Mediterranean Arab	0.006	-	0.021	0.027	0.041	0.038	0.488	0.072	0.642	0.109	
Maghreb	-	-	-	-	0.003	0.002	0.698	0.070	-	0.773	0.110
Other Arab											
Mauritania	0.031	0.474		0.505			0.385	0.031	0.416		
Iraq			0.349	0.349	0.081	0.044		0.038	0.162	0.150	
Jordan	0.069			0.069	0.124	0.181			0.305	0.263	
Djibouti		0.189		0.189			0.605		0.605	0.135	
Sudan	0.163			0.163	0.082			0.050	0.132	0.338	
Yemen	0.062		0.163	0.224				0.072	0.072	0.448	
Other Arab	0.051	0.009	0.120	0.180	0.069	0.067	0.065	0.031	0.232	0.241	
All Arab	0.041	0.001	0.064	0.106	0.092	0.115	0.283	0.045	0.032	0.566	0.105


Source: Own calculation adapted from Table (2) based on data from the UIS-UNESCO Global Education Digest (2012) statistics on International (internationally mobile) students: UIS- UNESCO web site.

When comparing the previous result for the period (1999-2004) with our results for 2010 we observe considerable decline in the total of all international Arab students in the UK, US, France, Germany, and Australia from around 74 per cent to 59 per cent. Despite the increase of international Gulf Arab students from 54 per cent to 64 per cent, but the considerable decline is attributed to the decline of international Mediterranean Arab students from 82 per cent to 77 per cent and of the other non-Gulf-non-Mediterranean Arab students from 50 per cent to 23 per cent. The considerable decline of all international Arab students is most probably attributed to the effect of the 2008 global economic crisis.

According to the UNDP- MBRA Foundation AKR Report (2009) the Arab region is considered one of the most active in terms of the export of highly qualified human capital equipped with university degrees. Indeed, human capital is among its major exports, possibly equalling oil and gas in value. The little data available on this indicates that 45 per cent of Arab students who study abroad do not return to their home countries, that 34 per cent of skilled doctors in Britain are Arabs, and that the Arab world has contributed 31 per cent of the skilled migration from developing states to the West, including 50 per cent of doctors, 23 per cent of engineers, and 15 per cent of scientists (Zahlan, 2004). The data in Table 4 differentiates two groupings of Arab countries on the basis of their ability to attract or repel national skills and talents. According to the official indicator for measuring human capital flight, the first group, which scored between 3.5 and 7 points and includes six oil-producing Gulf countries and Tunisia, are the countries capable of holding on to innovative national human capital. The second group includes six Arab countries, including Algeria and Egypt that are incapable of persuading human scientific capital to remain in its home country. Five Arab countries that are not included in the

table suffer from chronic human capital flight due to their political and security crises and the deterioration of their living conditions. These are Lebanon, Sudan, Iraq, Yemen, and Palestine. Opinions concerning the desirability of human capital flight from the Arab region vary; some consider it a curse, others a blessing. Human capital flight offers employment opportunities to university graduates whom domestic markets cannot absorb, and secures important financial resources that range between 5 and 10 per cent of the GDP of some Arab countries. The financial remittances sent by Arab migrants are considered among the most important factors contributing to development and the provision of foreign currency in a large number of impoverished Arab countries. The total sum of financial remittances sent to the Arab region in 2006 was over 25 billion USD. Finally, attention must be drawn to the movement of Arab skills and human capital within the Arab world. This phenomenon is new to Arab intellectual life and can be viewed in the context of inter-Arab cooperation, allowing us to speak of a circulation of human capital rather than human capital flight. The financial incentives and stable political and security conditions offered by oil producing Arab countries have become a pull factor for Arab and global human capital that competes with the attractions of Western states. Moreover, these oil producing countries are in close geographic proximity to a number of Arab countries that are incapable of holding on to their human capital. The circulation of Arab human capital has in recent years helped to develop Gulf universities and knowledge based and research institutions that in turn have helped to improve Arab knowledge performance. The circulation of Arab human capital is an alternative in the field of knowledge to the flight of human capital from the Arab region. For the sake of objectivity, it must be acknowledged that the movement of scientists within the Arab world is, overall, a positive phenomenon: it does not deplete the store of Arab knowledge but maintains it and contributes to its circulation and development."¹⁴

Table 4- Human capital flight index²⁸

Country	Human capital flight (scale of 1-7)	Most migration
Syria	2.3	
Egypt	2.3	
Mauritania	2.4	
Algeria	2.4	
Jordan	2.8	
Morocco	3.1	
Oman	3.9	
Tunisia	3.9	
Saudi Arabia	4.6	
Bahrain	4.7	
Kuwait	5.4	
UAE	5.6	
Qatar	5.7	

Source: UNDP-MBRA Foundation AKR (2009), p. 209; World Bank, Knowledge Assessment Methodology (KAM), 2008.

Mobilizing skills through utilization of human capital mobility in the MENA region is greatly hampered by the incidence of brain drain. For instance, the Arab countries are well known for the brain drain defined by the number of scholars leaving abroad (or students never coming back after

¹⁴ See UNDP-MBA Foundation AKR 2009- pp. 207-209.

obtaining their degree). Numerous students who left to improve their positions abroad do not come back home. And many academics or researchers emigrated since the 1990s.¹⁵ The brain drain problem can be interpreted due to push factors from the countries of origin and pull factors from the host countries. In the MENA countries, one of the “push” factors behind the outflow of students and migrants is the relative weakness of the local labour market. Economic growth in most MENA countries has not been enough to absorb the increasing labour force.¹⁶ The total number of Arab students enrolled in foreign universities outside the MENA region was about 120,000 in 1999, a number higher than Chinese students (106,000) or Indian students (53,000) studying abroad.¹⁷ The literature shows brain drain problem and "estimates that 12,000 Arabs are awarded Ph.Ds. abroad annually and that 85 per cent, or more, of these brain drain. This is a loss to the Arab World of around 10,000 Ph.D. graduates annually. Consequently, there are 60,000-70,000 Arabs having Ph.Ds. working in the Arab World compared with an estimated 150,000 abroad. Arab countries have invested more in education, at home and abroad, than either China or India. Obviously, it is not the amount of human capital that is making China and India the champions of development and the Arab countries slow developers it is rather the national science and economic policies adopted by Arab States that deprives them of the benefits of their substantial human capital. The total number of Arabs who brain-drained to OECD Member Countries by 1999 was 967,548, which is roughly 300,000 *more* than Indians, and only slightly lower than Chinese, on a per capita basis, the Arab brain drain is four times greater than that of China; and five times that of India. Overall emigration from China and India is 3.6 million compared to 4.5 million from the Arab World. Thus, China and the Arab World export an equal number of highly skilled personnel. But in terms of total emigration (skilled and semi-skilled, and dependents) the Arab World exceeds China and India combined. An important reason why the Arab brain drain is much higher on a per capita basis than that of China or India is that the Arab countries allocate the lowest proportion of their GNP to R&D, the Chinese and Indian governments devote far more towards R&D than any Arab government, China spends ten times more than the Arab countries on R&D per inhabitant and India spends three times more." (Zahlan, 2007)¹⁸ Another reason for the incidence of brain drain is that although the Arab countries have by now an important S&T potential, but it is little tapped for research, consequently brain drain takes a heavy toll. Another reason for the brain drain is the poor treatment and remuneration of profession, for instance, exodus is important in Egypt and the Maghreb countries, particularly, Egypt and Algeria are the main countries hit by exodus and where the brain drain has become a massive and structural problem. Because, "the profession is rather poorly treated and the remunerations were dreadfully eroded by price rise; an important

¹⁵ See Mouton and Waast (2009), pp.163-164.

¹⁶ See the World Bank (2011), pp. 3, 5-6, 12.

¹⁷ See Corm (2006), pp. 25-26.

¹⁸ See Zahlan (2007) , pp. 147-163. See also Zahlan, (1999), pp. 25-26.

emigration takes place continuously; and professionals are often busy with parallel tasks (contracts for teaching or doing research elsewhere) to make their living.¹⁹ Though the situation is less dramatic in Morocco and Tunisia, brain drain is also noteworthy. ... The brain drain trend shows that there is a large S&T potential in Arab countries, and a lot of frustrations among them ... there is a need for more incentives [e.g. financial rewards and personal incentives].²⁰ Thus, "the evidence suggests that there is a brain drain in Morocco and Tunisia, which would suggest that there is a need for these countries to adopt policies to deal with this loss of human capital." (The World Bank, 2008)²¹

The question of salary appears of secondary importance compared with other factors. The main factor of the phenomenon is found in the general environment, which is not favourable enough, if not actually hostile, to this kind of competence. This [lack of favourable environment] concerns among others, a lack of transparency in the administration of careers, a lack of freedom and very difficult working conditions, the scarcity of interesting and valuable opportunities offered, especially as concerns the industrial and technological areas. " (Mghari, 2004)²²... While, on the one hand, the migration of Arab students and brain drain hindered mobilization of skills in the MENA countries, but on the other hand, the internationally mobile students hosted by the Arab countries has the potential to support brain gain and mobilization of skills in the Arab countries.²³

"Arab human capital flight creates an opportunity not only to obtain financial resources, but also to transfer knowledge via migrants. This is the goal of the TOKTEN programme launched by the UNDP in 1977, in an attempt to turn "brain drain" into "brain gain." The TOKTEN programme began by surveying Arab human capital found abroad, developing a database of information on these professionals' academic and practical experience, establishing a network of direct relations between them and their home countries, and supporting the costs of their travel home for limited periods. TOKTEN is an arm of international technical cooperation relations that aims to lessen the negative effects of human capital flight. It is characterized by an open attitude to home societies and relies on the ties of shared language and tradition, the feelings that migrants hold for their homelands, and their desire to return favours to them, especially since most of these migrants were raised in their homelands and completed their education in them. The number of experts who have served their countries through the programme over the last decade is over 4,000; they have also offered consultative services to government agencies and the private sector, and some of them have returned to live in their home countries. Lebanon and Palestine are the Arab countries that have benefited most from this programme. Other networks like TOKTEN

¹⁹ See ESTIME Report (2007), pp. 36-37, 51-55.

²⁰ See ESTIME Report (2007), pp. 36-37, 51-55.

²¹ See the World Bank (2008) "New Challenges Facing the Education Sector in MENA," pp. 84-86, 110-111, 266-271, 275-276.

²² See Mohamed Mghari (2004), pp. 71-89.

²³ See UNESCO-UIS-Global Education Digest 2011 and the UNDP-Human Development Report (2009).

exist that connect scientific and intellectual communities abroad with their home countries, some of which were established by Arab scientific and academic communities abroad, such as the network of Maghreb researchers living in France (Migration et Recherche) and the Arab Scientists and Technologists Abroad network. With UNDP-support, the Palestinian Ministry of Planning and International Cooperation launched in the 1990s the Palestinian Scientists and Technologists Abroad (PALESTA) network, and this has developed a database on 1,200 Palestinian diaspora scientists."²⁴

Mobilizing skills through utilization of human capital mobility in the MENA region can be enhanced by addressing several issues related to mobility of students, migration of skill and brain drain. For instance, by strengthen skill level of the local labour by provision of regular training, in addition to promotion of recognition of foreign qualifications, including that of technical degrees to improve the labour market opportunities of students wishing to return to their home countries. In addition to enhancing the national science and economic policies to enable the MENA region to benefit from their substantial human capital, mainly, by encouraging MENA and Arab governments to devote more financial resources towards R&D, and by improving of treatment and remuneration of profession and increasing incentives [financial and personal incentives]. In addition to encouraging the MENA countries to adopt policies to deal with the loss of human capital and improvement of the other factors to improve the general favourable environment ... and through encouragement of the internationally mobile students hosted by the Arab countries to support brain gain and mobilization of skills in the Arab countries. In addition to mobilizing skill through encouragement of continuing transfer of knowledge via migrants, through the TOKTEN programme to turn "brain drain" into "brain gain." Our results support the third hypothesis that skills of international students can be better mobilized in their countries of origin by addressing several issues related to mobility of students, migration of skill and brain drain in the MENA region.

5. Conclusions and policy recommendations

This paper uses both the descriptive and comparative approaches to provide overview of migration of international students in the Middle East and North Africa (MENA) region and mobilizing skills in the MENA Region. We fill the gap in the MENA literature and present a more comprehensive and update analysis of migration of international students from the MENA region.

Section 2 presents the literature review. Section 3 shows the general socio-economic characteristics of the MENA region. Section 4 discusses the major development and shows the

²⁴ See UNDP-MBA Foundation AKR 2009- p. 208: BOX 5-10, p. 208.

available evidence concerning the mobility of international students from the MENA region compared to other world regions.

Our findings support the first hypothesis that the international students from the MENA region increased substantially over the past years. Our results corroborate the second hypothesis that international students from the MENA region are concentrated in few countries. Our findings support the third hypothesis that skills of international students can be better mobilized in their countries of origin by addressing several issues related to mobility of students, migration of skill and brain drain in the MENA region.

Our results show that mobilizing skills through utilization of human capital mobility in the MENA region can be enhanced by addressing several issues related to mobility of students, migration of skill and brain drain. For instance, by strengthen skill level of the local labour by provision of regular training, in addition to promotion of recognition of foreign qualifications, including that of technical degrees to improve the labour market opportunities of students wishing to return to their home countries. In addition to enhancing the national science and economic policies to enable the MENA region to benefit from their substantial human capital, mainly, by encouraging MENA and Arab governments to devote more financial resources towards R&D, and by improving of treatment and remuneration of profession and increasing incentives [financial and personal incentives]. In addition to encouraging the MENA countries to adopt policies to deal with the loss of human capital and improvement of the other factors to improve the general favourable environment ... and through encouragement of the internationally mobile students hosted by the Arab countries to support brain gain and mobilization of skills in the Arab countries. In addition to mobilizing skill through encouragement of continuing transfer of knowledge via migrants, through the TOKTEN programme to turn “brain drain” into “brain gain.”

References

- Baldwin-Edwards, M. (2005), "Migration in the Middle East and Mediterranean," A paper prepared for the Policy Analysis and Research Programme of the Global Commission on International Migration, Mediterranean Migration Observatory, Panteion University, Athens, Greece, September 2005, pp. 2, 23.
- Corm, G. (2006) World Bank "Labor Migration in the Middle East and North Africa A View from the Region," pp. 25-26.
- ESTIME Report (2007): Evaluation of Scientific, Technology and Innovation Capabilities in Mediterranean Countries. 2006. Towards science and technology evaluation in the Mediterranean Countries. 6th framework programme project final report, 1–80. France: Institut de Recherche pour le Développement: <http://www.estimate.ird.fr>. pp. 36-37, 51-55.
- Gubert, F. and Nordman, C. J. (2006) "Migration from MENA to OECD Countries: Trends, Determinants, and Prospects," paper in Shaping the Future A Long-Term Perspective of People and Job Mobility for the Middle East and North Africa Background Papers. pp. 1-2, 9, 10.
- Khachani, M. (2004) "Moroccan Migration to Europe: What Impact on the Economies of Countries of Origin?," in IOM (2004), pp. 37, 35-51.
- Mohammed bin Rashid Al Maktoum Foundation (MBRF) and the United Nations Development Programme/Regional Bureau for Arab States (UNDP/RBAS). (2009) "Arab Knowledge Report (AKR). 2009. Towards productive intercommunication for knowledge" Dubai: Al Ghurair Printing and Publishing House L.L.C.. AKR 2009: BOX 5-10: Knowledge Transfer via Migrant Scientists: p. 208. pp. 207-209: Arab Performance in Research and Innovation.
- Mouton, J. and Waast, R. (2009) "Comparative study on national research systems: Findings and lessons learnt". In Higher education, research and innovations: Changing dynamics, Report on the UNESCO Forum on Higher Education, Research and Knowledge 2001–2009, eds. V. Lynn Meek, U. Teichler, and M.L. Kearney, 147–169. Kassel: Kassel University (Incher-Kassel). pp.163-164. UIS-UNESCO (2012) - <http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=3968>. Accessed 14 February 2013.

- Nour, S. (2011), "National, Regional and Global Perspectives of Higher Education and Science Policies in the Arab Region" Minerva: A Review of Science, Learning and Policy, Minerva, Springer, Germany, Vol. 49, No. 4, December 2011, pp. 412-414.
- The World Bank (2008) "New Challenges Facing the Education Sector in MENA," pp. 84-86, 110-111, 266-271, 275-276.
- Mghari, M. (2004) "Exodus of skilled labour: magnitude, determinants and impacts on development," in International Organization for Migration, (2004) "Arab Migration in a Globalized World," May, 2004, Switzerland, Geneva, pp. 71-89.
- Salehi-Isfahani, D. (2010) "Human Development in the Middle East and North Africa," United Nations Development Programme, Human Development Reports Research Paper 2010/26, October 2010, pp. 1, 2, 3, 4.
- The World Bank (2012a) accessed on October 10, 2012: http://info.worldbank.org/etools/kam2/KAM_page5.asp#c103
- The World Bank (2012b) "the Middle East and North Africa (MENA): Regional Brief," September 2012.: <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/0,,menuPK:247606~pagePK:146732~piPK:146828~theSitePK:256299,00.html>. Accessed 13 February 2013
- The World Bank (2011) "Internationalization of Higher Education in MENA: Policy Issues Associated with Skills Formation and Mobility," Report No: 63762-MNA, pp. 3, 5-6, 12.
- The World Bank (2004) "Unlocking the Employment Potential in the Middle East and North Africa," Washington DC: The World Bank.
- The World Bank (2003) "Global Development Finance 2003," Washington DC: The World Bank, pp. 171-172.
- The World Bank Migration and Remittances Factbook (2011), p. 29.
- Zahlan, A. B. (2007) "Higher Education, R&D, and Economic Development: Regional and Global Interfaces". In: "The Impact of Globalisation on Higher Education and Research in the Arab States", Regional Research Seminar, Rabat, Morocco, pp. 147-163.
- Zahlan, A. B. (2004) "The Arab Brain Drain, Innovation and Development," ALECSO- UNESCO Conference on the Arab Brain Drain, Amman, 27 November -1 December 2004.
- Zahlan, A.B. (1999) "Science and Technology in the Arab World: Progress without Change, " The Centre for Arab Unity Studies (CAUS), Beirut. (in Arabic)., pp. 4-7. See also Georges Corm and the World Bank (2006) "Labor Migration in the Middle East and North Africa, A View from the Region", pp. 25-26.
- United Nations Development Programme (UNDP)-Arab Human Development Report (AHDR) (2002), "UNDP Arab Human Development Report (2002) "Creating opportunities for future generations," The UNDP. New York: Icons Printing Services.
- United Nations Development Programme (UNDP)-Arab Human Development Report (AHDR). (UNDP-AHDR). (2003). *Arab human development report 2003: Building a knowledge society*. Amman, Jordan: UNDP-RBAS; New York, NY: National Press.
- UNDP (United Nations Development Programme) (2009) "Human development report 2007/2008: Overcoming barriers: Human mobility and development " New York, NY: UNDP. Palgrave Macmillan.
- UNESCO: UNESCO -UIS "Global Education Digest (2012) "Opportunities lost: the impact of grade repetition and early school leaving" - Mobile students - Table 10- tertiary education / ISCED 5 and 6 / international flows of mobile students / 2010- pp. 134, 137. p. 67-68, 80: <http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=3968>, Accessed on 14 February 2013.
- UNESCO-UIS "Global Education Digest (2011)", Table 11, pp. 190-191, 198-199.

The UNU-MERIT WORKING Paper Series

- 2014-01 *The medium-term effect of R&D on firm growth* by Marco Capasso, Tania Treibich and Bart Verspagen
- 2014-02 *Diverse and uneven pathways towards transition to low carbon development: The case of diffusion of solar PV technology in China* Michiko Iizuka
- 2014-03 *User innovators and their influence on innovation activities of firms in Finland* by Jari Kuusisto, Mervi Niemi and Fred Gault
- 2014-04 *Migration, remittances and household welfare in Ethiopia* by Lisa Andersson
- 2014-05 *Path-breaking directions of nanotechnology-based chemotherapy and molecular cancer therapy* by Mario Coccia and Lili Wang
- 2014-06 *Poor trends - The pace of poverty reduction after the Millennium Development Agenda* Richard Bluhm, Denis de Crombrughe, Adam Szirmai
- 2014-07 *Firms' adoption of international standards: Evidence from the Ethiopian floriculture sector* by Mulu Gebreeyesu
- 2014-08 *School choice, segregation, and forced school closure* by Cheng Boon Ong and Kristof De Witte
- 2014-09 *Gender difference in support for democracy in Sub-Saharan Africa: Do social institutions matter?* by Maty Konte
- 2014-10 *Why are women less democratic than men? Evidence from Sub-Saharan African countries* by Cecilia García-Peñalosa and Maty Konte
- 2014-11 *Tipping points? Ethnic composition change in Dutch big city neighbourhoods* by Cheng Boon Ong
- 2014-12 *Technology life cycle and specialization patterns of latecomer countries. The case of the semiconductor industry* by Giorgio Triulzi
- 2014-13 *Patents as quality signals? The implications for financing constraints on R&D* by Dirk Czarnitzki, Bronwyn H. Hall and Hanna Hottenrott
- 2014-14 *Assessment of effectiveness of Chinese aid in competence building and financing development in Sudan* by Samia Satti Osman Mohamed Nour
- 2014-15 *Education, training and skill development policies in Arab Gulf countries: Macro-micro overview* by Samia Satti Osman Mohamed Nour
- 2014-16 *Structure of labour market and unemployment in Sudan* by Samia Satti Osman Mohamed Nour
- 2014-17 *Overview of knowledge transfer in MENA countries - The case of Egypt* by Samia Satti Osman Mohamed Nour
- 2014-18 *The impact of ICT in public and private universities in Sudan* by Samia Satti Osman Mohamed Nour
- 2014-19 *End-user collaboration for process innovation in services: The role of internal resources* by Mona Ashok, Rajneesh Narula and Andrea Martinez-Noya
- 2014-20 *Public investment and regional politics: The case of Turkey* by Mehmet Guney Celbis, Denis de Crombrughe and Joan Muysken
- 2014-21 *Infrastructure and the international export performance of Turkish regions* by Mehmet Guney Celbis, Peter Nijkamp and Jacques Poot
- 2014-22 *Discovering and explaining work-family strategies of parents in Luxembourg* by Nevena Zhelyazkova
- 2014-23 *Parental leave take up and return to work of mothers in Luxembourg: An application of the model of nested dichotomies* by Nevena Zhelyazkova

- 2014-24 *Millennium Development Goals: Tool or token of global social governance?* by Mueid Al Raee, Elvis Amoateng, Elvis Koroku Avenyo, Youssef Beshay, Mira Bierbaum, Charlotte Keijser and Rashmi Sinha
- 2014-25 *One Europe or several? Causes and consequences of the European stagnation* by Jan Fagerberg and Bart Verspagen
- 2014-26 *The harmony of programs package: Quasi-experimental evidence on deworming and canteen interventions in rural Senegal* by Théophile Azomahou, Fatoumata Diallo and Wladimir Raymond
- 2014-27 *Country Terms of Trade 1960-2012: Trends, unit roots, over-differencing, endogeneity, time dummies, and heterogeneity* by Thomas Ziesemer
- 2014-28 *The structure and comparative advantages of China's scientific research - Quantitative and qualitative perspectives* by Lili Wang
- 2014-29 *Transition to knowledge-based economy in Saudi Arabia* by Samia Satti Osman Mohamed Nour
- 2014-30 *Challenges and opportunities for transition to knowledge-based economy in Arab Gulf countries* by Samia Satti Osman Mohamed Nour
- 2014-31 *Migration of international students and mobilizing skills in the MENA Region* by Samia Satti Osman Mohamed Nour