

#2020-016**Migration of higher education students from the North Africa
Region to the United Kingdom****Samia Satti Osman Mohamed Nour**

Published: 21 April 2020

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UNU-MERIT Working Papers
ISSN 1871-9872

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

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**By Prof. Dr. Samia Satti Osman Mohamed Nour
(February 20, 2020)**

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Abstract

This paper uses both the descriptive and comparative approaches to provide an overview of migration of higher education students from North Africa to the United Kingdom (UK). We fill the gap in the African literature and present a more comprehensive and recent analysis of migration of higher education students from the North Africa region to the UK using UNESCO recent secondary data on international students mobility in tertiary education. We provide an interesting comparative analysis of migration of higher education students from the North Africa region to the UK. A novel element in our analysis is that we examine migration of higher education students from the North Africa region to the UK from both national and regional perspectives; mainly we discuss migration of higher education students for each individual country in the North Africa region (Algeria, Egypt, Libya, Morocco, Sudan and Tunisia) and then discuss the total for the entire North Africa region. Therefore, we provide an extremely valuable contribution to the increasing debate in the international literature concerning the increasing interaction between migration and increasing internationalisation of higher education. Our findings support the first hypothesis that from a national perspective, the pattern and size of migration of higher education students from the North Africa region to the UK increased substantially over the period (2000-2017/2018) but the distribution showed considerable variation across North African countries. Our results corroborate the second hypothesis that the increasing trend of migration of higher education students from the North Africa region to the UK is caused by several push-pull factors (e.g. economic, social, political, cultural and educational). Our results support the third hypothesis that migrations of higher education students from North Africa to the UK lead to mixed positive and negative impacts (e.g. transfer of knowledge, brain gain and skill acquisition for returned migrant students, but weak capacity to retain talents and brain drain for non-returned migrant students). Our findings corroborate the fourth hypothesis that skills of migrant higher education students from the North Africa region can be better mobilised in their countries of origin by addressing the push-pull factors that determine migration of skills from the North Africa region.

Keywords: Migration, higher education students, International student mobility, Internationalisation of higher education, Africa, North Africa region, the United Kingdom.

JEL classification: J60, J61, I23, I25

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Migration of higher education students from the North Africa Region to the United Kingdom

1. Introduction

This section provides an introduction and gives a brief general overview of the research problem, the importance, relevance, objectives, questions, hypotheses and the general structure of the research.

Since long, the analysis of international migration is receiving increasing interest in the international literature. Mainly, the increasing debates about international migration particularly focuses on the mixed positive and negative impacts related to migration, especially the impact of migration of highly skilled on the economic, social and cultural development of both sending and host countries. In particular, considerable controversy in the international literature appeared around two issues: Does migration lead to development or under-development? Does the migration of highly skilled individuals lead to brain drain, or to brain gain? (Sika, 2015: 151).

The relevance and significance of this research can be realized from the fact that migration of higher education students is very valuable and interesting research topic that can be analysed from the perspectives of both hosting and sending countries. Since long, migration of higher education students remains an essential issue of concern, since it includes several key cross-cutting thematic related issues that can be analysed from various perspectives of higher education institutions and policies, globalisation, creation and transfer of knowledge, development, demographic, economic, political, social and cultural issues in both sending and hosting countries. The topic of migration of higher education students remains timely, highly relevant and has become increasingly important issues receiving increasing interest in view of the fact that it involves several parties, including higher education institutions and policies, higher education students, researchers, scholars, practitioners, and policymakers in both hosting and sending countries and in both developed and developing countries. The topic of mobility and migration of higher education students remains largely debated issues in view of the increasing interaction between migration of higher education students and the increasing internationalisation of higher education. Particularly, in recent years, the recent increasing concern about mobility and migration of higher education students is consistent with the recent increasing concern about internationalization of higher education for both the sending and hosting countries. On the one hand, for the hosting countries the increasing importance of migration of higher education students is consistent with the increasing recognition of the importance and the economic potential of higher education institutions for generating national incomes, and for enhancing national competitiveness in the global market. On the other hand, for the sending countries the increasing importance of migration of higher education students is consistent with the growing recognition of potential benefits and contribution to transfer of knowledge, brain gain and skill acquisition for returned migrant students and potential contribution to economic development through remittances and contribution to household economies for non-returned migrants students who preferred to join the labour market in the hosting countries.

Apart from the well-known importance of migration globally for all world countries that has been well documented in the international literature, the importance of migration is also particularly recognized regionally for all North Africa region that has been well documented in the regional literature. For instance, North Africa countries constitute part of the Mediterranean countries and the Middle East countries.² The Mediterranean and

² According to the United Nations's definition, the North Africa includes Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia. The Maghreb countries include Algeria, Morocco, Tunisia, and Libya. According to the World Bank classification of world countries (2017), the term Middle East & North Africa (MENA) includes: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, West Bank and Gaza, and Yemen. The Mediterranean countries

Middle East countries 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. Some studies in the MENA literature discuss the economic aspects of migration in the MENA region and indicate that "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 (World Bank, 2004; UNDP, 2002; 2003). 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 per cent) than in Latin America (7.5 per cent), East Asia and the Pacific (6.1 per cent), and Eastern Europe and Central Asia (3.9 per cent).³

Based on the above this paper aims to discuss migration of higher education students from the North Africa region, from national, regional and global perspectives, to identify the factors that determine migration of higher education students from North Africa and to contribute to recent studies in migration in the African region.⁴ This research is particularly consistent with recent studies on "Migration, mobility and transnational relations". The study is generally motivated by the increasing level of migration from North Africa. The central themes discussed in this research examine the pattern, size, distribution, trend, causes and consequences of migration of higher education students from the North Africa region to the United Kingdom (UK). In particular, this paper aims to discuss the following questions:

- (1) What are the pattern, size, distribution and trend of migration of higher education students from the North Africa region to the UK from national, regional and global perspectives?
- (2) What are the causes "push-pull factors" of migration of higher education students from the region? And
- (3) What are the major implications?

We examine four hypotheses; the first hypothesis argues that from national perspective, the pattern and size of migration of higher education students from the North Africa region to the United Kingdom increased substantially over the period (2000-2017/18), but the distribution showed considerable variation across North African countries. The second hypothesis argues that the increasing trend of migration of higher education students from the North Africa region to the United Kingdom is caused by several push-pull factors (e.g. economic, social, political, cultural and educational). The third hypothesis argues that migration of higher education students from the North Africa region to the United Kingdom lead to mixed positive and negative impacts (e.g. transfer of knowledge, brain gain and skill acquisition for returned migrant students, but weak

are those that surround the Mediterranean Sea, the Mediterranean countries include: Albania, Algeria, Bosnia-Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia, and Turkey.

³ See Baldwin-Edwards (2005: 2, 23), Khachani (2004: 37), World Bank (2003: 171-172), Gubert and Nordman (2006: 1-2, 9, 10).

⁴ For the purpose of this paper, the term North Africa refers to six countries including: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia in view of recent increasing migration from these six countries. The population of the MENA region at its least extent is considered around 223.4 million people, about 18.85% of total Africa population, about 0.03% of the total world population.

capacity to retain talents and brain drain for non-returned migrant students). The fourth hypothesis argues that skills of migrant higher education students from the North Africa region to the United Kingdom can be better mobilised in their countries of origin by addressing the push-pull factors that determine migration of skills from the North Africa region.

Concerning the relevance and contribution, this paper adds to studies in the international literature in the field of migration that examine some economic aspects of migration from developing countries and regions. Few studies in the international literature examine migration of students from developing countries and regions (cf. Nour 2014, 2011). In our view, one merit of this research is that it fills the gap in the African literature concerning the migration of higher education students from the North Africa region by examining recent pattern, size, distribution, trend, causes and consequences of migration of higher education students from North Africa to the United Kingdom. Different from few earlier studies in the international literature (cf. Nour, 2011; 2014; 2017; 2019; Gubert and Nordman, 2006; Baldwin-Edwards, 2005) we provide a more comprehensive and an in-depth recent analysis of the pattern, size, trend, distribution, causes and consequences of migration of higher education students from the North Africa region to the United Kingdom using UNESCO recent secondary data on international students mobility in tertiary education.

A novel element in our analysis is that we examine migration of higher education students from North Africa from both national and regional perspectives; mainly we discuss migration of higher education students for each individual country in North Africa region, and then discuss the total for the entire North Africa region to the United Kingdom. Therefore, we provide an extremely valuable contribution to the increasing debate in the international literature concerning the increasing interaction between migration and increasing internationalisation of higher education. In our view, another merit is that the objective to address a recent comparative analysis of the size, trend and distribution of migration of higher education students from the North Africa region both within the region and in relation to the rest of the world is quite interesting and relevant.

In our view, another merit is that we discuss very important and key issues with focus on the possible causes (push-pull factors) and consequences of migration of higher education students from the North Africa region to the United Kingdom. We present an important, relevant and timely work consistent with the growing awareness amongst researchers and policy-makers of the region to improve understanding of the recent development in the region in view of increasing globalization and increasing integration of North African countries in global world economy.

In our view, another merit is that we provide relevant and valuable contribution to the largely debated issues in the international literature, particularly we focus on the increasing interaction between migration of higher education students from North Africa and the increasing internationalisation of higher education, and the causes, and consequences or implications from the perspective of the sending North Africa countries.

In our view, one advantage of our analysis in this paper is that we use a more precise and narrow scope of analysis since we focus only on the internationally mobile students who have crossed the North Africa borders with explicit intention to study abroad. This implies that our scope of analysis is different from the more broad scope of analysis used in earlier studies in North Africa literature that focused on internationally mobile highly skilled or low skilled labours who have crossed the North Africa borders with explicit intention to work abroad. Therefore, our results will contribute to previous studies and debate in the international literature by providing

recent analysis to improve understanding about migration of higher education students from North Africa to the United Kingdom.

Finally, in our view further merit of this research is that our analysis is useful from policy perspective and can be used to substantiate useful policy recommendations for dealing with the mixed positive-negative impacts of migration of higher education students from the North Africa region to the United Kingdom and hence to achieve inclusive growth and sustainable economic development in the North Africa region.

Regarding research method, we use secondary data and the descriptive and comparative methods to provide an empirical investigation of the pattern, size, trend, distribution, causes and consequences of migration of higher education students from the North Africa region to the United Kingdom from national, regional and global perspectives. Similar to the studies in the literature (cf. Nour 2014, 2011), we use recent data from UIS-UNESCO, 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, trend and distribution of higher education migrant students from the North Africa region to the United Kingdom and other world regions.⁵

Concerning the structure, the rest of this paper will be organized as follows: Section 1 provides an introduction and gives a brief general overview of the research problem, the importance, relevance, objectives, questions, hypotheses and the general structure of the research. Section 2 shows the general socio-economic characteristics and economic development challenges in North Africa region. Section 3 presents the literature review. Section 4 discusses the major development concerning the pattern, size, trend, distribution and impacts of migration of higher education students to the United Kingdom as a receiving country and from North Africa countries as sending countries, this section also examines the push-pull factors (economic, political, cultural and educational) causes and consequences of migration of higher education students from the North Africa region and to the United Kingdom. Finally, Section 5 provides the conclusions and policy recommendations.

2. General socio-economic characteristics and economic development challenges in North Africa region.

This section shows the general socio-economic characteristics, economic development challenges and the great diversity amongst the North Africa countries, since the migration of higher education students is often closely linked to economic, political and social factors, as well as both the resources directly devoted to development of higher education and also to the whole economic structure that supports higher education. Before examining the general socio-economic characteristics amongst the North Africa countries, it will be useful to provide definition of the concept North Africa region and show the importance of North Africa region.

We find that the regional and international literature uses different criterions for classification of world countries according to geographical location, income level, and economic structure. In this context, the North

⁵ 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 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 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). See UIS-UNESCO (2012) Education Digest (2012), pp. 67-68, 80

Africa region can be studied based on geographical location, income level, and economic structure.⁶ The regional and international literature uses two different classifications for North Africa countries according to the United Nations classification of world countries and the World Bank classification of world countries. In this paper, we use the classification of North Africa countries based on the United Nations classification of World countries that combines the geographical location and economic classification. In our view for operational and analytical purposes the definition of North Africa countries based on the United Nations classification of World countries is more appropriate for our analysis in this paper, since it provides a more precise definition that seem consistent with our objective to present a more precise analysis of the North Africa region, since this definition considers the North Africa countries as a group of countries sharing some similarities and consistency in terms of geographical location, social and cultural backgrounds and economic development challenges. According to the United Nations classification of world countries, the World Economic Situation and Prospects (WESP) by region, from geographical location perspective the North Africa region is composed of six countries that located in northern part of Africa, includes: Algeria, Egypt, Libya, Mauritania, Morocco, Sudan and Tunisia. According to this definition from economic classification perspective, the North African countries are included in the group of developing economies. According to this definition the classification of economies is defined according to GNI per capita (2012), implies that three or half of the North African countries (namely, Algeria, Libya and Tunisia) are included in the category of upper middle income economies, while the other three or half of the North African countries (namely, Egypt, Morocco and Sudan) are included in the category of lower middle income. According to the United Nation definition the classification by economic structure implies that the majority or four or nearly two third of the North African countries (namely, Algeria, Libya Egypt and Sudan) are included in the group of Fuel-exporting countries, while the other two or nearly one third of the North African countries (namely: Morocco and Tunisia) are not included in the group of Fuel-exporting countries, which implies that they are classified as diversified economies.⁷ On the other hand, the World Bank uses the definition of Middle East and North Africa (MENA). According to the World Bank classification of world countries (2017), the term Middle East and North Africa (MENA) includes Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, West Bank and Gaza and Yemen. According to this definition, Sudan is not classified among the MENA countries but included in the group of Sub-Saharan Africa countries. According to the World bank classification of Economies according to GNI per capita (March 2017), two or one third of the North African countries (namely, Algeria and Libya) are included in the group of upper middle income economies, while the other four or majority or two-thirds of the North African countries (Egypt, Tunisia, Morocco and Sudan) are included in the group of lower middle income economies.⁸ On the other side, based on the Economic Research Forum (ERF) (1998) classification of Arab countries that used in the Arab literature (cf. Ali 2003; 2004). ERF

⁶ North Africa or Northern Africa is the northernmost region of Africa. The United Nations's definition of "Northern Africa" includes Algeria, Egypt, Libya, Morocco, Sudan, Tunisia, and Western Sahara. (Mauritania is included in the United Nations's definition of Western Africa and South Sudan in the definition of Eastern Africa.) The countries of Algeria, Morocco, Tunisia, and Libya are often collectively referred to as the Maghreb, which is the Arabic word for "sunset". Egypt lies to the northeast and encompasses part of West Asia, while Sudan is situated on the edge of the Sahel, to the south of Egypt. See https://en.wikipedia.org/wiki/North_Africa, accessed on 27 April 2017.

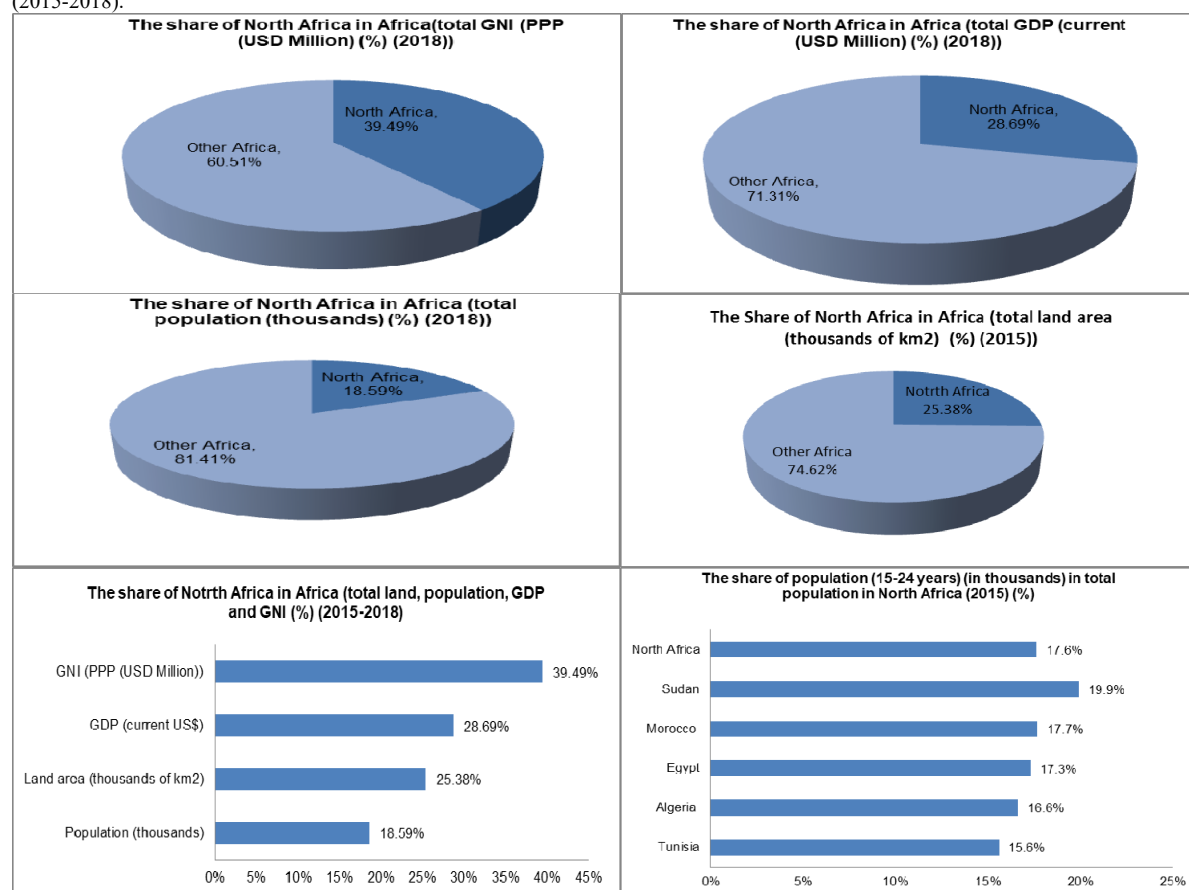
⁷ See United Nations the World Economic Situation and Prospects (WESP) (2014: 146-148), UN: World Economic Situation and Prospects: http://www.un.org/en/development/desa/policy/wesp/wesp_current/2014wesp_country_classification.pdf, accessed 27 April 2017.

⁸ See the World Bank (2017): databank.worldbank.org/data/download/site-content/CLASS.xls. Accessed on 27 April 2017. Note: This table classifies all World Bank member countries (189) and all other economies with populations of more than 30,000. For operational and analytical purposes, economies are divided among income groups according to 2015 gross national income (GNI) per capita, calculated using the World Bank Atlas method. The groups are low income, \$1,025 or less; lower middle income, \$1,026–4,035; upper middle income, \$4,036–12,475; and high income, \$12,476 or more.

(1998) the North Africa countries can be classified into three groups: mixed oil economies group includes two countries (Algeria and Libya), diversified economies group includes three countries (Egypt, Morocco, and Tunisia) and primary export economies group includes only one country (Sudan). This classification implies that the majority or half of North Africa countries are amongst the diversified economies and the other half are amongst oil-dependent economies.

Based on the above definition, we find evidences on the economic, geographical, and demographic importance of the North Africa region compared to Africa Continent. For instance, the North Africa region contributes with more than third of total Africa GNI (39.49%), it contributes with more than a quarter of total Africa land area (25.38%), and it contributes (total population 236.7 million people) around nearly fifth of Africa total population (18.59%) (See Figure 1). Our results imply that the North Africa region maintained its strongest position in Africa Continent from different economic, geographical, and demographic perspectives that appears in terms of the share of the North Africa in Africa total GDP, total land area and total populations respectively.

Figure 1- The share of North Africa in Africa total land area, total GDP, GNI and total population, and youth population in North Africa (%) (2015-2018).



Sources: Adapted from (1) UNDP (2016, 2015), (2) the World Bank World Development Indicators Data (2017), accessed 22 April 2017, (3) United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects, The 2015 Revision, (4). African Economic Outlook: <http://www.africaneconomicoutlook.org/en/statistics>; accessed on 28 April 2017.

Given the importance of North Africa region as explained above, this section also shows the general socio-economic characteristics and economic development challenges in the North Africa region and World regions including demographic structure/ composition (population size), economic growth as measured by (GNI per capita), and human development indicators as measured by Human Development Index (HDI), life expectancy, mean years of schooling, literacy rate and gross enrolment ratios (see Table 1). Table 1 illustrates the substantial

gap between North Africa and other world regions in terms of population, standard of economic development as measured by GDP per capita and HDI. We find that for the entire North Africa region, the total population is accounting for 236.7 thousand million, while, the average GDP per capita is amounting for US\$ 9.688. In general, the North Africa region is characterised by low standards of economic development together with high population numbers and high average population growth rate. For instance, according to UNDP-HDR (2016), the increasing trend in population average annual growth rate in the North Africa region are below only Arab states, Sub-Saharan Africa and Least developed countries, but are above the level of all World regions: Europe and Central Asia, Latin America and the Caribbean, East Asia and the Pacific, South Asia and South Africa (see Table 1). Furthermore, the North Africa region is characterized by high share of youth in total population that raises concern. According to UNESCO – WB-WEDI (2017) demographic situation estimates of the age group under 15 years for the year 2015 amount to the majority, and that nearly third of the population in the North Africa region is under 25 years of age (32.3% of total population). In addition, according to some estimates, nearly one in every five people in the North Africa region is aged between 15-24 years (17.6% of total population). These percentages indicate that the North Africa youth will, for the years or decades to come, put increasing pressure on resources in the North Africa region to provide education, work and social services".⁹

In general, the North Africa region is characterised by high population numbers together with variation in human development index. According to the World Bank classification of economies, all the North Africa countries are classified among medium-income economies. In addition, according to the UNDP-HDR classification of economies, the estimated GNI per capita and average GDP per capita, the other HDI components: average human development index (HDI), average life expectancy, mean years of schooling and expected years of schooling, literacy rate, population with at least some secondary education and gross enrolment ratios in secondary education for the North Africa region is below the World average and the majority of World regions: world high-income group, Europe and Central Asia, Latin America and the Caribbean, and East Asia and the Pacific, but on average above only the level developing countries, South Asia, Sub-Saharan Africa and Least developed countries (see Tables 1-2).

Moreover, North Africa region shows considerable weakness concerning the supply of and demand for higher education reflecting the weakness in higher education systems and institutions in North Africa region. For instance, over the period (2010-2015) the weakness in the demand side appears in terms of the gross enrolment ratios in tertiary education in North Africa that implies that less than one third of students in tertiary education age are enrolled in higher education (28.8%), gross enrolment ratios in tertiary education in North Africa falls far behind advanced Asia countries (Korea (95%), Malaysia (30%), China (39%)), below the World level (35%), and below the majority of world regions: OECD (70%), world high-income group (43%), Europe and Central Asia (55%), Latin America and the Caribbean (44%), and East Asia and the Pacific (37%), Arab states (30%), and developing countries (29%), but on average above only the level of South Asia (23%), Sub-Saharan Africa (8%) and Least developed countries (9%) (See Table 2 and Figure 3). In addition, over the period (2010-2014) the weakness in the supply side appears in terms of the level of financial resources allocated for education as measured by the level of expenditure on education as % of GDP in the North Africa region (4.6%) is below the World average (5%), below the level of OECD (5.5%), Sub-Saharan Africa (4.8%) and Latin America and the Caribbean (5.4%), but above the level of South Asia (3.4%) and Least developed countries (3.3%) (See Table 2

⁹ See UNDP-MBAF Arab Knowledge Report (AKR), 2014, p. 13.

and Figure 3).

Moreover, poverty remains a very serious problem for nearly a quarter of North Africa population (24%). In addition, unemployment rates and youth unemployment rates in North Africa region are more than twice above the world average and are above all World regions: Arab States, East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, OECD, South Asia, Sub-Saharan Africa, developing countries and least developed countries (see Table 1 and Figure 2). Furthermore, political instability and political conflict are serious problems in the majority of North Africa countries (Egypt, Libya, Sudan and Tunisia). For instance, except for Morocco, all North Africa countries experienced regimes changes over the past years (Algeria, Egypt, Libya, Sudan and Tunisia).

Table 1- General socio-economic characteristics of North Africa compared to other world regions (2019)

	Population ¹	Gross national income (GNI) per capita ²	Human Development Index (HDI) ²		Life expectancy at birth ²	Expected years of schooling ²	Mean years of schooling ²	Poverty Population living below Income poverty line (%)	Unemployment	
			Value	Rank					total	Youth
	Total (millions)	(2011 PPP \$)			(years)	(years)	(years)	%		
								National poverty line	(% of labour force)	(% ages 15–24)
	2018	2018	2018	2018	2018	2018	2019	2005-2014	2015	2015
Algeria	42,228.43	13,639	0.759	82	76.7	14.7	8		10.5	28.6
Egypt	98,423.60	10,744	0.7	116	71.8	13.1	7.3	25.2	12.1	35.5
Libya	6,678.57	11,685	0.708	110	72.7	12.8	7.6		20.6	50.0
Morocco	36,029.14	7,480	0.676	121	76.5	13.1	5.5	8.9	9.6	19.3
Sudan	41,801.53	3,962	0.507	168	65.1	7.7	3.7	46.5	13.6	22.5
Tunisia	11,565.20	10,677	0.739	91	76.5	15.1	7.2	15.5	14.8	34.5
North Africa	236,726.47	9,698						24.0	13.5	31.7
Human Development Index Groups										
Very high human development		40,112	0.892		79.5	16.4	12		6.8	16.3
High human development		14,403	0.75		75.1	13.8	8.3		5.8	14.4
Medium human development		6,240	0.634		69.3	11.7	6.4		5.2	13.4
Low human development		2,581	0.507		61.3	9.3	4.8		7.0	11.4
World Regions										
Arab States	419,790.59	15,721	0.703		71.9	12	7.1		11.7	29.0
East Asia and the Pacific	2,328,220.87	14,611	0.741		75.3	13.4	7.9		4.6	12.6
Europe and Central Asia	918,793.59	15,498	0.779		74.2	14.6	10.2		10.4	19.3
Latin America and the Caribbean	641,357.52	13,857	0.759		75.4	14.5	8.6		6.4	14.3
South Asia	1,814,388.74	6,794	0.642		69.7	11.8	6.5		4.2	10.7
Sub-Saharan Africa	1,078,306.52	3,443	0.541		61.2	10	5.7		7.8	12.5
Developing countries		10,476	0.686		71.1	12.2	7.4		5.7	13.5
Least developed countries	1,009,662.58	2,630	0.528		65	9.8	4.8		6.2	11.4
Organisation for Economic Co-operation and Development (OECD)	1,303,529.46	40,615	0.895		80.4	16.3	12		6.9	14.7
World	7,594,270.36	15,745	0.731		72.6	12.7	8.4		5.9	13.8

Sources: (1) the World Bank, World Development Indicators database (2020), access on February 16, 2020, and (2) UNDP (2019), PPP – purchasing power parity. pp. 300-303. United Nations Development Programme (UNDP) "Human Development Report (2019) "Beyond income, beyond average, beyond today: Inequalities in Human Development in the 21st century," UNDP: New York, USA. pp. 300-303.

UNDP (2016), PPP – purchasing power parity. pp. 198-201, 218-219, 222-225, 238-241. (3) United Nations Development Programme (UNDP) "Human Development Report (2016) "Human Development for Everyone," UNDP: New York, USA. pp. 198-201, 222-225.

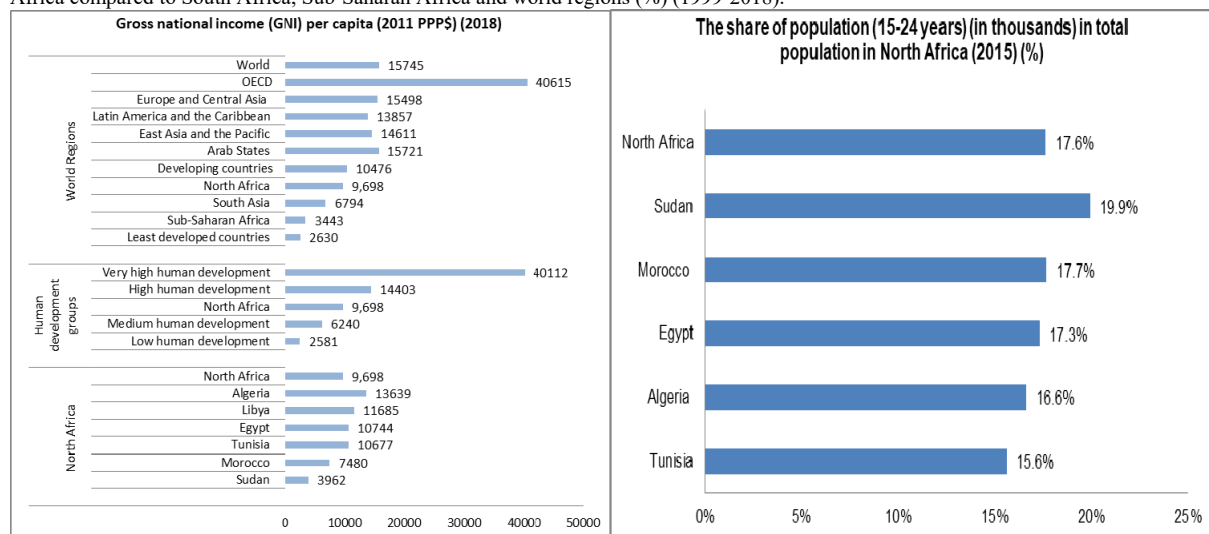
Note: VHHD refers to very high human development, HHD refers to high human development, MDH refers to medium human development, and LHD refers to low human development.

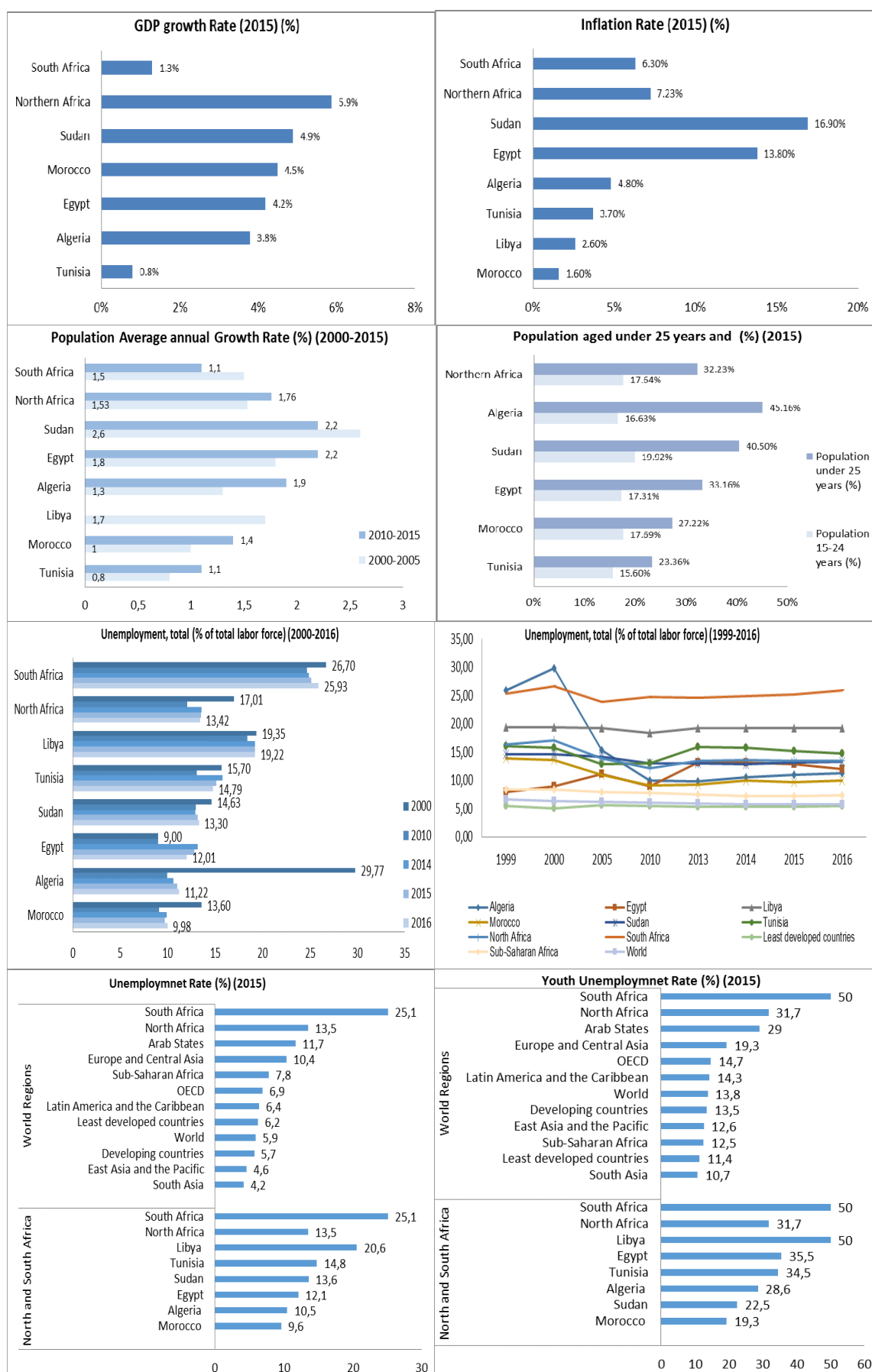
Table 2 - Literacy and Education in North Africa compared to selected World countries and regions (2005-2015)

	Literacy rates			Gross enrolment ratio		Government expenditure on education		
	Adult Literacy rates (% aged 15 and above)	Adult illiteracy rates (% aged 15 and above)	Population with at least some secondary education (% aged 25 and above)	Secondary (% of secondary school-age population)	Tertiary (% of tertiary school-age population)	(% of GDP)	Expected years of schooling (years)	Mean years of schooling (years)
	2005-2015	2005-2015	2005-2015	2010-2015	2010-2015	2010-2014	2015	2015
North and South Africa								
Algeria	80.2	19.8	34.9	100	35		14.4	7.8
Egypt	75.2	24.8	61.4	86	32		13.1	7.1
Libya	91.0	9	55.1				13.4	7.3
Morocco	72.4	27.6	29.4	69	25		12.1	5.0
Sudan	75.9	24.1	16.3	43	17		7.2	3.5
Tunisia	81.8	18.2	43.9	88	35	6.2	14.6	7.1
North Africa	79.4	20.6	40.2	77.2	28.8	6.2	12.5	6.3
South Africa	94.3	5.7	74.9	94	20	6.1	13.0	10.3
Advanced Asia countries								
China	96.4	3.4	75.0	94	39		13.5	7.6
Korea	100	0	91.4	98	95	4.6	16.6	12.2
India	72.1	27.9	48.7	69	24	3.8	11.7	6.3
Malaysia	94.6	5.4	77.1	79	30	6.1	13.1	10.1
Singapore	96.8	3.2	78.6			2.9	15.4 d	11.6
Human Development Index Groups								
Very high human development	100	0	88.8	106	75	5.1	16.4	12.2
High human development	95.3	4.7	70.6	95	43		13.8	8.1
Medium human development	76.4	23.6	49.1	68	23	3.9	11.5	6.6
Low human development	60.9	39.1	20.3	40	8	3.8	9.3	4.6
World Regions								
Arab States	80.7	19.3	47.0	76	30		11.7	6.8
East Asia and the Pacific	95.7	4.3	68.9	88	37		13.0	7.7
Europe and Central Asia	98.1	1.9	81.7	98	55		13.9	10.3
Latin America and the Caribbean	93.2	6.8	58.1	95	44	5.4	14.1	8.3
South Asia	70.3	29.7	47.9	65	23	3.4	11.3	6.2
Sub-Saharan Africa	64.3	35.7	29.6	43	8	4.8	9.7	5.4
Developing countries	83.3	16.7	57.7	71	29		11.8	7.2
Least developed countries	63.3	36.7	25.7	44	9	3.3	9.4	4.4
OECD	100	0	85.5	104	70	5.1	15.9	11.9
World	84.3	15.7	64.9	76	35	5.0	12.3	8.3

Source: UNDP (2016): United Nations Development Programme (UNDP) "Human Development Report (2016) "Human Development for Everyone," UNDP: New York, USA. pp. 230-233. Note: PPP – purchasing power parity.

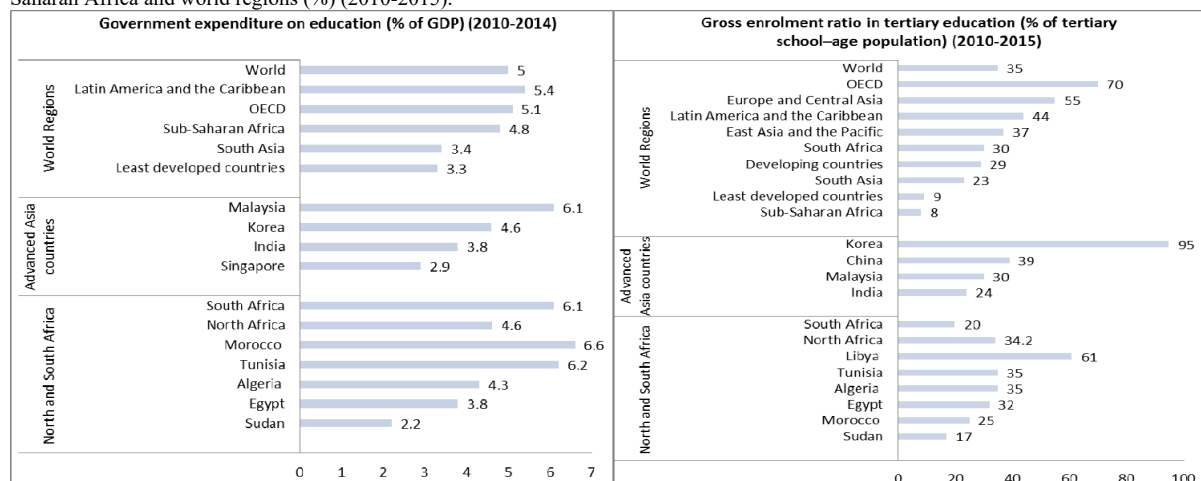
Figures 2- General socio-economic characteristics (GNI per capita, poverty, unemployment rates and youth unemployment rates) in North Africa compared to South Africa, Sub-Saharan Africa and world regions (%) (1999-2018).





Sources: Adapted from (1) UNDP (2016), (2) UNDP (2019), (3) the World Bank World Development Indicators (2017), (3) International Labour Organization, ILOSTAT database. Cited in the World Bank World Development Indicators Data (2017), accessed on April 22, 2017.

Figures 3- Government expenditure on education and gross enrolment in tertiary education, in North Africa compared to South Africa, Sub-Saharan Africa and world regions (%) (2010-2015).



Sources: Adapted from (1) UNDP (2016, 2015), (2) the World Bank World Development Indicators Data (2017), accessed 22 April 2017.

Using the classification presented above we observe great diversity amongst North Africa countries in terms of demographic structure and socio-economic and human development indicators. For instance, the distribution of total North Africa population in 2015 implies that the majority of North Africa population are residing in countries with diversified economies (61), followed by mixed oil economies (21), and primary export economies (18) respectively (see Table 2 and Figure 2). In addition, the highest population average annual growth rate is reported in primary export economies, followed by diversified economies and mixed oil economies respectively. During the period (2000/2005-2013/2015) the trend of population average annual growth rate declined in primary export economies but increased in mixed oil economies and diversified economies (see Figure 2). Moreover, the highest share of youth population in total population is reported in mixed oil economies, followed by primary export economies and diversified economies respectively (see Table 2). We find that the distribution of total North Africa GDP in 2012, implies that the diversified economies contributes with nearly two third of total North Africa GDP (63), followed by the mixed oil economies that contributes with nearly third of total North Africa GDP (30), and primary export economies with marginal contribution contributes less than one tenth of total North Africa GDP (7) respectively (see Table 2 and Figure 2). This implies that the North Africa natural resources based economies (North Africa mixed oil economies and primary export economies) contributes with more than one third of total North Africa GDP (38) and more than one-third of total North Africa population (40) as compared to North Africa diversified economies that contributes with nearly two third of total North Africa GDP (63) and nearly two third of total North Africa population (60) (see Table). Similarly, the highest level of GDP per capita in 2012 is reported in mixed oil economies, followed by diversified economies, and primary export economies respectively (see Table 1). Moreover, according to UNDP-HDR (2019) three or half of the North Africa countries are classified among high human development group (Libya, Tunisia, and Algeria), two are classified among medium human development group (Egypt, and Morocco), and one is classified among low human development group (Sudan). This implies that all mixed oil economies and one of the diversified economies of the North Africa countries are classified among high human development group (Libya, Algeria, and Tunisia), the majority of diversified economies are classified among medium human development group (Egypt, and Morocco), and one the primary export economy is classified among low human development group (Sudan). The observed variation with respect to HDI seems to be largely consistent with the above-observed variation with respect to income level. For instance, the

performance of North Africa countries regarding GNI per capita in 2018 implies that the mixed oil economies Libya (11,685), and Algeria (13,639) are ranked at the top place in the North African countries, followed by the diversified economies followed by Tunisia (10,677), Egypt (10,744) and Morocco (7,480), and finally Sudan (3,962) ranked at the bottom place in the North Africa countries respectively. Moreover, the ranking regarding HDI value implies that in 2018, Algeria (82) ranked at the top in the North Africa countries, followed by Tunisia (91), Libya (110), Egypt (116) Morocco (121), and finally Sudan (168) ranked at the bottom place in the North Africa countries respectively. This performance implies that two of the mixed oil economies are ranked at the top three places, while, the primary export economy is ranked at the bottom place in the North Africa countries.¹⁰

We find that despite, the great heterogeneity in economic and human development indicators across the North Africa countries; it is evident that the migration of higher education students remains an important issue over the past decades for all North Africa countries as we explain below.

3. Literature review

In this section, we present the literature review on migration, mainly, migration of higher education students. We explain that the topics of migration and migration of higher education students are well documented in the international literature from several perspectives. Existing studies in the international literature postulate several explanations of migration of higher education students. In particular, considerable debate arises around three issues regarding the evolution, trend, size, extent, breadth, pattern, and distribution of migration of higher education students; the causes, motivation, determinants and push-pull factors of migration of higher education students; and the impacts, implications and consequences of migration of higher education students. Mainly, the determinants and impacts of migration of higher education students on both sending and hosting countries are well documented in the international literature.

The evolution, trend, size, breadth, pattern, and distribution of migration of higher education students

The first group of studies in the international literature provides explanation of the evolution, trend, size, pattern, distribution, breadth and extent of migration of international higher education students. Numerous studies in the international literature highlight the evolution and development of migration of higher education students based on the interpretation that the international flow of students is not a new phenomenon. And also based on the argument that since long there is increasing debate about international students mobility in the sending and hosting countries, but the increasing trend has been more visible in most world countries in view of the fact that higher education sector is expanding in most world countries. On the one hand, there is increasing agreement and consensus in the international literature concerning the development and increasing trend, size and breadth and extent of migration of higher education students that appears from the fact that the past decades have witnessed an impressive growth of international student mobility, for instance, several studies in the international literature provide interpretation of increasing higher education student mobility (Brooks and Waters, 2011), some studies provide empirical evidence on increasing international student migration to Germany, one of the most important destination countries for international students worldwide (cf. Bessey, 2012). On the other hand, there is lack of consensus and increasing debate in the international literature regarding the pattern and geographical distribution of migration of higher education students. For instance, while in recent study the investigation of the factors that

¹⁰ See UNU-HDR (2016).

determine transnational students mobility reveals that cross-national student exchange networks are stable over time; the USA, Great Britain, France, and Germany attract highest shares of students from most remaining countries (cf. Vögtle and Windzio, 2016). By contrast, other recent studies in the international literature find that in the last decade the rise of transnational higher education and education hubs in some Asian countries and emerging economies such as China, India, Singapore, South Korea, Malaysia, Hong Kong and other Middle East economies, has inevitably transformed the patterns of international student mobility and induced intensified competition for students in the world regions (cf. Mok, 2012; Shields and Edwards, 2010, Rivza and Teichler, 2007). The argument in these studies is based on the fact that unlike the patterns of international students mobility in the 1970s and 1980s when most international students mainly chose their study destinations in Europe, the United Kingdom and North America, students have now begun to accept the Asia and Pacific region as a viable alternative choice there has been a fundamental shift of international student mobility patterns (Mok and Ong, 2011, Altbach, 1989). This argument implies that in the past, students were moving from ‘periphery’ (developing economies) to ‘core’ (developed economies) for overseas learning experiences; now more of them are moving from ‘periphery’ to ‘semi-periphery’ (emerging economies). Some studies argue that in recent years the pattern of international students mobility has become much more complex than it was in the past. The rise of new destinations for international students is unlikely to usurp the global dominance of Western developed countries overnight; nonetheless, students movement towards these emerging economies does suggest that competition will increase for the revenues associated with foreign students enrolment (cf. Mok, 2012).

The causes, motivation and determinants or push-pull factors of migration of higher education students

The second group of studies in the international literature provides a more broad explanation and valuable interpretation of the causes, motivations and determinants of international student mobility from different perspectives and from sending and hosting countries perspectives. To illuminate the causes, motivations and determinants of migration of higher education students the international literature postulates several theoretical explanations including: historical, geographical, cultural, political, institutional, social, and economic (micro-macro explanations and supply-demand explanations), demographic, educational policies and human capital gap, and labour market and wages gap explanations (cf. Brooks and Waters 2011; Findlay et al., 2012; King and Raghuram, 2013). This implies that the determinants of cross-national students mobility are largely debated in the international literature; most research focuses on analysing the phenomenon from one perspective. Few studies in the literature provide a more comprehensive theoretical explanation of cross-national students mobility by explaining several different perspectives including the micro perspective, macro perspective, and theory of rational choice, globalization or global knowledge economy, human capital approach, critical perspectives, and world culture theory (Shields, 2013; Vögtle and Windzio, 2016).

In the international migration literature the traditional push–pull model of international student mobility (Bessey 2012; Karemera et al. 2000; Mayda 2005), has been widely used as an analytical tool to understand and interpret the reasons, determinants and pull-push factors of migration of higher education students related to the sending and hosting countries. Most existing research on international students mobility use the push–pull model from sending and hosting countries perspectives to identify the factors that push people to study abroad and those attract them to a particular destination. Within this framework, international migration flows from one country to another are modelled as a function of the characteristics of both countries. For example, some studies

in the literature provide demographic explanation and predict that an increase in population in the country of origin and the associated “demographic pressure” (Hatton and Williamson 2001) push more people to go abroad, whereas the cost of mobility reduces migration. Some studies in the literature provide a combination of geographical, economic and political explanations and provide evidence that distance is important for encouraging student mobility and that politically free countries send more students abroad (Bessey, 2012). Some studies focus on the characteristics of countries of origin that can determine the amount of people seeking higher education abroad. For example, some studies in the literature provide a more comprehensive explanation including a combination of several factors related to economic, development and integration in the global economy, implying that the level of economic development in countries of origin correlates negatively with the volume of tertiary student emigration, whereas the degree of participation of the home countries in the global economy correlates positively with student mobility (McMahon, 1992). Some studies focus on institutional and globalization or global knowledge economy aspects. These institutional explanation and globalization or global knowledge economy explanation puts international student mobility in the context of the global knowledge economy; from this perspective, foreign students are perceived as “embodiments of a worldwide trend toward the internationalization of knowledge and research in an integrated world economy” (Altbach 1991: 305.) From institutional perspective, the increase in student mobility is because higher education institutions increasingly see international education as an export activity that yields economic returns and market their tertiary education programmes internationally (She and Wotherspoon, 2013). For most countries, international education reflects the integration process between higher education and the knowledge economy (Kauppinen, 2015).

The economic explanations include various micro-macro explanations, supply-demand explanations, demographic and labour market explanations. The push–pull model explored the determinants of migration of higher education students from a micro-level perspective (cf. Netz 2013). The micro explanation postulate that on the basis of the theory of rational choice or individual rationality, the rationales on the individual level for studying abroad are that students are rational actors investing in their education with the goal of maximizing their lifetime earnings (Rosenzweig 2006; Beine et al. 2014). From micro perspective, the increase in student mobility is the result of individual decisions, the growing internationalisation of education and economies encourages students to be more mobile to develop skills that are considered essential to being competitive in an increasingly global labour market for highly skilled individuals (Tremblay, 2005). The macro-level explanation provides an assessment of supply and demand sides of international students (Findlay, 2010). For instance, the explanation from macro level perspective postulates that the demographic, labour and market changes in the last few decades, combined with a transition to knowledge economy, created demand for high-skilled workers in OECD countries. In this context, the international students have been considered as a significant source of skilled labour for host societies and international education is recognised as an important channel of labour migration (Liu-Farrer, 2014: 185). The OECD countries have increasingly sought to attract international students as part of a strategy to expand their knowledge economies, while students’ source countries have expressed concern about the development consequence of losing human capital (Findlay, 2011). In the most recent decade universities have become key facilitators of skilled migration flows (Hawthorne and To, 2014). Some studies find that several factors explain a world-wide emerging trend of highly skilled migration. They argue that tertiary education has risen everywhere and numbers of migration-prone graduates are booming; inequalities of income between countries have not receded, and this applies to highly skilled, as well as to low skilled workers;

information on employment conditions abroad circulates more than ever, to such extent, indeed, that the labour market is becoming truly global in certain sectors; gaps in education between countries are continuously diminishing, so that skills acquired in one country can be employed in another (Fargues and Venturini, 2015).

The educational policies and human capital gap explanations postulate the gap between the sending and hosting countries in terms of supply and demand for educational opportunities and quality of education. For instance, the educational and human capital gap explanations assume that the motivations for enrolling students in higher education abroad implies that one of the main reasons driving people towards studying abroad is the unsatisfied demand for higher education in their home country (Beine et al., 2013a, 2014; Agarwal and Winkler 1985; Lee and Tan 1984); in addition to the low quality of the higher education supply in the home country (Wilkins et al., 2012); the perceived higher quality of an international programme compared to a local one (Wilkins et al., 2012) and/or the quality difference between foreign and domestic degrees (Aslangbengui and Montecinos 1998; Gordon and Jallade 1996; Mazzarol and Soutar 2002). This explanation implies that student migration occurs because of the inadequacy of educational opportunities in the home country (Beine et al., 2013a; 2014; Rosenzweig 2006). According to this model, when students make the decision to study abroad, they hope to acquire higher quality education and to return to their country of origin after graduation. Hence, an increase in the higher education supply in the countries of origin reduces the number of people seeking education abroad (Rosenzweig, 2006). The human capital explanation assumes that the rise of international student mobility is associated “with an increased demand for technical, specialized, post-secondary education that prompts students to go abroad in search of educational opportunities that are better than those available to them in their home country” (Shields 2013: 610). According to this human capital explanation, students seek higher education outside of their country of origin when the benefits outweigh the costs of studying abroad.

The labour market and wages gap explanations postulate the gap between the sending and hosting countries in terms of labour market opportunities and return to education or wages. For instance, the labour market explanation assumes that studying abroad seems to be connected particularly with the lack of labour market opportunities in the home country (Levatino, 2016). The wages gap explanation envisage that seeking education abroad constitutes a strategy to immigrate permanently to a foreign country to escape from low returns on education in the country of origin, according to this explanation, because of the differences in wages worldwide, an increase in the higher education supply in the countries of origin of international students provokes a rise in the number of people seeking education abroad (Beine et al. 2013a, 2014).

Other explanations include the critical perspective explanation that assumes that power relationships and hegemony are main drivers of cross-national student mobility. Accordingly, those who ultimately benefit most from cross-national student mobility are transnational and national elites who have access to the globally most prestigious universities (Shields 2013: 613). Finally, the cultural explanation focuses on cultural factors for explaining student migration patterns (Bessey 2010; Dreher and Poutvaara 2005; Tremblay 2001; Kondakci 2011). The cultural approach explains the rising number of international students as “driven primarily by cultural values rather than rational choice” and expects cultural factors to determine patterns of international student mobility (Shields 2013: 615; Boli et al. 1985; Boli and Thomas 1997).

The impact, implications and consequences of migration of higher education students

The third group of studies in the international literature provides explanation of the impacts, consequences or implications of migration of higher education students from the perspectives of both sending and hosting

countries. Several studies develop a comprehensive understanding of the implications of students movement, mobility, migration and the internationalization of higher education (Brooks and Waters, 2011). Some studies examine mobility of knowledge and examine the impact of geographical mobility of people and spatial mobility on the production, dissemination, and transfer of knowledge (Jöns, Heffernan, and Meusbürger, 2017). Recent studies contribute to further understanding of the labour market outcomes and explore the complex and changing relationship between global mobility of highly-skilled international students and recent changes to immigration policy in the UK that prevent such mobility on the other (Moskal, 2016). Some studies argue that that international highly skilled migration has become more controversial as it has become more frequent. Mainstream policy makers and development specialists in origin countries tend to see migration as brain drain or as brain flight, according to whether they explain migration in terms of the pull effect of the destination countries or the free choice of migrants. Those denouncing brain drain see developing countries as victims of more advanced predator economies, while those blaming brain flight point to collective interest being sacrificed to private ambitions. (Fargues and Venturini 2015)

Numerous studies analysing the determinants of students outflows migration and the brain drain. Some studies examine African brain drain and find that of all the world's regions, Sub-Saharan Africa has experienced the most serious negative repercussions. It is also a reflection of the complex and shifting interplay of "push" and "pull" factors that motivate individuals to leave one country for another. The impact of the brain drain on Sub-Saharan Africa is complex. There is the well-known migration of highly educated Africans from the continent to other parts of the developed world. Generally, the migration is from poor, politically unstable, and/or conflict prone countries to those that have stronger economies, are politically stable, and offer good security. The brain drain has positive impacts for the losing country, because in some cases, the Diasporas have become significant sources of financial remittances back to the home country. The role of remittances is observed, for instance, the World Bank estimated that remittances to Sub-Saharan Africa in 2007 reached \$20 billion, more than the total foreign direct investment flow and nearly equal to foreign aid. Remittances to North Africa were even higher—about \$35 billion with Egypt, Morocco, and Algeria the leading recipients. There is a long history of African students' migration and movement, for instance, during the colonial period most large population movements were linked to the economic policies of colonial governments. Africans from Francophone countries tended to migrate to France, those from Anglophone countries to the United Kingdom and the United States. Germany and the United States became the preferred destination for scientists and professionals. The brain drain has impacted some areas of specialization much more than others. Shortages have been severe for most countries in medicine, nursing, physical and human sciences, engineering, technology, and computer programming. Regarding the causes of migration and the brain drain, complex push and pull factors determine the severity of the brain drain and migration for any particular country in Africa. Pull factors such as good security and better economic and social opportunities in countries that attract skilled people have essentially the same effect on skilled persons in all of Sub-Saharan Africa. The impact of push factors varies, however, from one country to another. The push factors include many political and security issues: military coups, political persecution, arbitrary arrest, poor human rights practices, intolerance of political dissent, absence of academic freedom, illegal regime change, and favoritism based on ethnic or religious affiliation add to the brain drain. A host of economic issues is responsible for or at least exacerbates the flight of skilled persons. A country with a weak economy, high unemployment, significant corruption, low wages, periodic famine and/or substantial poverty is a prime candidate for a brain

drain. A country that is unable to create a sufficient number of new jobs and has a limited capacity to absorb qualified personnel is especially vulnerable. Low salaries for professionals are often cited as a major reason for the brain drain. A related concern is the lack of professional opportunity, benefits and personal development. This includes issues such as training and research opportunities, morale and job satisfaction, and human resource and management policies. Most countries in Sub-Saharan Africa do not have particularly friendly working environments, strong budgets, clear policies or generous research funds. There is often no national policy for and little investment in science and technology. Some of the problems concern everyday living. Professionals become discouraged if they cannot afford decent housing. Poor supervision and limited career advancement opportunities add to the frustration. Poorly equipped institutions where computers and access to the Internet are limited pose a serious handicap. Libraries that house a modest number of mostly out-of-date books, laboratories with broken or obsolete equipment, and medical personnel without modern equipment add to the brain drain. Inability to access professional literature is another issue. These problems are common to many countries in Sub-Saharan Africa. As for the pull factors, if the push factors are difficult to control, Sub-Saharan African countries have virtually no influence over the pull factors. In most cases, the pull attraction is the opposite of the push factor. If the economy is weak and wages are low in the country losing skilled personnel, the economy tends to be strong and wages high in the gaining country. This is the case for Europe, North America, and even the Gulf States. (Shinn, 2008)¹¹

Several studies examine the determinants of students outflows migration and the brain drain in North Africa. For instance, some studies indicate that the determinants and processes driving highly skilled Arab migration at both the sending and the receiving ends in North Africa countries implies that selective destination policies and labour market needs matter more than origin factors in explaining Arab educational profiles abroad and its change over the last generation, unemployment and low returns on education at home explain the rest, in the Maghreb, on the other hand, colonial ties have long triggered the emigration of low skilled workers, not only the lack of economic opportunities in these countries which spur highly skilled migration, there is also the question of unstable and oppressive political regimes, while the social remittances of migrants tend to change the culture of non-migrants in the origin countries (Di Bartomoeol and Fargues, 2015, Tabar (2015).

Analysis of the determinants and processes driving highly skilled Arab migration at both the sending and the receiving ends, implies that selective destination policies and labour market needs matter more than origin factors in explaining Arab educational profiles abroad and its change over the last generation, unemployment and low returns on education at home explain the rest, there is a significant divide between countries, the reasons underlying these geographical differentials is to be found in history and origin-destination ties, in the Maghreb, colonial ties have long caused the emigration, but it has been (stressed that it is not only the lack of economic opportunities (the North Africa) which spur highly skilled migration, there is also the question of unstable and oppressive political regimes (cf. Di Bartomoeol and Fargues 2015; Tabar, 2015). While the social remittances of migrants tend to change the culture of non-migrants in the origin countries, migrant communities are also increasingly engaged in trans-local homeland politics. Some studies discuss the impacts of migration of high skilled in Egypt (Sika, 2015: 164-165), Tunisia (Zekri, et al., 2015), Algeria (Mebroukine, 2015: 196-208), Morocco (Khachani, 2009; Khachani, 2015: 181-195) and Sudan (Assal, 2015: 209-223).

¹¹ The British Royal Society coined the term “brain drain” to describe the outflow of scientists and technicians to the United States and Canada in the 1950s and early 1960s. By the 1970s, the brain drain came to be associated with the flow of skilled individuals from the developing world to Western Europe and North America. (See Shin, 2008)

4. Pattern, size trend and impacts of migration of higher education students from North Africa to the United Kingdom

This section discusses the pattern, size, trend and distribution and impacts of migration of higher education students to the United Kingdom as a receiving country and from North Africa countries as sending countries.

4.1. Pattern of migration of higher education students to the United Kingdom

This section discusses the major characteristics and stylized facts concerning the pattern, size, trend and distribution of migration of higher education students to the United Kingdom as a receiving country.

Several studies focus on international students in UK in view of the fact that study is a major reason for moving to the UK.¹² For instance, in the academic year 2018/19, around 486,000 international students, both EU and non-EU, were studying in UK higher education institutions, the largest number on record, making up a fifth of all students in UK higher education. Looking at the numbers of first-year EU and non-EU students, which indicates total annual student inflows, we see an increase of almost a fifth (18%) from 2009/10 to 2018/19. A large majority and more than three-quarters of international students starting in UK higher education in 2018/19 came from outside the EU and non-EU countries (76%), with one-third coming from China. This is despite non-EU domiciled students paying higher tuition fee rates, while under free movement EU students pay the same as UK students, and unlike non-EU students are entitled to the same subsidised tuition fee loans. UK universities have become increasingly reliant on students from a single country, China, whose numbers have more than tripled from 2006/07 to 2018/19, and now make up 32% of all new first-year students. This is a trend also seen in other countries, in part because China's large population and growing wealth make it a major source country for international students globally. In the US, Chinese students accounted for 34% of all international students in the academic year 2018/19 (IIE, 2020). In Australia, the figure was 37% (Department of Education, Skills and Employment, 2020). Meanwhile, Indian student numbers fell from 2011/12, due in part to the abolition of the post-study work visa, but showed signs of recovery from 2016/17 to 2018/19. From 2007 to 2017, the UK lost global market share in international students to Australia, Canada, and China. Although the UK has more than doubled its intake of international students over the past 20 years, from 2007 to 2017 its global market share fell from 11% to 8%. The UK and the United States, traditionally also a popular choice for international students, both lost market share during this period, primarily to Australia, Canada, and China. The higher education sector has raised concerns that the UK's decline in market share of international students has resulted from changes in policy, such as restrictions of post-study work options (e.g., see evidence cited in Migration Advisory Committee, 2018, p. 37–45). The fall in the UK's global market share of international students reflects its loss of students from the US, Europe, and especially India.¹³ (See Figure 5)

Migration Advisory Committee (2018) report considers UK policy towards international students, trends in the numbers coming to the UK, and where and what they study and compares UK policy toward international students with other countries as competition for international students is intense. According to Migration Advisory Committee (2018) report concerning the international students in the UK, more than

¹² See the Migration Observatory briefings, *Migrants in the UK: An Overview and Immigration by Category: Workers, Students, Family Members, Asylum Applicants*. See also Conlon *et al.*, (2018).

¹³ Walsh, P.W. (2020) 'International Student Migration to the UK,' *The Migration Observatory* (2020), Centre on Migration, Policy and Society (COMPAS) University of Oxford, 21 Mar 2020: <https://migrationobservatory.ox.ac.uk/resources/briefings/international-student-migration-to-the-uk/> Accessed March 30, 2020.

750,000 students come to the UK each year to study – the overwhelming majority come to study English. Students come from all over the world to study in the UK. English language centres and further education colleges are popular amongst EU students, while international students from China are the largest group in both higher education and independent schools. However, students come from a wide range of countries – 61 countries had at least 500 students coming to the UK for higher education in 2016/17. The number of international students in higher education has grown nearly 30 per cent over the past nine years, though much more slowly in recent years. The further education sector saw a boom in international students following the introduction of the Tier 4 Points Based System, and a subsequent contraction with the tightening of the rules and ending of licences for many further education colleges. International students attend institutions throughout the UK, though are more concentrated in some areas of the UK, with London, Scotland, and the south-east popular destinations. In higher education, international students primarily undertake courses related to business and administrative studies, engineering and technology, or social studies. As for the international context, competition for international students is increasing, and while the UK is currently the second most popular destination for international students, market share has declined slightly in recent years. In particular the UK's market share of students from India has fallen sharply in recent years, while remaining stable for those students from China. While the UK has no cap on the number of international students, many competitor countries have national strategies and targets for increasing the number of international students. The UK offers similar rights to work while studying as other countries, though post-study work options are less generous than those offered by a number of competitors. The most important factors for international students in deciding which country to study are reported to be a high-quality education and a welcoming environment, though migration policies do play a role.¹⁴

The International Student Statistics in UK (2020) about international students in UK growth trend over the years (2000/2001-2017/2018) implies that the UK is the second most popular study destination worldwide. As of 2017/18, according to official international enrolment statistics, 458,520 international students were attending university in the UK. As of 2017/18, international enrolment at UK universities increased by 3.6% compared to the previous year. New enrollees share 54% (247,685) of the total international students in UK.¹⁵

The distribution of international students in the UK by the top countries of origin of international students implies that China, India, US, Hong Kong, and Malaysia are the top five most popular countries of origin of international students in the UK. Students from these five countries make 38% of the total international enrolment at UK universities. China continues to be the top country of origin of international students in the UK. As of 2017/18, 106,530 Chinese students were enrolled at UK universities, followed by India with 19,750 students and the United States with 18,885 students. EU students share 30% of foreign students at UK universities. As of 2017/18, 139,150 EU students were enrolled at UK universities. The top five countries of origin of EU students enrolled at UK universities includes Italy, France, Germany, Spain and Greece. As of 2017/18, many students were attending university in the UK coming from Italy (13,985) followed by France (13,660) and Germany (13,545). Of the total EU enrolment, first-year students accounted for 62,270 students, while 76,880 EU students were studying at higher years. In (2017–18) the total number of international students from Africa in the UK are 27,815, between (2017/18-2016/17) the total number of international students from

¹⁴ See Migration Advisory Committee (2018) 'Impact of international students in the UK', London, UK: Migration Advisory Committee, September 2018, pp. 1-3.

¹⁵ See International Student Statistics in UK 2020: <https://www.studying-in-uk.org/international-student-statistics-in-uk/>, Accessed on February 02, 2020.

Africa in the UK declined by 7.3%.¹⁶ UNESCO (2020) shows that in 2017/18 the total number of mobile students hosted in UK universities is 435,734, the top countries of origin sending international students to study in UK includes China (22.16%), China, Hong Kong (3.81%), India (3.77%), Malaysia (3.75%), United States (3.71%), Italy (3.07%), Germany (3.03%), France (3.00%), Nigeria (2.90%) and Greece (2.30%) respectively. UNESCO (2020) explains that in 2017/18 the total number of UK students studying abroad is 35,252, the top countries receiving and hosting students from UK includes United States (29.26%), Netherlands (7.72%), Germany (6.40%), Australia (6.34%), France (6.07%), Canada (4.73%), Ireland (4.05%), Spain (2.82%), Denmark (2.69%), Bulgaria (2.52%) and Austria (2.29%) respectively. UNESCO (2020) shows indicators related to students abroad from the UK (including the percentage of total mobile students from UK (0.7%), gross outbound enrolment ratio (0.9 %) and outbound mobility ratio (%1.4)) and indicators related to students hosted in the UK (including the percentage of total mobile students hosted in UK (8.2%) and inbound mobility rate (17.9 %)).(See Figure 5). International Students Statistics by Higher Education (HE) Provider in the UK implies that England is the top popular choice for international students in UK. As of 2017/18, most of foreign students were attending university in England (377,140), followed by Scotland (54,235), Wales (21,350) and Northern Ireland (5,765). Most of EU students were attending university in English universities (108,335), followed by Scotland (21,605), Wales (6,640) and Northern Ireland (2,565) (See Figure 5). The distribution of international students in the UK by the most popular subjects for International students in UK implies that the five favourite degrees for international students in UK are Business and Administrative studies, Engineering and Technology, Social Studies, Creative Arts and Design, Biological Sciences. For instance, [in 2017/2018] the majority of international students in UK were pursuing a degree in Business and Administrative studies (126,955), more than in any other subject. Moreover, International enrolment in Computer Science courses has experienced the largest growth in UK universities. According to statistics, between 2016/17 and 2017/18, the international student population in these degrees increased by 13.8%, from 19,330 to 22,000. (See Figure 5)

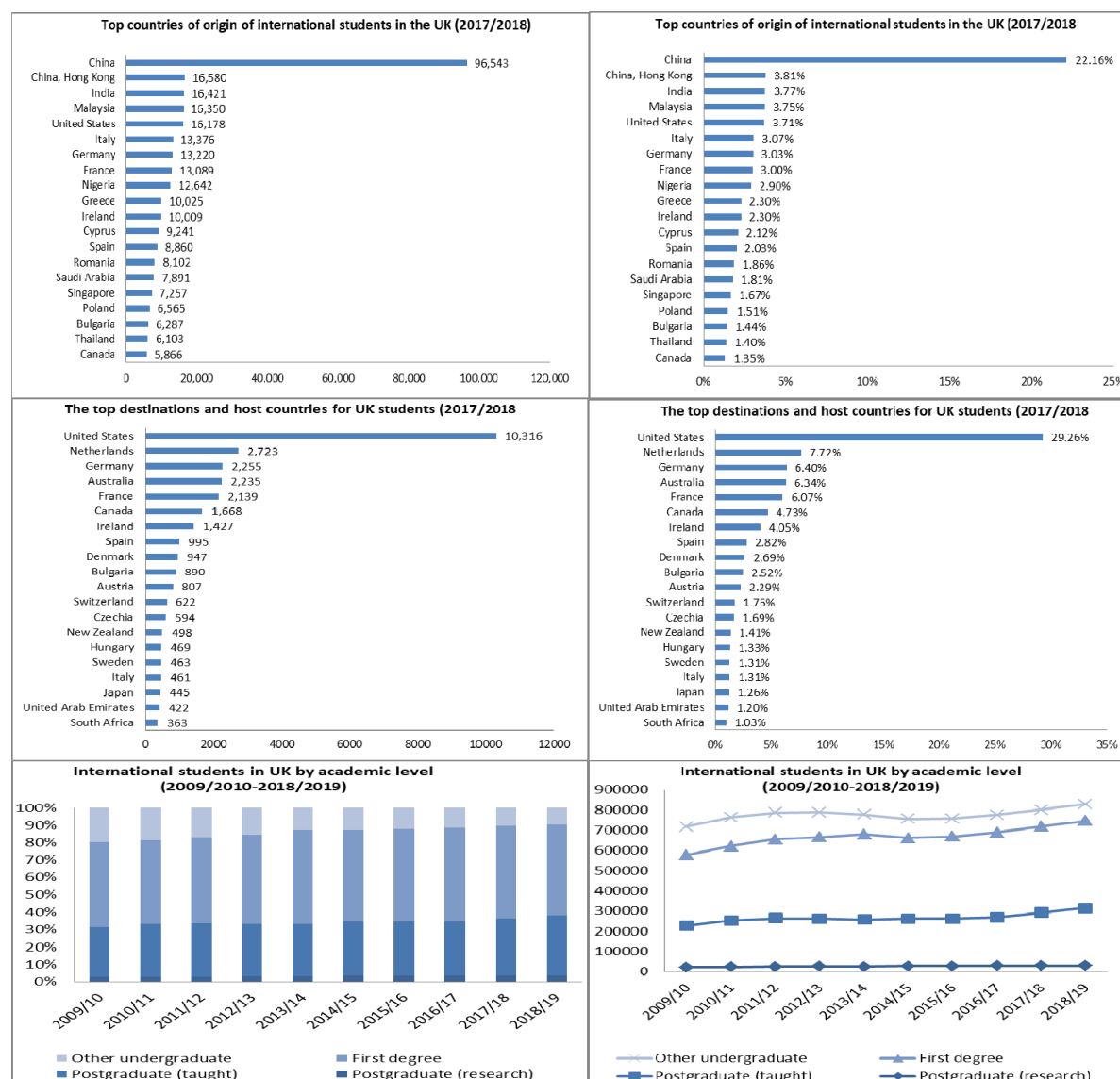
The distribution of international students in the UK by academic level implies that the majority of international students in the UK were studying at the undergraduate level. Statistically, 56% (255,785) of all international students in UK were enrolled in an undergraduate course. 104,555 of these students were first-year students, as opposed to 151,145 students who were studying at higher years. Postgraduate students, on the other hand, share 44% of the international student population in UK. Out of 202,785 international postgraduate students, 143,130 were first-year students while the remainder of 59,660 students was studying at higher years. (See Figure 5)

Universities in UK International Facts and Figures (2019) indicate that the UK higher education is a global success story. UK universities are worldrenowned for their quality, diversity and impact and internationalisation that is central to this success. International staff and students make a vital contribution to the UK's academic community, while global partnerships in research and teaching enhance UK influence and impact. Universities in UK International Facts and Figures (2019) present a snapshot of the international dimensions of UK higher education. The report looks at the number of international students choosing to study in the UK, where they come from, at what level and which subjects they study, the international academic and non-academic staff living and working in the UK, where they come from, and what they do, the UK sector's provision for outward student mobility, the UK's transnational education offer across the world, the international

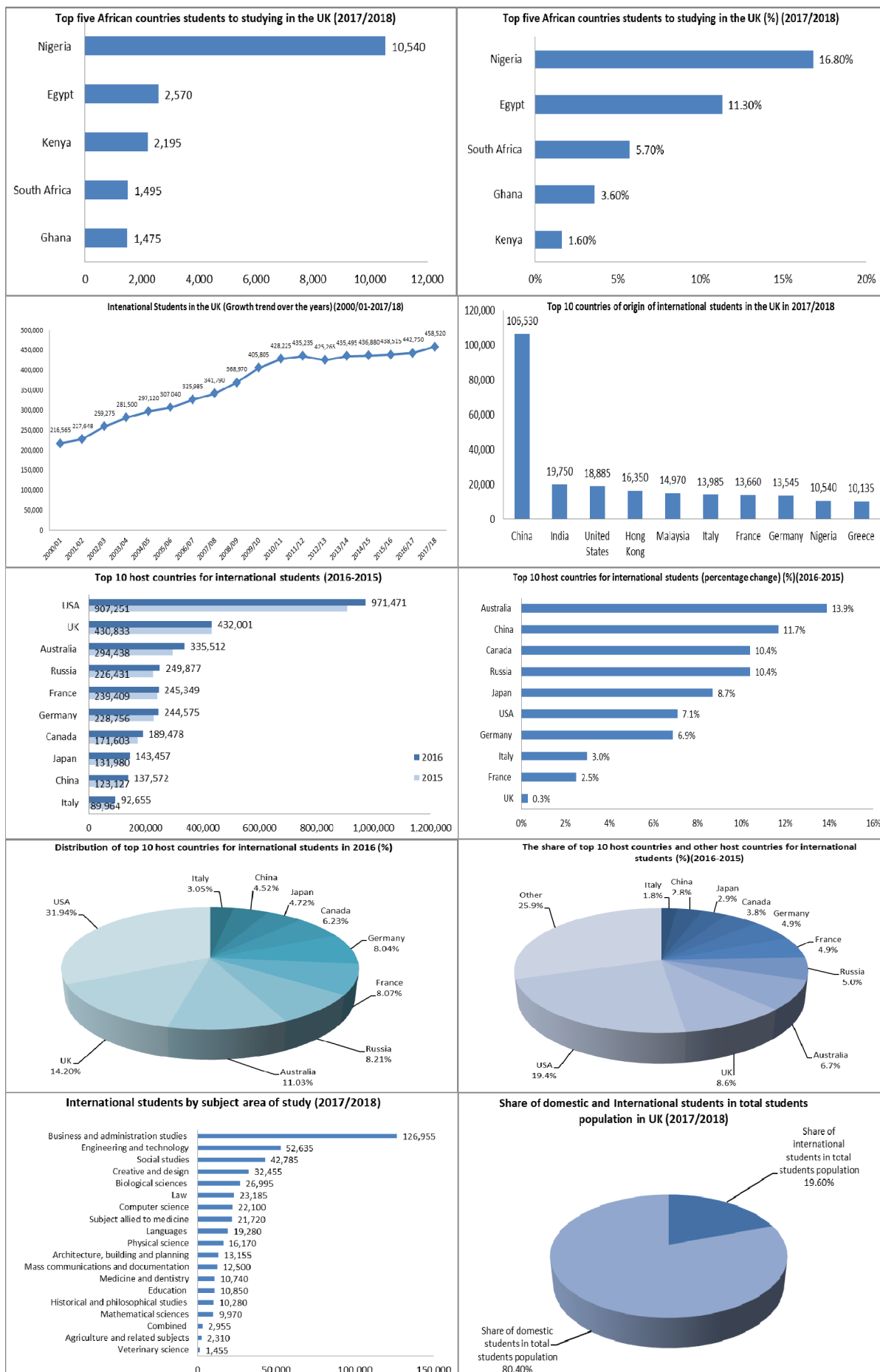
¹⁶ See UNESCO (2020), see also International Facts and Figures 2019, Universities in UK International, p. 32.

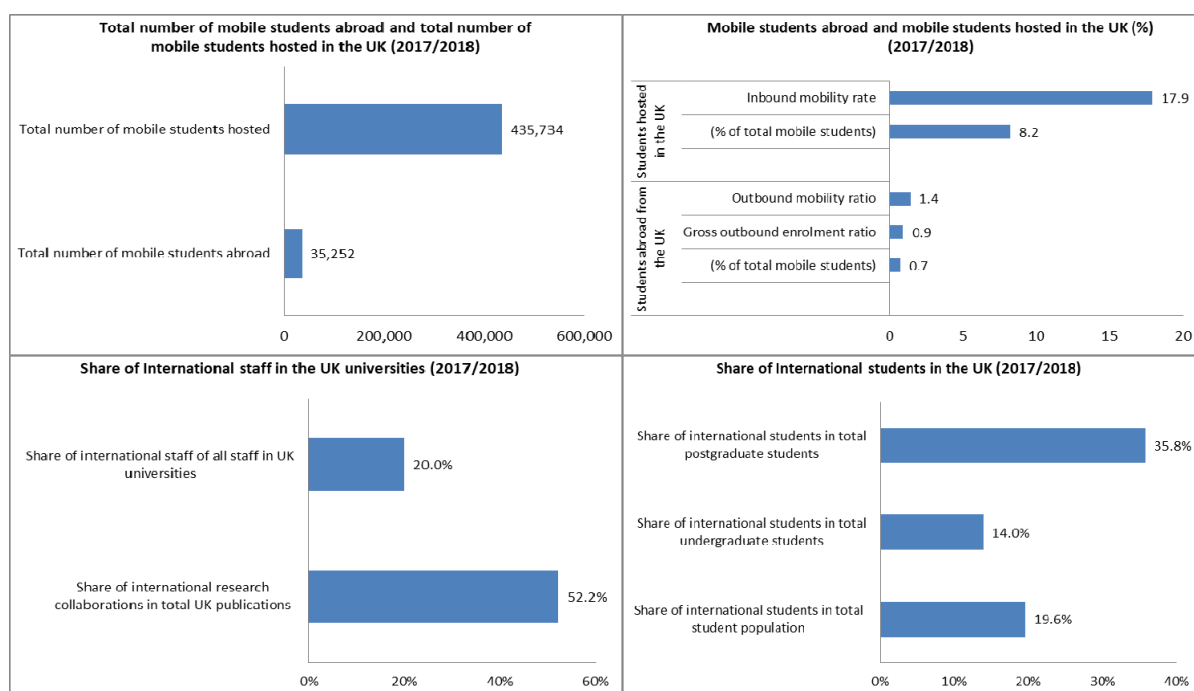
research collaborations and funding, the levels of engagement and collaboration by region. The report indicates significant contribution of the international students, for instance, the estimated transnational education of students studying for a UK degree overseas is 693,695 students, and the international students make up 19.6% of the total student population; 14% of all undergraduates and 35.8% of all postgraduates. The outward student mobility implies that 7.8% of undergraduate students study, work or volunteer overseas as part of their degree. The international research collaborations implies significant contribution of international staff, for instance, 55.2% of all UK publications are the product of international research collaborations and 20% of all staff at UK universities are international.¹⁷ The UK Government has recognised the importance of internationalisation in the International Education Strategy and the International Research and Innovation Strategy, which is an encouraging sign, and necessary particularly in the context of challenges posed by Brexit, the report finds that it is now more important than ever for the sector to do what it does best—be open to the world, and innovative in internationalisation.

Figure 4- International students in the UK Growth trend over the years (2000/2001-2017/2018)



¹⁷ See Universities in UK International Facts And Figures (2019), July, 2019, p. 2. <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/Intl-facts-figs-19.aspx>, Access on February 02, 2020.





Sources: UNESCO (2020), (2) International Student Statistics in UK 2020: Studying-in-UK.org
<https://www.studying-in-uk.org/wp-content/uploads/2018/07/International-students-in-UK.png>, Access on February 02, 2020.

4.2. Pattern, causes and consequences of migration of higher education students from North Africa countries from regional perspective

This section discusses the major development concerning the pattern, size, trend and distribution of migration of higher education students from North Africa countries in the UK and world countries, and examines the push-pull factors (economic, political, cultural and educational) causes and consequences of migration of higher education students from the North Africa region. This section aims to investigate if the various valuable explanations and interpretations of the causes, motivations, determinants and implication of international students mobility presented in the previous international studies in the international literature as presented in the previous section are also applicable to North Africa, and to show the impacts of international students in the UK.

4.2.1. Pattern of migration of higher education students from North Africa countries from regional perspective:

Our results discussed in this section are consistent with the results in the international literature on the evolution and development of migration of higher education students that implies that the international flow of students is not a new phenomenon since long, the North Africa countries like most other world countries experienced highly skilled emigration, and in recent years the trend has been more visible in North Africa and other world countries despite the fact that its higher education sector is expanding in North Africa and other world countries.

The UNESCO– UIS (2017; 2020) provides useful indicators on migration of higher education students measured by several mobility indicators, including total outbound mobility ratio, gross outbound enrolment ratio, outbound mobility ratio, inbound mobility ratio and net flow of internationally mobile students (inbound - outbound) for all world countries and regions that allows comparison between North Africa region with other world regions over the period (2000-2015).¹⁸ For instance, data from UNESCO– UIS (2017) implies that the

¹⁸ Total outbound internationally mobile students is defined as the students who have crossed a national or territorial border for the purpose of education and are now enrolled outside their country of origin. Gross outbound enrolment ratio is defined as the total number of students

total number of both total outbound mobility and total inbound mobility in North Africa are less than all World regions (2000-2015)). For instance, we observe that with a population of 236.726 million people and average GDP per capita of PPP\$ 9.698, the North Africa region is ranked at the bottom place globally in terms of total outbound mobility ratio and migration of higher education students from the North Africa region compared to world regions in 2015. We find that in 2014 the total number of outbound internationally mobile tertiary students studying abroad from low income countries, lower middle income countries, middle income countries, upper middle income countries, high income countries, Sub-Saharan Africa, Africa and developing countries is nearly two times, seven times, twenty times, thirteen times, nine times, two times, three times and more than twenty times above the level of North Africa respectively. (See Tables 3-4 and Figures 5-6).

When comparing the trend for North Africa we find that North Africa shows increasing trends in terms of total outbound mobility ratio and gross outbound enrolment ratio, Tables 3-5 illustrates the increasing trend in total outbound mobile students from the North Africa region studying abroad over the period (1999-2017/18) that increased substantially from 75453 in 1999 to 125064 in 2015 and to 145,741 in 2017/18. Table 5 illustrates that total outbound mobility ratio and gross outbound enrolment ratio are nearly doubled over the period (1999-2017/18), mainly, total outbound students from North Africa studying abroad increased substantially from 17522 in 1999 to 20493 in 2015, while, in North African outbound mobility ratio show declining trends over the period (1999-2017/18). We find that in terms of inbound mobility ratio North Africa (See Tables 3-4). In 2017/18 gross outbound enrolment ratio in North Africa (1.35) is nearly double above gross enrolment ratio in 1999 (0.66), over the period (2000-2014). Outbound mobility ratio declined from 4.97 in 1999 to 2.290 in 2013, but then increased to 3.98 in 2017/18. Inbound mobility ratio declined from 1.64 in 1999 to 0.56 in 2012, but then increased to 1.63 in 2017/2018. Outbound mobility ratio increased from 75453 in 1999 to 125064 in 2017/18.

When investigating the intra-regional mobility indicators within the North Africa region, we find considerable intra-regional variation within the North Africa region that appears in terms of various mobility indicators, including total outbound mobility ratio, gross outbound enrolment ratio, outbound mobility ratio, inbound mobility ratio and net flow of internationally mobile students (inbound - outbound) over the period (1999-2017/18). For instance, the distribution of total outbound internationally mobile tertiary students studying abroad over the period (2000-2017) implies that Morocco (43.07%) is ranked at the top, followed by Algeria (0.88%), Tunisia (15.73%), Egypt (13.53%), Libya (4.76%), and Sudan (2.03%) respectively. The distribution of gross outbound enrolment ratio implies that Tunisia (1.86%) is ranked at the top, followed by Libya (1.48%), Morocco (1.35%), Algeria (0.57%), Egypt (0.29%), and Sudan (0.25%) respectively. The distribution of total outbound mobility ratio over the period (2000-2017/18) implies that Tunisia (5.37%) is ranked at the top, followed by Morocco (5.35%), Algeria (1.64%), Sudan (1.54%), and Egypt (0.92%) respectively. The distribution of inbound mobility ratio over the period (1999-2015) implies that Egypt (1.88%) is ranked at the top, followed by Tunisia (1.85%), Morocco (1.80%), and Algeria (0.64%) respectively. The distribution of studnets hosted inbound mobility ratio in North Africa in (2017/2018) implies that Tunisia (2.3%) is ranked at the top, followed by Morocco (1.9%), Egypt (1.8%) and Algeria (0.5%) respectively. The distribution of inbound

from a given country studying abroad, expressed as a percentage of the population of tertiary age in that country. Net flow of internationally mobile students is defined as the difference between (inbound - outbound). Outbound and inbound internationally mobile students are students who have crossed a national or territorial border for the purpose of education and are now enrolled outside their country of origin. Inbound mobility ratio is defined as the 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 as the n number of students from a given country studying abroad, expressed as a percentage of total tertiary enrolment in that country.

mobility ratio over the period (2000-2017/18) implies that Egypt (59%) is ranked at the top, followed by Morocco (24%), Algeria (10%), and Tunisia (7%) respectively.

Moreover, we observe that the increasing trend in total outbound mobile students from the North Africa region studying abroad over the period (1999-2015) varies enormously across the different North Africa countries as explained below. These results support the first hypothesis that the international students from the North Africa region increased substantially over the past years but this increasing trend varies enormously across the different North Africa countries (see Tables 3-4 and Figures 5-6).

Table 3 –The total number of outbound mobility ratio in North Africa compared to all World regions (1999-2017/18))

Country\ Time	1999	2000	2005	2010	2011	2012	2013	2014	2015	2017/ 2018	2000- 2017	2000- 2017
North Africa												(%)
Algeria	17522	16427	24780	22847	23956	24773	20827	20385	20493	25,729	351035	20.88%
Egypt	8632	8802	9621	14320	15234	16696	20007	23475	24970	34,922	227511	13.53%
Libya	1752	1771	3603	7390	7456	6795	5646	7615	8209	11,574	80100	4.76%
Morocco	38167	42751	46016	42845	43509	43999	39443	42262	43148	51,164	724280	43.07%
Sudan	..	..	..	..	7196	7955	9300	9755	10058		34206	2.03%
Tunisia	9380	10286	15038	19725	19503	19026	16851	17825	18186	22,352	264460	15.73%
Total North Africa	75453	80037	99058	107127	116854	119244	112074	121317	125064	145,741	1681592	
World Regions	..	..	..	..	..	..	..	..	..			
Developed countries	594920	606484	661606	730419	767626	791139	810321	822143	..			
Developing countries	971301	1033288	1617095	2183331	2318921	2343225	2374405	2533945	..			
Countries in transition	158666	168842	232058	329486	354868	353269	380816	431320	..			
Arab States	169833	177310	219934	277602	298491	326349	346535	391977	..			
Central and Eastern Europe	216259	241882	334389	409926	428193	425452	421528	427342	..			
Central Asia	57160	55742	83916	133028	147245	150382	174591	219683	..			
East Asia and the Pacific	426225	438074	759333	994535	1081120	1116774	1129319	1174419	..			
Latin America and the Caribbean	112202	124289	163720	215877	212768	211388	214744	227110	..			
North America and Western Europe	486915	490446	490411	562626	596457	618469	637490	638803	..			
South and West Asia	114655	123404	234623	369058	377411	365096	366009	408162	..			
Sub-Saharan Africa	141638	157467	224431	280584	299730	273723	275325	299911	..			
Northern Africa	75453	80037	99058	107126	109658	111289	102774	111563	..			
UNESCO Regions	..	..	..	..	..	..	..	..	..			
Africa	227384	247958	335209	400292	422074	398202	392600	427311	..			
Asia	771531	791394	1286600	1752138	1877205	1927147	1987256	2145310	..			
Europe	555103	574718	639270	775453	825712	845775	862940	878876	..			
North America	123013	130713	171003	188598	186242	188766	193437	197379	..			
South America	63228	70106	90954	133352	135047	131580	133546	143961	..			
Oceania	19395	20247	22914	27744	28007	28461	29400	29883	..			
World Bank Regions	..	..	..	..	..	..	..	..	..			
Low income countries	75776	81069	111055	161023	175011	162317	168701	185317	..			
Lower middle income countries	343356	378834	575437	790687	814907	798096	818662	904657	..			
Middle income countries	893861	958895	1551634	2096814	2235857	2264319	2312244	2504779	..			
Upper middle income countries	550505	580061	976197	1306126	1420950	1466223	1493582	1600122	..			
High income countries	789583	794752	882753	1019179	1062955	1092806	1117364	1131896	..			

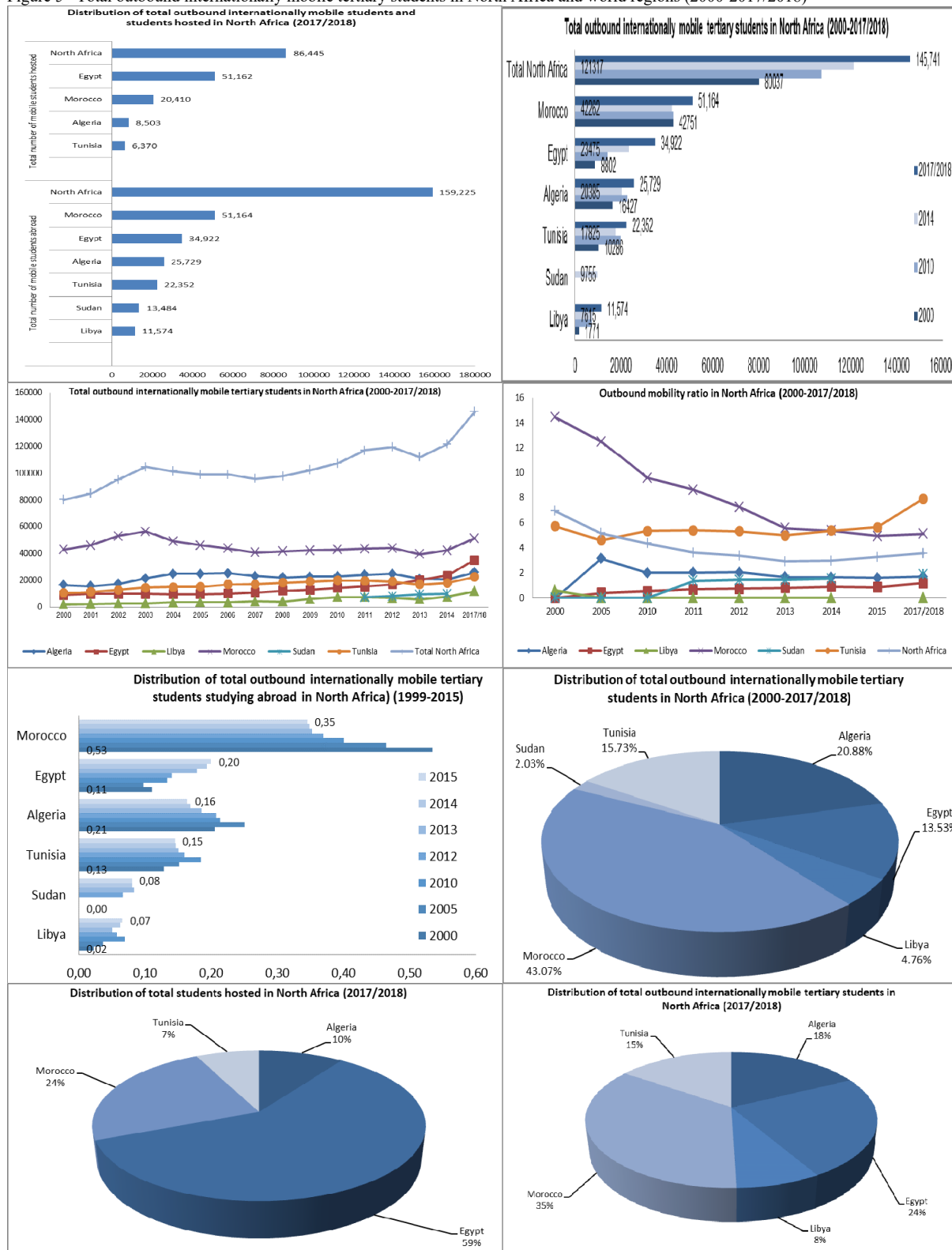
Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

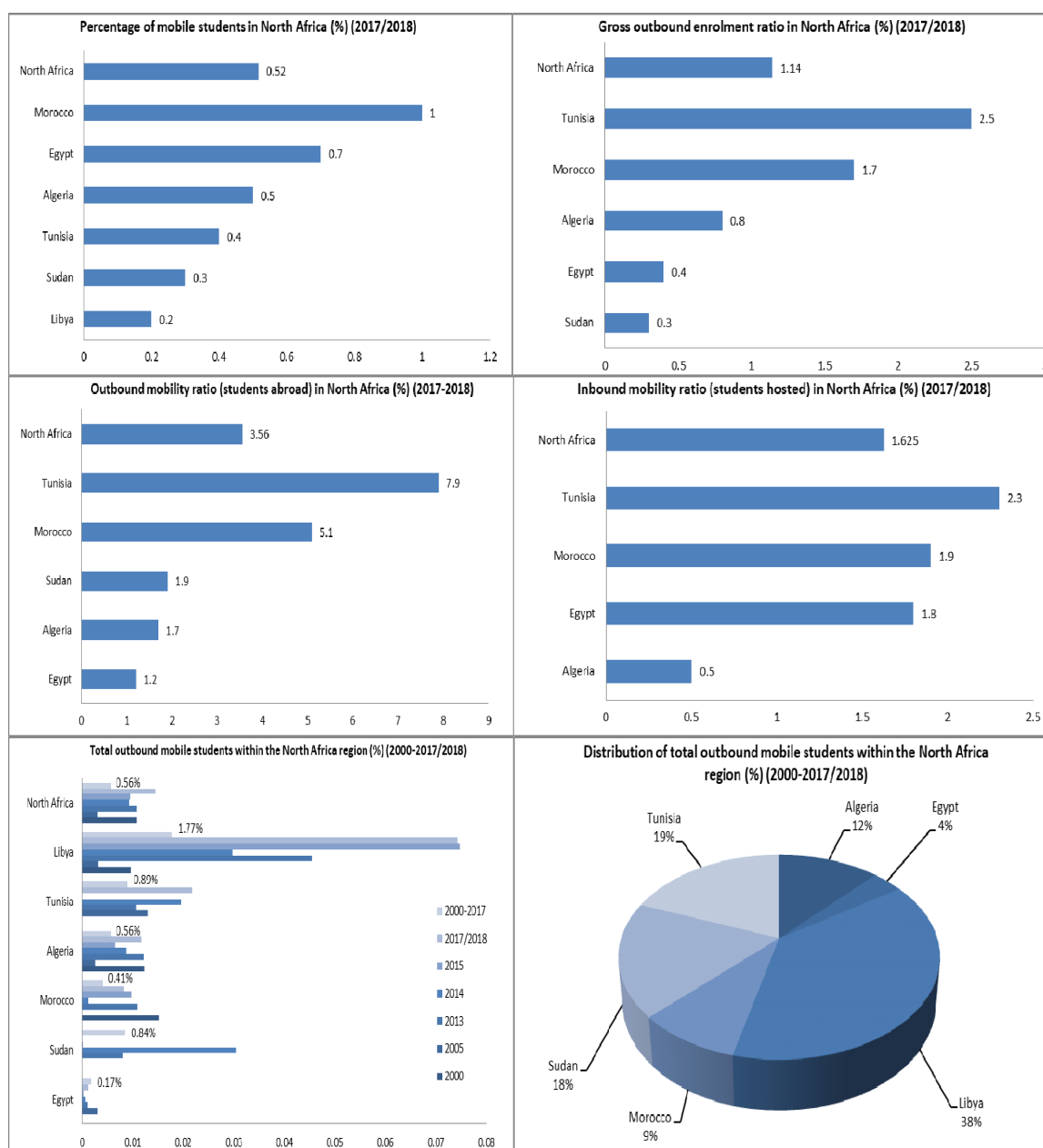
Table 4 – Mobility indicators: gross outbound enrolment ratio, outbound mobility ratio, inbound mobility ratio and net flow of internationally mobile students (inbound - outbound) in North Africa and South Africa (1999-2017/18) (%)

Country/Time	1999	2000	2005	2010	2011	2012	2013	2014	2015	2017/2018
Gross outbound enrolment ratio										
North Africa										
Algeria	0,52	0,48	0,65	0,60	0,63	0,66	0,56	0,57	0,59	0.8
Egypt	0,13	0,13	0,12	0,17	0,18	0,20	0,24	0,29	0,32	0.4
Libya	0,30	0,30	0,57	1,18	..	..	..	1,48	..	...
Morocco	1,34	1,47	1,47	1,38	1,39	1,40	1,25	1,35	1,38	1.7
Sudan	..	..	..	..	0,20	0,22	0,25	0,25	..	...
Tunisia	1,02	1,10	1,46	1,87	1,88	1,87	1,71	1,86	1,95	2.5
North Africa	0,66	0,69	0,86	1,04	0,86	0,87	0,80	0,97	1,06	1.35
Outbound mobility ratio										
North Africa										
Algeria	3,84	..	3,13	2,00	2,02	2,05	1,66	1,64	1,59	1.7
Egypt	0,42	..	0,41	0,54	0,68	0,73	0,81	0,92	0,87	1.2
Libya	0,57	0,61	..	..	..	..	..	..	..	...
Morocco	13,97	14,46	12,52	9,58	8,61	7,26	5,57	5,35	4,92	5.1
Sudan	..	..	..	..	1,37	1,44	1,45	1,54	..	...
Tunisia	6,05	5,71	4,60	5,33	5,39	5,32	4,99	5,37	5,64	7.9
North Africa	4,97	6,93	5,16	4,36	3,61	3,36	2,90	2,97	3,25	3.98
Inbound mobility ratio										
North Africa										
Algeria	..	..	0,67	0,57	0,55	0,60	0,59	0,64	0,62	0.5
Egypt	..	..	1,31	1,85	..	..	1,78	1,88	..	1.8
Libya	..	..	..	..	..	..	..	..	..	...
Morocco	1,53	1,52	1,35	1,92	..	..	1,41	1,80	..	1.9
Sudan	..	..	..	..	..	..	..	..	..	...
Tunisia	1,75	1,53	..	0,60	0,56	0,53	1,85	..	2,00	2.3
North Africa	1,64	1,53	1,11	1,24	0,56	0,56	1,41	1,44	1,31	1.63
Total outbound mobility ratio										
North Africa										
Algeria	17522	16427	24780	22847	23956	24773	20827	20385	20493	
Egypt	8632	8802	9621	14320	15234	16696	20007	23475	24970	
Libya	1752	1771	3603	7390	7456	6795	5646	7615	8209	
Morocco	38167	42751	46016	42845	43509	43999	39443	42262	43148	
Sudan	..	..	..	..	7196	7955	9300	9755	10058	
Tunisia	9380	10286	15038	19725	19503	19026	16851	17825	18186	
Total North Africa	75453	80037	99058	107127	116854	119244	112074	121317	125064	
North Africa										
	Students abroad:		Students hosted:							
	Total number of mobile students abroad	(% of total mobile students)	Total number of mobile students hosted	(% of total mobile students)						
Algeria	25,729	0.5	8,503	0.2						
Egypt	34,922	0.7	51,162	1						
Libya	11,574	0.2	...	...						
Morocco	51,164	1	20,410	0.4						
Sudan	...	...	...	...						
Tunisia	22,352	0.4	6,370	0.1						
Total North Africa	145,741	0.56	86,445	0.425						
Net flow of internationally mobile students (inbound - outbound)										
North Africa										
Algeria			-19437,219	-16302,671	-17427,158	-17561,652	-13424,23	-12432,417	-12526,231	
Egypt			21101,837	34691,344			23986,255	24340,448		
Morocco	-33977	-38248,857	-41057,503	-34241,023			-29492,736	-28042,25		
Tunisia	-6661	-7529,7143		-17521,55	-17470,913	-17125,167	-10615,154		-11744,098	
North Africa	-40638	-45778,571	-39392,886	-33373,9	-34898,071	-34686,818	-29545,864	-16134,219	-24270,329	

Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

Figure 5 –Total outbound internationally mobile tertiary students in North Africa and world regions (2000-2017/2018)





Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

The UNESCO– UIS (2020) provides useful indicators on the distribution of internationally mobile tertiary or higher education students from the North Africa region and all world regions by host countries for the period (2000-2017/2018), implies several stylized facts. For instance, the distribution of the international students from North Africa studied and hosted by other World regions over the period (2000-2017/2018) implies heavy concentration of North Africa students studied abroad in few countries, for instance, the majority or more than three quarter (80%) of North Africa students studied abroad studied in eight countries. In particular, the majority of North Africa students studied abroad studied in the OECD (North America and Western Europe and Canada) (80%). This implies that different the main destination countries for internationally mobile tertiary students from North Africa includes for instance more than half of North Africa students studied in France (55.4%), followed by Germany (7.78), United States of America (4.48%), United Kingdom of Great Britain and Northern Ireland (3.19%), Canada (2.99%), Spain (2.63%), Belgium (1.92%), and Italy (1.68%) over the period (2000-2017/2018)

respectively. We observe limited intra-regional movement of outbound mobility within North Africa (0.56%) (mainly, Libya (1.77%), Tunisia (0.89%), Sudan (0.84%), Algeria (0.56%), Morocco (0.41%), and Egypt (0.17%) respectively). We find that the distribution of total students hosted in North Africa (2017/2018) implies that more than half is concentrated in Egypt which is ranked at the top (59%), followed by Morocco (24%), Algeria (10%) and Tunisia (7%) respectively.

We observe that few and less than 3.22 per cent of North Africa students studied in the United Kingdom of Great Britain and Northern Ireland over the period (2000-2017). We find that the total number of internationally mobile tertiary students from North Africa in the United Kingdom of Great Britain and Northern Ireland increased substantially by more than double from 1904 in 2000 to 4634 in 2017/2018. We find that the distribution of internationally mobile tertiary students from North Africa in the United Kingdom of Great Britain and Northern Ireland implies that the majority and nearly one third of North Africa students from Libya (29.66%), followed by nearly tenth from Egypt (8.23%), followed by Sudan (2.57%), Algeria (1.46%), Morocco (0.59%) and Tunisia (0.48%). We find that the trend of internationally mobile tertiary students from North Africa in the United Kingdom of Great Britain and Northern Ireland during the period (2000-2017/2018) implies significant increasing trend from 2.38% in 2000 to 4.50% in 2010, but some fluctuations over the period between (2010-2017/2018) from 4.50% in 2010 to 3.18% in 2017/2018. (See Table 5 and Figure 6-7)

We observe slight decrease in the share of North Africa students studied in North America and Western Europe from (84.61%) in 2000 to (82.92%) and (67.05%) in 2010 and 2017/2018 respectively. These results are consistent with the findings in Nour (2014), which imply that in 2010 the UK, USA, France, Germany, and Australia receive around and 77% of international Maghreb students respectively, and also consistent with the findings in Nour (2019), which imply that in 2014 the OECD (North America and Western Europe and Canada) receive around and 76% of the North Africa students. It is worthy to note that intra-regional mobility of students, between North Africa countries, is significantly weaker than the international mobility of North Africa students (see Table 5). Regional mobility within the North Africa region is generally limited to Tunisia, Morocco and Egypt. For instance, of all North Africa students, only 0.56% move within the North Africa region within North Africa (0.56) (mainly, Libya (1.77%), Tunisia (0.89%), Sudan (0.84%), Algeria (0.56%), Morocco (0.41%), and Egypt (0.17%) respectively). This implies that in total, only 0.56% are moving in all North African countries compared to 80% moving in the OECD (North America and Western Europe and Canada). Our results in this paper for 2015 are quite consistent with the earlier results over the periods (2010) and (1999-2004) and (2010) that discussed in Nour (2011, 2014) that find that the UK, US, France, Germany, and Australia receive around 82% of international North Africa, mainly, Maghreb students.¹⁹

These results support the first hypothesis that the international students from the North Africa region increased substantially over the past years but this increasing trend varies enormously across the different North Africa countries. We find that destination also strongly varies with origin. international students from the Maghreb to OECD countries is strongly concentrated toward Continental Europe, while emigration from the other Egypt and Sudan countries is focused on Anglo-Saxon countries and more recently on Arab Gulf countries. This second stylized fact suggests that past colonial links and common language are strong pull factors.

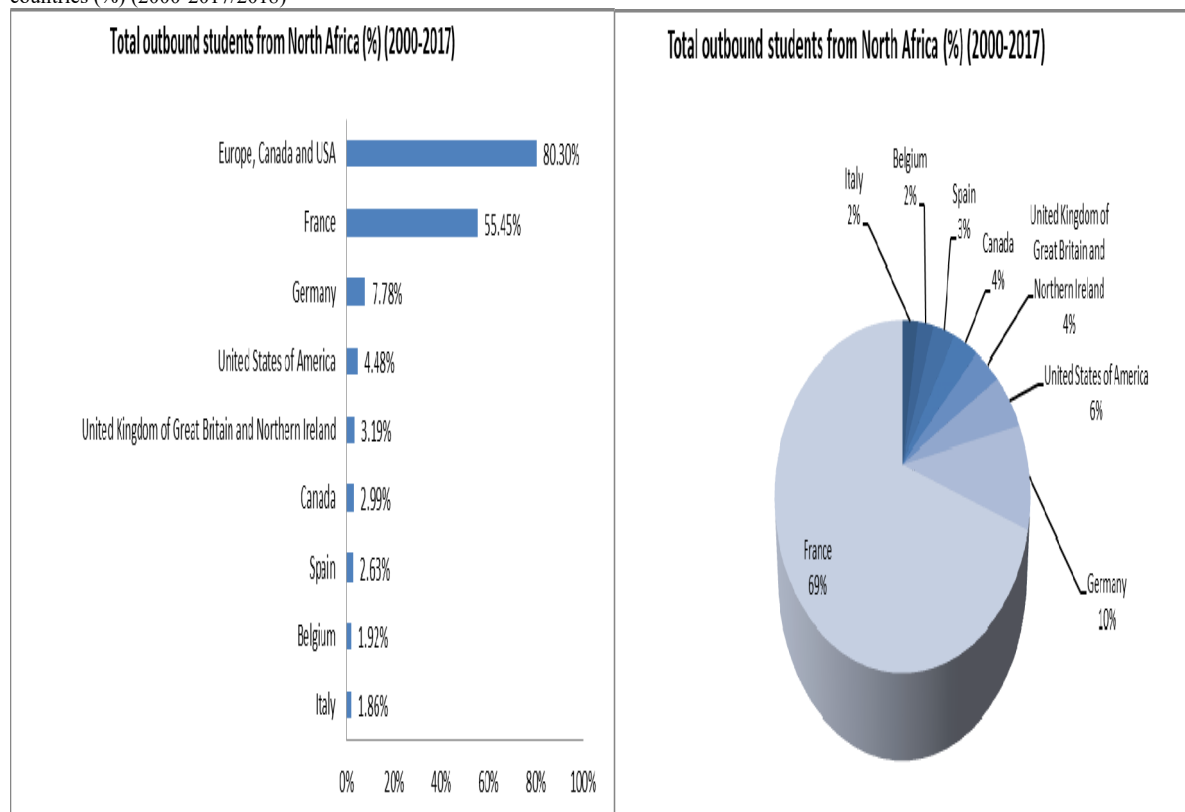
¹⁹ See Nour (2014), pp. 14-15, Nour (2011), pp. 412-414.

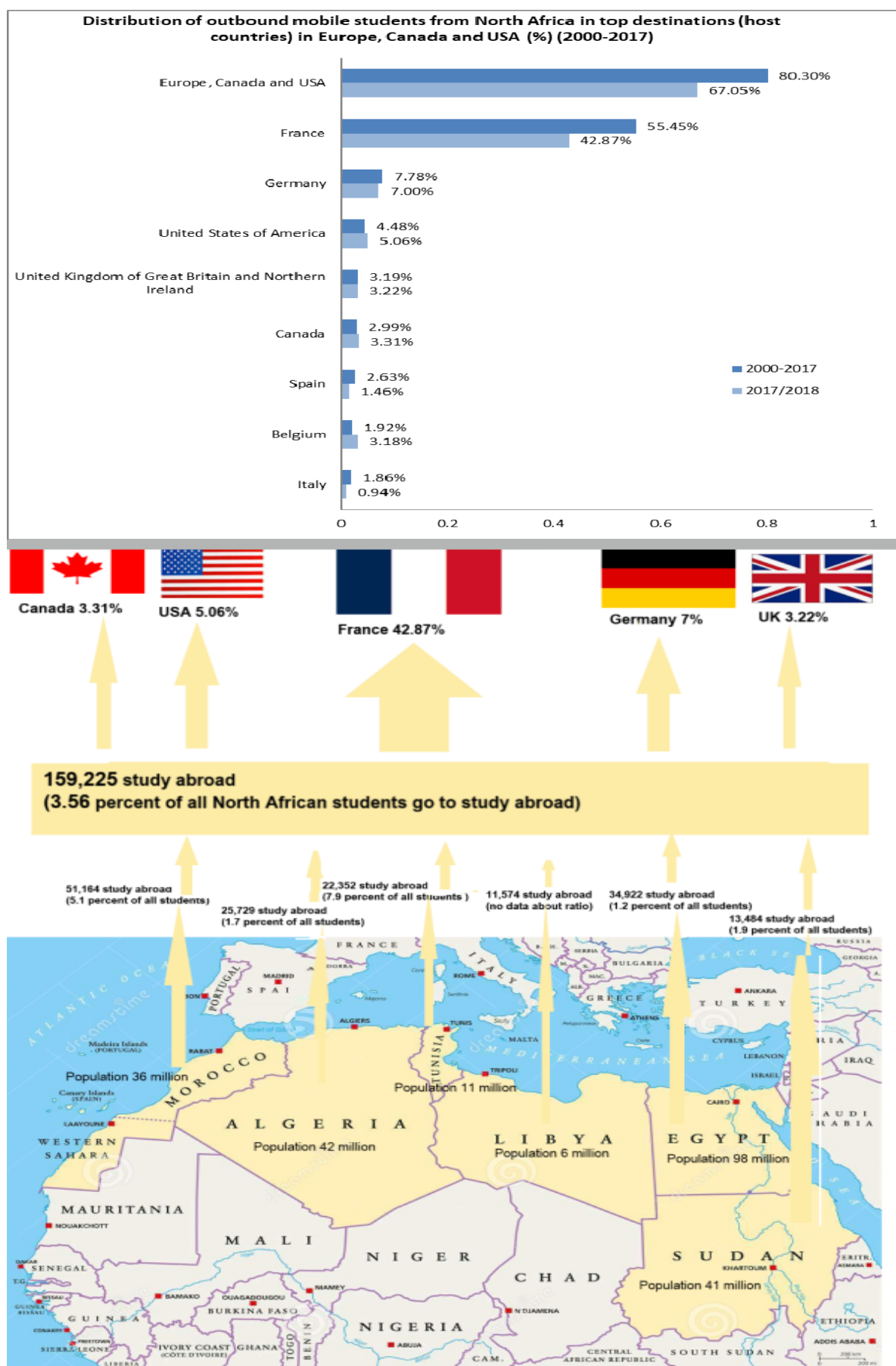
Table 5– Distribution of outbound mobile students within North Africa, from North Africa in top destinations (host countries) and the UK (%) (2000-2017/2018)

	2000	2005	2010	2011	2012	2013	2014	2017/2018	2000-2017
Outbound mobile students from North Africa in top destinations (host countries)									
France	51.81%	63.57%	56.69%	53.56%	53.10%	46.17%	43.55%	42.87%	55.45%
Germany	10.84%	11.95%	7.09%	0.00%	0.00%	5.43%	5.40%	7.00%	7.78%
United States of America	4.81%	3.79%	4.57%	4.55%	4.58%	5.18%	5.04%	5.06%	4.48%
United Kingdom of Great Britain and Northern Ireland	2.38%	2.93%	4.50%	3.69%	3.22%	3.16%	3.45%	3.22%	3.19%
Canada	2.32%	2.30%	3.47%	3.02%	3.01%	3.26%	0.00%	3.31%	2.99%
Spain	4.30%	1.59%	3.56%	2.96%	2.95%	3.04%	0.00%	1.46%	2.63%
Belgium	7.62%	0.12%	0.35%	0.37%	0.32%	1.22%	1.03%	3.18%	1.92%
Italy	0.53%	1.43%	2.70%	2.81%	2.94%	2.84%	3.17%	0.94%	1.86%
Europe, USA, Canada	84.61%	87.67%	82.92%	70.96%	70.12%	70.30%	61.64%	67.05%	80.30%
Outbound mobile students from North Africa in the United Kingdom of Great Britain and Northern Ireland									
	2000	2005	2010	2011	2012	2013	2014	2017/2018	2000-2017
Algeria	1.62%	2.20%	1.04%	0.78%	0.74%	0.86%	1.14%	1.31%	1.47%
Egypt	10.85%	8.36%	9.75%	7.38%	6.92%	6.04%	6.02%	6.57%	8.23%
Libya	27.78%	36.25%	38.25%	35.18%	25.83%	24.42%	21.25%	10.27%	29.66%
Morocco	0.37%	0.40%	0.62%	0.68%	0.77%	1.02%	1.24%	1.31%	0.59%
Sudan	n.a.	n.a.	n.a.	n.a.	4.12%	2.94%	2.84%	n.a.	2.57%
Tunisia	0.32%	0.43%	0.48%	0.42%	0.42%	0.55%	0.66%	0.64%	0.48%
Total North Africa	2.38%	2.93%	4.50%	3.69%	3.22%	3.16%	3.45%	3.18%	3.22%
Outbound mobile students within the North Africa Region									
	2000	2005	2009	2010	2013	2014	2015	2017/2018	2000-2017
Algeria	1.22%	0.25%	0.41%	0.35%	1.21%	0.87%	0.64%	1.17%	0.56%
Egypt	0.00%	0.30%	1.21%	0.15%	0.10%	0.06%	0.03%	0.11%	0.17%
Libya	0.96%	0.31%	0.81%	2.29%	4.55%	2.97%	7.48%	7.43%	1.77%
Morocco	1.52%	0.00%	0.00%	0.00%	1.09%	0.12%	0.97%	0.82%	0.41%
Sudan	n.a.	n.a.	n.a.	n.a.	0.80%	3.04%	0.02%	n.a.	0.84%
Tunisia	0.00%	1.29%	0.80%	0.84%	1.07%	1.95%	0.00%	2.18%	0.89%
North Africa	1.08%	0.30%	0.44%	0.41%	1.08%	0.92%	0.94%	1.45%	0.56%

Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

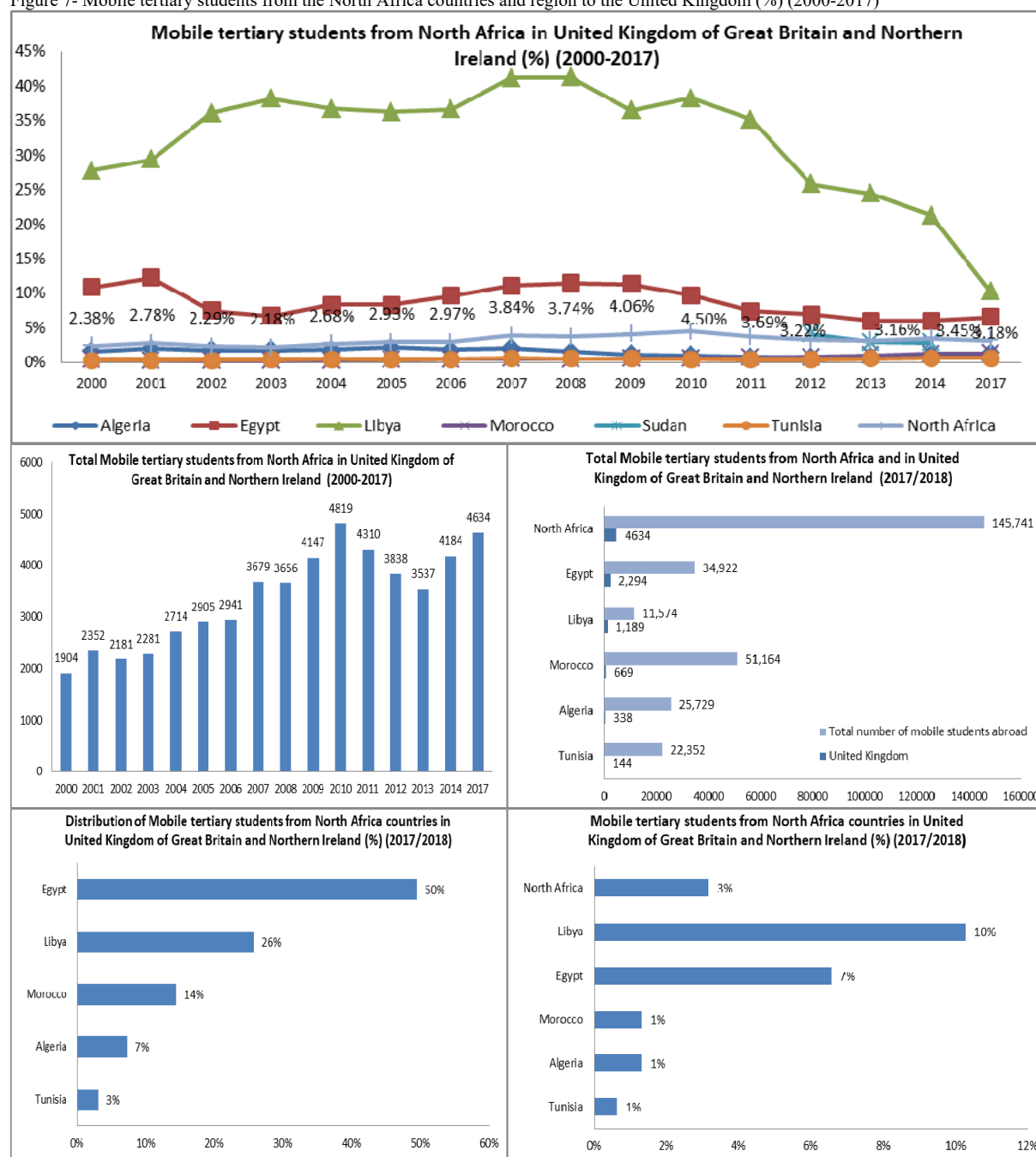
Figure 6 - Distribution of outbound mobile students within North Africa, from North Africa in top destinations (host countries) and in Nordic countries (%) (2000-2017/2018)





Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

Figure 7- Mobile tertiary students from the North Africa countries and region to the United Kingdom (%) (2000-2017)



Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

4.2.2. Pattern of migration of higher education students from North Africa countries from national perspective: Profile of migration of higher education students from North African Countries:

This section examines the major development concerning the pattern, size, trend and distribution of migration of higher education students from North Africa countries from national perspective.

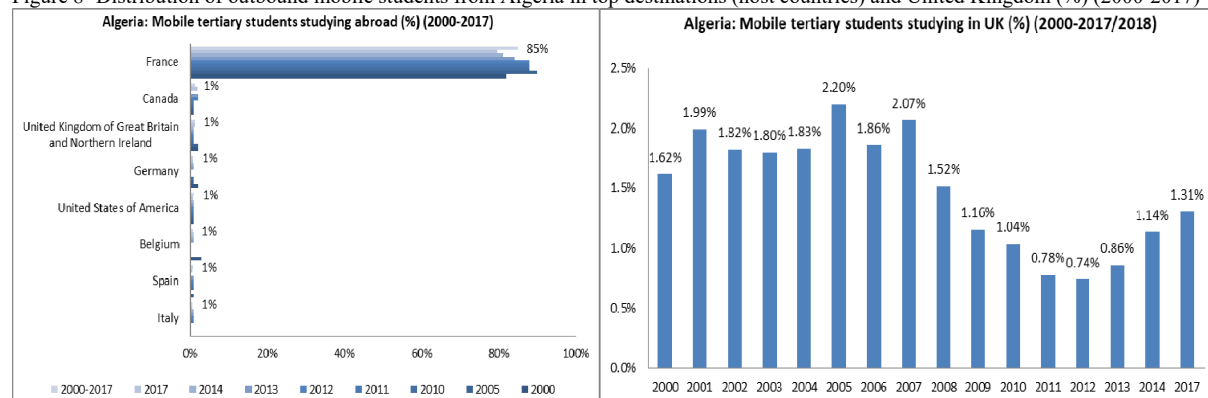
4.2.2.1 Algeria

The UNESCO– UIS (2020) provides useful indicators on the distribution of internationally mobile tertiary or higher education students from Algeria and all world regions by host countries for the period (2000-2017/2018), implies several stylized facts. For instance, we find that with a population of 42.23 million and GNI per capita of

PPP\$ 13,639, Algeria shows increasing trends in terms of total outbound mobility ratio and gross outbound enrolment ratio, total outbound mobility ratio and gross outbound enrolment ratio are increased substantially over the period (2000-2017/2018), mainly, total outbound students from Algeria studied abroad increased substantially from 16427 in 2000 to 25,729 in 2017/2018. Different from other North African countries in Algeria both inbound mobility ratio and outbound mobility ratio show declining trends over the period (2000-2017/2018) (see Table 6). Globally, as upper-middle income Algeria is ranked below to its peers upper-middle income world countries. Regionally, Algeria is ranked third in terms of outbound mobility ratio, ranked fourth in terms of gross outbound enrolment ratio and inbound mobility ratio, and ranked third in terms of total outbound mobility ratio, Algeria contributes 18% of total outbound students mobility ratio from the North Africa region, and it is ranked third in terms of total inbound mobile student hosted in North Africa, Algeria contributes 10% of total inbound students mobility of students hosted in North Africa region in 2017/2018 (see Figure 8) .

According to UNESCO-UIS (2017), internationally mobile tertiary students from Algeria over the period (2000-2017/2018) implies several stylized facts. For instance, the distribution of the international students from Algeria studied abroad and hosted by other World regions over the period (2000-2017/2018) implies heavy concentration of Algerian students studied abroad in few countries, for instance, the majority or more than three quarter (91%) of Algerian students studied abroad studied in eight countries. In particular, the majority of Algerian students studied abroad studied in the OECD (North America, Western Europe and Canada) (91%). This implies that similar to other North African countries the main destination countries for internationally mobile tertiary students from Algeria includes for instance more than three quarter of Algerian students studied in France (85%), followed by Canada (1%), United Kingdom of Great Britain and Northern Ireland (1%), United States of America (1%), Germany (1), Belgium (1%), Italy (1%), and Spain (1%) over the period (2000-2017/2018) respectively. We observe that few and less than one per cent of Algerian students studied abroad studied in Asia, North Africa (mainly, Morocco, Tunisia and Egypt), and South Africa. We observe that few and nearly 1.47 per cent of Algerian students studied in the United Kingdom of Great Britain and Northern Ireland over the period (2000-2017/2018). We find that the trend of mobile tertiary students from Algeria studying in the United Kingdom of Great Britain and Northern Ireland implies an increasing trend from 1.62% in 2000 to 2.2% in 2005 but then decreasing trend from 2.2% in 2005 to 1.31% in 2017/2018, over the period (2012-2017) increasing trend from 0.74% in 2012 to 1.31% in 2017/2018 (see Table 6 and Figure 8).

Figure 8- Distribution of outbound mobile students from Algeria in top destinations (host countries) and United Kingdom (%) (2000-2017)



Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

Table 6- Distribution of outbound mobile students from Algeria in top destinations (host countries) and United Kingdom (%) (2000-2017)

Main indicators									
General socio- economic indicators									
Region	Middle East & North Africa								
Income level:	Upper middle income								
Total population (in thousands)	42.23								
Annual population growth (%)	2.0								
Population 15-24 years (in thousands)	6,595								
Population aged 14 years and younger (in thousands)	11,320								
% of Population 15-24 years (in thousands)	16.6%								
GDP (2015)	619,666.89								
GDP in billions - PPP\$	173.76								
GDP growth (2015)	1.4								
GNI per capita - PPP\$	13639								
Inflation (2015)	7.6								
Government expenditure on education as % of GDP (2008)									
R&D as % of GDP (2005)									
Poverty headcount ratio at 3.10 PPP\$ a day (% of population)	...								
Mobility indicators									
Inbound and outbound mobility indicators									
	2000	2005	2010	2011	2012	2013	2014	2015	2017/ 2018
Total outbound mobility ratio	16427	24780	22847	23956	24773	20827	20385	20493	25,729
Gross outbound enrolment ratio	0,48	0,65	0,60	0,63	0,66	0,56	0,57	0,59	0.8
Outbound mobility ratio	..	3,13	2,00	2,02	2,05	1,66	1,64	1,59	1.7
Inbound mobility ratio	..	0,67	0,57	0,55	0,60	0,59	0,64	0,62	0.5
Net flow of internationally mobile students (inbound - outbound)		-19437,219	-16302,671	-17427,158	-17561,652	-13424,23	-12432,417	-12526,231	
Distribution of outbound mobile students from Algeria in the top destinations (%)									
	2000	2005	2010	2011	2012	2013	2014	2017	2000-2017
France	82%	90%	88%	88%	88%	84%	81%	0.7964	85%
Canada	1%	1%	1%	1%	2%	2%	0%	0.0188	1%
United Kingdom of Great Britain and Northern Ireland	2%	2%	1%	1%	1%	1%	1%	0.0131	1%
Germany	2%	1%	1%	0%	0%	1%	1%	0.0066	1%
United States of America	1%	1%	1%	1%	1%	1%	1%	0.0072	1%
Belgium	3%	0%	0%	0%	0%	1%	1%	0.0099	1%
Spain	1%	0%	1%	1%	1%	1%	0%	0.0055	1%
Italy	0%	0%	0%	1%	1%	1%	1%	0.0062	1%
Total	92%	95%	93%	93%	94%	92%	86%	86%	91%

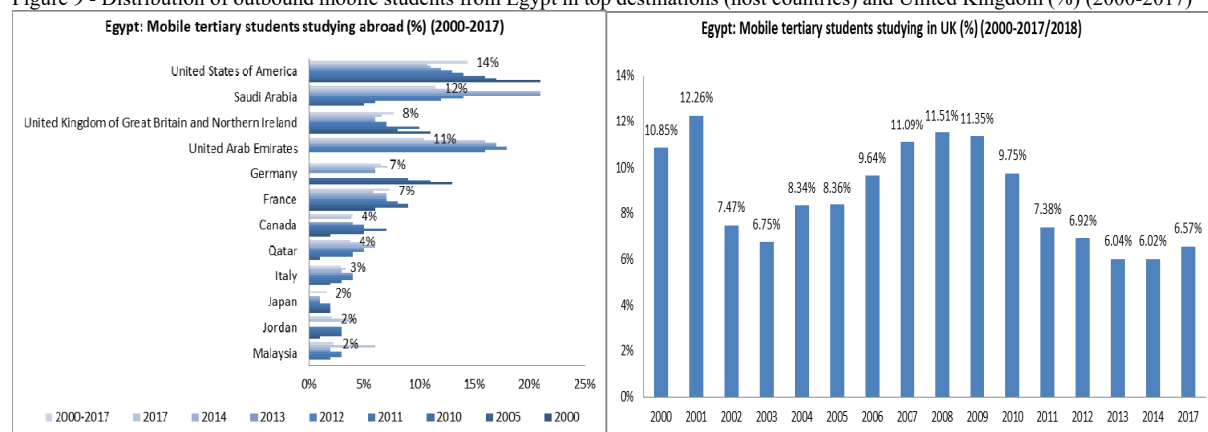
Sources: Adapted from (1) UNESCO – UIS (2017), based on data accessed on April 05, 2017, (2) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (3) The World Bank World Development Indicators (2017).

4.2.2.2. Egypt

The UNESCO– UIS (2020) provides useful indicators on the distribution of internationally mobile tertiary or higher education students from Egypt and all world regions by host countries for the period (200-2017/2018), implies several stylized facts. For instance, we find that with a population of 98,42 million and GNI per capita of PPP\$ 10,744, Egypt shows increasing trends in terms of total outbound mobility ratio, gross outbound enrolment ratio and outbound mobility ratio over the period (2000-2017/2018), mainly, total outbound mobility, gross outbound enrolment ratio and outbound mobility ratio more than doubled over the period (2000-2017/2018), mainly, total outbound students from Egypt studied abroad increased substantially by more than three times from 8802 in 2000 to 34922 in 2017/2018 (see Table 7). Globally, as lower-middle income Egypt is ranked below to its peers lower-middle income world countries Regionally, Egypt is ranked second in terms of inbound mobility ratio, ranked fifth in terms of both outbound mobility ratio, and gross outbound enrolment ratio, ranked third in terms of intra-regional mobility within the North Africa region, ranked second in terms of total outbound mobile students from North Africa, Egypt contributes 24% of total outbound mobile students from the North Africa region studying abroad, Egypt is ranked first in terms of total inbound mobile students hosted in North Africa, Egypt contributes more than half 59% of total inbound mobile students hosted in North Africa region in 2017/2018 (see Figure 9).

According to UNESCO-UIS (2020), internationally mobile tertiary students from Egypt over the period (2000-2017/2018), implies several stylized facts (see Table 7). For instance, the distribution of the international students from Egypt studied abroad and hosted by other World regions over the period (2000-2017/2018) implies heavy concentration of Egyptian students studied abroad in few countries, for instance, nearly three quarter (74%) of Egyptian students studied abroad studied in fourteen countries. In particular, the majority and nearly half of Egyptian students studied abroad studied in the OECD (North America and Western Europe and Canada) (43%). This implies that more than tenth of Egyptian students studied in United States of America (14%), followed by one tenth studied in Saudi Arabia (12%), followed by United Arab Emirates (11%), United Kingdom of Great Britain and Northern Ireland (8%), Germany (7%), France (7%), Canada (4%), Qatar (4%), Italy (3%), Japan (2%), Jordan (2%), Malaysia (2%), over the period (2000-2017/2018) respectively. We observe that different from other North African countries the main destination countries for internationally mobile tertiary students from Egypt is more diversified implies that the majority or nearly half of Egyptian students studied abroad studied in the OECD (North America and Western Europe and Canada and Australia) (43%); followed by more than a quarter in Arab countries including Saudi Arabia, United Arab Emirates, Qatar and Jordan (29%), followed by advanced Asia countries including Japan and Malaysia (4%), while few and less than one per cent in North Africa, mainly, Morocco and Tunisia. We observe that nearly 8 per cent of Egyptian students studied in the United Kingdom of Great Britain and Northern Ireland (8%) over the period (2000-2017/2018). We find that the trend of mobile tertiary students from Egypt in the United Kingdom of Great Britain and Northern Ireland (8%) implies a decreasing trend from 10.85 in 2000 to 6.57% in 2017/2018, with slight increase from 6.02% in 2014 to 6.57% in 2017. (See Table 7 and Figure 9)

Figure 9 - Distribution of outbound mobile students from Egypt in top destinations (host countries) and United Kingdom (%) (2000-2017)



Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

Table 7- Distribution of outbound mobile students from Egypt in top destinations (host countries) and United Kingdom (%) (2000-2017)

Main indicators									
General socio- economic indicators									
Region	Middle East & North Africa								
Income level	Lower middle income								
Total population (in thousands)	98.42								
Annual population growth (%)	2.0								
Youth population (population 15-24 years (in thousands))	15,843								
Population aged 14 years and younger (in thousands)	30,344								
% of Youth population (population 15-24 years (in thousands))	17.3%								
GDP									
GDP in billions - PPP\$	250.89								
GNI per capita - PPP\$	10744								
GDP Growth	5.3								
Inflation	21.4								
Poverty headcount ratio at 3.10 PPP\$ a day (% of population)	...								
Government expenditure on education as % of GDP (2008)	3.76								
R&D as % of GDP (2014)	0.67,868								
Mobility indicators									
Inbound and outbound mobility indicators									
	2000	2005	2010	2011	2012	2013	2014	2015	2017/2018
Total outbound mobility ratio	8802	9621	14320	15234	16696	20007	23475	24970	34,922
Gross outbound enrolment ratio	0,13	0,12	0,17	0,18	0,20	0,24	0,29	0,32	0.4
Outbound mobility ratio	..	0,41	0,54	0,68	0,73	0,81	0,92	0,87	1.2
Inbound mobility ratio	..	1,31	1,85	..	..	1,78	1,88	..	1.8
Net flow of internationally mobile students (inbound - outbound)		21101,837	34691,344			23986,255	24340,448		
Distribution of outbound mobile students from Egypt in the top destinations (%)									
	2000	2005	2010	2011	2012	2013	2014	2017	2000-2017
United States of America	21.00%	17.00%	16.00%	14.00%	13.00%	12.00%	11.00%	0.1077	14%
Saudi Arabia	0.00%	5.00%	6.00%	12.00%	14.00%	21.00%	21.00%	0.13	12%
United Arab Emirates	0.00%	0.00%	0.00%	16.00%	18.00%	17.00%	17.00%	0.16	11%
United Kingdom of Great Britain and Northern Ireland	11.00%	8.00%	10.00%	7.00%	7.00%	6.00%	6.00%	0.0657	8%
Germany	13.00%	11.00%	9.00%	0.00%	0.00%	6.00%	6.00%	0.0708	7%
France	6.00%	9.00%	9.00%	8.00%	7.00%	7.00%	7.00%	0.0588	7%
Canada	2.00%	5.00%	7.00%	5.00%	5.00%	4.00%	0.00%	0.0381	4%
Qatar	0.00%	1.00%	4.00%	4.00%	5.00%	5.00%	6.00%	0.05	4%
Italy	0.00%	2.00%	3.00%	4.00%	4.00%	4.00%	3.00%	0.0331	3%
Japan	2.00%	2.00%	2.00%	2.00%	1.00%	1.00%	1.00%		2%
Jordan	1.00%	3.00%	3.00%	3.00%	3.00%	0.00%	0.00%	0.04	2%
Malaysia	0.00%	0.00%	2.00%	3.00%	3.00%	2.00%	2.00%	0.06	2%
Total	56.00%	63.00%	71.00%	78.00%	80.00%	85.00%	80.00%	81.42%	74%

Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017. (3) The World Bank World Development Indicators (2017).

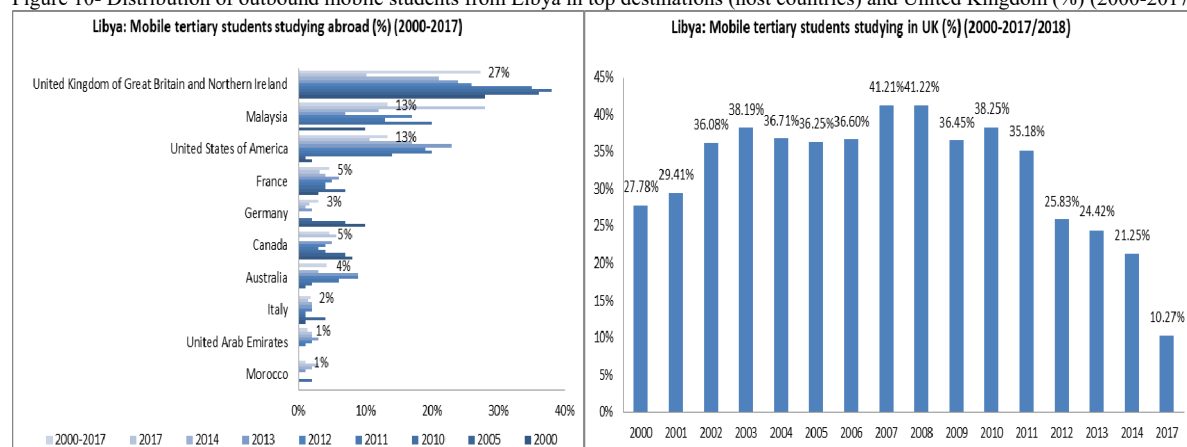
4.2.2.3. Libya

The UNESCO– UIS (2017) provides useful indicators on the distribution of internationally mobile tertiary or higher education students from Libya and all world regions by host countries for the period (2000-2017/2018), implies several stylized facts. For instance, we find that with a population of 6.68 million and GNI per capita of PPP\$ 11,685, Libya shows increasing trends in terms of total outbound mobility ratio, gross outbound enrolment ratio and outbound mobility ratio over the period (2000-2017/2018), total outbound mobility ratio and gross outbound enrolment ratio increased by nearly five times and nearly five times in 2014 and 2017/2018 compared to 2000 respectively, mainly, total outbound students from Libya studied abroad increased substantially from 1771 in 2000 to 11574 2017/2018. Globally, as upper-middle income Libya is ranked below to its peers upper-middle income world countries (Table 8). Regionally, Libya is ranked second in terms of gross outbound enrolment ratio, ranked sixth at the bottom place in terms of outbound mobility ratio, ranked fifth terms of total outbound mobile students from North Africa studying abroad, Libya contributes only 8% of total outbound students mobility ratio from the North Africa region in 2017/2018 (see Figure 10).

According to UNESCO-UIS (2017), internationally mobile tertiary students from Libya over the period (2000-2017/2018), implies several stylized facts. For instance, the distribution of the international students from

Libya studied abroad and hosted by other World regions over the period (2000-2017/2018) implies heavy concentration of Libyan students studied abroad in few countries, for instance, the majority or nearly three quarter (74%) of Libyan students studied abroad studied in ten countries. In particular, the majority and more than half of Libyan students studied abroad studied in the OECD (North America, Western Europe, Canada and Australia) (58%). This implies that nearly third of Libyan students studied in United Kingdom of Great Britain and Northern Ireland (27%), followed by more than tenth studied in Malaysia (13%), followed by United States of America (13%), Canada (5%), France (5%), Australia (4%), Germany (3%), Italy (2%), United Arab Emirates (1%), Morocco (1%), and over the period (2000-2017/2018) respectively. We observe that different from other North African countries the main destination countries for internationally mobile tertiary students from Libya implies that more than half of Libyan students studied abroad studied in the OECD (North America, Western Europe, Canada and Australia) (58%); followed by more than tenth in Asia (including Malaysia and United Arab Emirates) (14%), while few and only one per cent in North Africa, (mainly, Morocco (1%) and Tunisia (1%)) and less than one per cent in Egypt). We observe that few and more than a quarter of Libya students studied in the United Kingdom of Great Britain and Northern Ireland (27%), over the period (2000-2017/2018). We find that the trend of mobile tertiary students from Libya in the United Kingdom of Great Britain and Northern Ireland, implies substantial decreasing trend from 27.78% in 2000 to 41.22% in 2008 but then declined to 21.25% in 2014 and 10.27% in 2017/2018 (see Table 8 and Figure 10).

Figure 10- Distribution of outbound mobile students from Libya in top destinations (host countries) and United Kingdom (%) (2000-2017)



Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

Table 8 - Distribution of outbound mobile students from Libya in top destinations (host countries) and United Kingdom (%) (2000-2017)

Table 8 – Distribution of outbound mobile students from Libya in the top destinations (most countries) and United Kingdom (%) (2000-2017)

Main indicators									
General socio- economic indicators									
Region	Middle East & North Africa								
Income level	Upper middle income								
Total population (in thousands)	6.68								
Annual population growth (%)	1.5								
Youth population (population 15-24 years (in thousands))									
Population aged 14 years and younger (in thousands)									
% of Youth population (population 15-24 years (in thousands))									
GDP (2011)									
GDP in billions - PPP\$	48.36								
GNI per capita - PPP\$	11685								
GDP Growth	7.9								
Inflation	15.8								
Poverty headcount ratio at 3.10 PPP\$ a day (% of population)	...								
Government expenditure on education as % of GDP (2008)									
R&D as % of GDP (2014)									
Mobility indicators									
Inbound and outbound mobility indicators									
	2000	2005	2010	2011	2012	2013	2014	2015	2017/2018
Total outbound mobility ratio	1771	3603	7390	7456	6795	5646	7615	8209	11,574
Gross outbound enrolment ratio	0,30	0,57	1,18	..	..	..	1,48	..	
Outbound mobility ratio	0,61	..	..	..	..	..	..	..	
Inbound mobility ratio	..	..	..	..	..	..	..	..	
Net flow of internationally mobile students (inbound - outbound)									
Distribution of outbound mobile students from Libya in the top destinations (%)									
	2000	2005	2010	2011	2012	2013	2014	2017	2000-2017
United Kingdom of Great Britain and Northern Ireland	28%	36%	38%	35%	26%	24%	21%	10.27%	27%
Malaysia	10%	0%	20%	13%	17%	7%	12%	28%	13%
United States of America	2%	1%	14%	20%	19%	23%	17%	10.62%	13%
France	3%	7%	4%	4%	5%	6%	4%	3.20%	5%
Canada	8%	7%	4%	3%	4%	5%	0%	5.65%	5%
Australia	0%	1%	2%	6%	9%	9%	3%		4%
Germany	10%	7%	2%	0%	0%	2%	1%	1.58%	3%
Italy	1%	4%	1%	1%	2%	2%	2%	1.37%	2%
United Arab Emirates	0%	0%	0%	1%	2%	3%	2%	2%	1%
Morocco	0%	0%	2%	0%	0%	1%	2%	3%	1%
Total	62%	63%	87%	83%	84%	82%	64%	66%	74%

Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017. (3) The World Bank World Development Indicators (2017).

4.2.2.4. Morocco

The UNESCO– UIS (2017) provides useful indicators on the distribution of internationally mobile tertiary or higher education students from Morocco and all world regions by host countries for the period (2000-2017/2018), implies several stylized facts. For instance, we find that with a population of 36.03 million and GNI per capita of PPP\$ 7,480, Morocco shows increasing trends in terms of total outbound mobility ratio, gross outbound enrolment ratio and inbound mobility ratio, by contrast outbound mobility ratio declined substantially over the period (2000-2017/2018), mainly, total outbound students from Morocco studied abroad increased substantially from 42751 in 2000 to 51,164 in 2017/2018 (see Table 9). Globally, as lower-middle income Morocco is ranked below to its peers lower-middle income world countries. Regionally, Morocco is ranked second in terms of outbound mobility ratio, ranked third in terms of both gross outbound enrolment ratio and inbound mobility ratio, ranked second in terms of intra-regional mobility within the North Africa region, Morocco is ranked first at top in terms of total outbound mobility ratio, Morocco contributes to nearly half 35% of total outbound students mobility ratio from the North Africa region, Morocco is ranked second in terms of total inbound mobile students hosted in North Africa, Morocco contributes to nearly half 24% of total inbound mobile students hosted in North Africa region in 2017/2018 (see Table 9 and Figure 11).

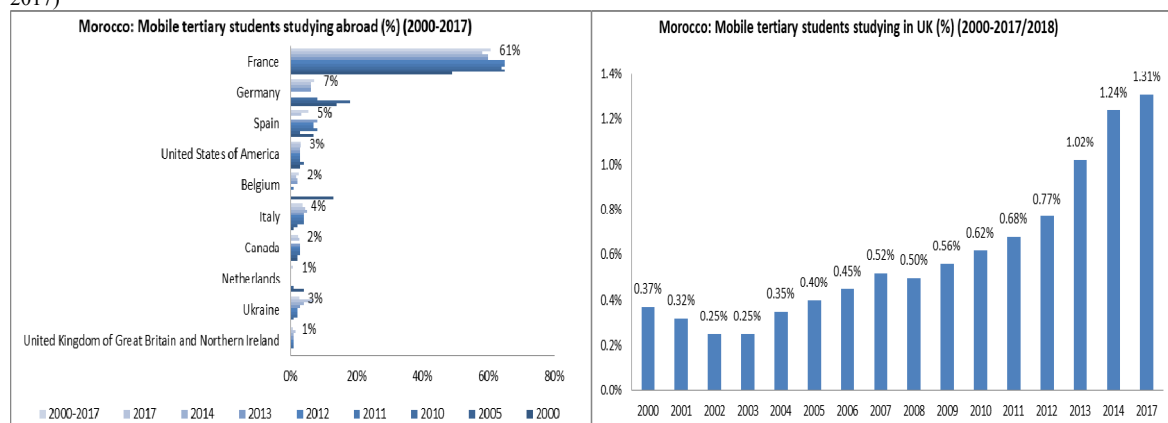
According to UNESCO-UIS (2017), internationally mobile tertiary students from Morocco over the period (2000-2017/2018), implies several stylized facts. For instance, the distribution of the international students from Morocco studied abroad and hosted by other World regions over the period (2000-2017/2018) implies heavy concentration of Moroccan students studied abroad in few countries, for instance, the majority or more than three quarter (89%) of Moroccan students studied abroad studied in ten countries. In particular, the majority of Moroccan students studied abroad studied in the OECD (North America, Western Europe and Canada) (86%); This implies that similar to other North African countries the main destination countries for internationally mobile tertiary students from Morocco includes for instance, more than half of Moroccan students studied in France (61%), followed by Germany (7%), Spain (5%), Italy (4%), United States of America (3%), Ukraine (3%), Belgium (2%), Canada (2%), Netherlands (1%), and United Kingdom of Great Britain and Northern Ireland (1.31%) over the period (2000-2017/2018) respectively. We observe that few and only one per cent of Moroccan students studied abroad studied in North Africa, (mainly, Tunisian (1%) and less than one per cent in Egypt). We observe that few and slight above 1 per cent of Moroccan students studied in the United Kingdom of Great Britain and Northern Ireland (1.3%) over the period (2000-2017/2018). We find that the trend of the mobile tertiary students from Morocco studying in the United Kingdom of Great Britain and Northern Ireland (1.31%) implies continuous increasing trend from 0.37% in 2000 to 0.40% in 2000, to 0.62% in 2010, to 1.24% in 2014 and to 1.31% in 2017/2018 respectively. (See Table 9 and Figure 11)

Table 9 - Distribution of outbound mobile students from Morocco in top destinations (host countries) and United Kingdom (%) (2000-2017)

Table 9 - Distribution of outbound mobile students from Morocco in top destinations (most countries) and United Kingdom (%) (2000-2017)									
Main indicators									
General socio- economic indicators									
Region	Middle East & North Africa								
Income level	Lower middle income								
Total population (in thousands)	36.03								
Annual population growth (%)	1.3								
Youth population (population 15-24 years (in thousands))	6,080								
Population aged 14 years and younger (in thousands)	9,359								
% of Youth population (population 15-24 years (in thousands))	17.7%								
GDP									
GDP in billions - PPP\$	117.92								
GNI per capita - PPP\$	7480								
GDP Growth	3.0								
Inflation	1.1								
Poverty headcount ratio at 3.10 PPP\$ a day (% of population)	15.5								
Government expenditure on education as % of GDP (2008)	5.26								
R&D as % of GDP (2014)	0.71,454								
Mobility indicators									
Inbound and outbound mobility indicators									
	2000	2005	2010	2011	2012	2013	2014	2015	2017/2018
Total outbound mobility ratio	42751	46016	42845	43509	43999	39443	42262	43148	51,164
Gross outbound enrolment ratio	1,47	1,47	1,38	1,39	1,40	1,25	1,35	1,38	1.7
Outbound mobility ratio	14,46	12,52	9,58	8,61	7,26	5,57	5,35	4,92	5.1
Inbound mobility ratio	1,52	1,35	1,92	..	..	1,41	1,80	..	1.9
Net flow of internationally mobile students (inbound - outbound)	-38248,857	-41057,503	-34241,023			-29492,736	-28042,25		
Distribution of outbound mobile students from Morocco in the top destinations (%)									
	2000	2005	2010	2011	2012	2013	2014	2017	2000-2017
France	49.00%	65.00%	64.00%	65.00%	65.00%	60.00%	60.00%	0.5811	61%
Germany	14.00%	18.00%	8.00%	0.00%	0.00%	6.00%	6.00%	0.0605	7%
Spain	7.00%	3.00%	8.00%	7.00%	7.00%	8.00%	0.00%	0.0332	5%
United States of America	3.00%	4.00%	3.00%	3.00%	3.00%	3.00%	3.00%	0.0308	3%
Belgium	13.00%	0.00%	0.00%	1.00%	0.00%	2.00%	2.00%	0.0158	2%
Italy	1.00%	2.00%	4.00%	4.00%	4.00%	4.00%	5.00%	0.0442	4%
Canada	2.00%	2.00%	3.00%	3.00%	3.00%	3.00%	0.00%	0.0269	2%
Netherlands	4.00%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%		1%
Ukraine	0.00%	1.00%	2.00%	2.00%	2.00%	3.00%	4.00%	0.07	3%
United Kingdom of Great Britain and Northern Ireland	0.00%	0.00%	1.00%	1.00%	1.00%	1.00%	1.00%	0.0131	1%
Total	93.00%	96.00%	93.00%	86.00%	85.00%	90.00%	81.00%	87.56%	89%

Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017, (3) The World Bank World Development Indicators (2017).

Figure 11- Distribution of outbound mobile students from Morocco in top destinations (host countries) and United Kingdom (%) (2000-2017)



Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

4.2.2.5 Sudan

The UNESCO– UIS (2020) provides useful indicators on the distribution of internationally mobile tertiary or higher education students from Sudan and all world regions by host countries for the period (2011-2017/2018), implies several stylized facts. For instance, we find that With a population of 41.8 million and GNI per capita of PPP\$ 3,962, Sudan shows increasing trends in terms of total outbound mobility ratio, gross outbound enrolment ratio and outbound mobility ratio over the period (2011-2017/2018), total outbound mobile students from Sudan studied abroad increased substantially from 7196 in 2011 to 13484 in 2017/2018 (see Table 10). Globally, as lower-middle income Sudan is ranked below its peers lower-middle income world countries (Table 10). Regionally, Sudan is ranked fourth in terms of outbound mobility ratio, ranked sixth at the bottom place in terms of gross outbound enrolment ratio and in terms of total outbound mobility, Sudan contributes only for 3% of total outbound students mobility ratio from the North Africa region in 2015 (see Table 10 and Figure 12).

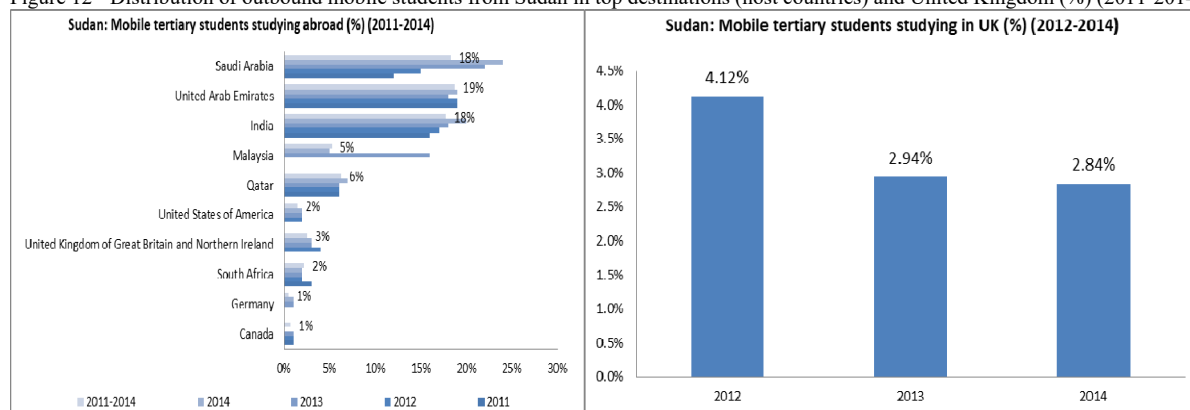
According to UNESCO-UIS (2020), internationally mobile tertiary students from Sudan over the period (2012-2014), implies several stylized facts. For instance, the distribution of the international students from Sudan studied abroad and hosted by other World regions over the period (2011-2014) implies heavy concentration of Sudanese students studied abroad in few countries, for instance, the majority or nearly three quarter (75%) of Sudanese students studied abroad studied in ten countries. In particular, in the Arab countries and advanced Asia countries, for instance, nearly half of Sudanese students studied in the Arab countries (45%). This implies that different from other North African countries the main destination countries for internationally mobile tertiary students from Sudan includes Saudi Arabia (20%), United Arab Emirates (19%), India (14%), Malaysia (7%), Qatar (6%), United States of America (2%), United Kingdom of Great Britain and Northern Ireland (2%), South Africa (2%), Germany (1%), Canada (1%) over the period (1999-2015) respectively. We observe that different from other North African countries the main destination countries for internationally mobile tertiary students from Sudan is more diversified, for instance, nearly half of Sudanese students studied in the Arab countries (45%); followed by nearly fifth studied in Advanced Asia countries (21); while few and less than tenth studied in North America and Western Europe and Canada (6%), and finally Africa (2%) respectively. We observe that few and less than 1 per cent of Sudanese students studied in the United Kingdom of Great Britain and Northern Ireland over the period (1999-2015). We find that the trend of mobile tertiary students from Sudan in the United Kingdom of Great Britain and Northern Ireland implies increasing trend from 0.42% in 2012 to 0.55% in 2013 and 0.66% in 2017/2018 respectively. (See Table 10 and Figure 12)

Table 10 - Distribution of outbound mobile students from Sudan in top destinations (host countries) and United Kingdom (%) (2000-2017)

Main indicators											
General socio- economic indicators											
Region	Sub-Saharan Africa										
Income level	Lower middle income										
Total population (in thousands)	41.80										
Annual population growth (%)	2.4										
Youth population (population 15-24 years (in thousands))	8,016										
Population aged 14 years and younger (in thousands)	16,297										
% of Youth population (population 15-24 years (in thousands))	19.9%										
GDP											
GDP in billions - PPP\$	40.85										
GNI per capita - PPP\$	3962										
GDP Growth	-2.3										
Inflation	23.9										
Poverty headcount ratio at 3.10 PPP\$ a day (% of population)	38.9										
Government expenditure on education as % of GDP (2008)	2.22										
R&D as % of GDP (2014)	0.29,844										
Mobility indicators											
Inbound and outbound mobility indicators											
	1999	2000	2005	2010	2011	2012	2013	2014	2015	2017/2018	
Total outbound mobility ratio	..	..	..	..	7196	7955	9300	9755	10058	13,484	
Gross outbound enrolment ratio	..	..	..	..	0,20	0,22	0,25	0,25	..	0.3	
Outbound mobility ratio	..	..	..	..	1,37	1,44	1,45	1,54	..	1.9	
Inbound mobility ratio	..	..	..	..	..	..	..	..	..		
Net flow of internationally mobile students (inbound - outbound)											
Distribution of outbound mobile students from Sudan in the top destinations (%)											
	2000	2005	2010	2011	2012	2013	2014	2017	2011-2014		
Saudi Arabia				12%	15%	22%	24%		18%		
United Arab Emirates				19%	19%	18%	19%		19%		
India				16%	17%	18%	20%		18%		
Malaysia				0%	0%	16%	5%		5%		
Qatar				6%	6%	6%	7%		6%		
United States of America				0%	2%	2%	2%		2%		
United Kingdom of Great Britain and Northern Ireland				0%	4%	3%	3%		3%		
South Africa				3%	2%	2%	2%		2%		
Germany				0%	0%	1%	1%		1%		
Canada				1%	1%	1%	0%		1%		
Total				57%	66%	89%	83%		74%		

Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017. (3) The World Bank World Development Indicators (2017).

Figure 12 - Distribution of outbound mobile students from Sudan in top destinations (host countries) and United Kingdom (%) (2011-2014)



Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

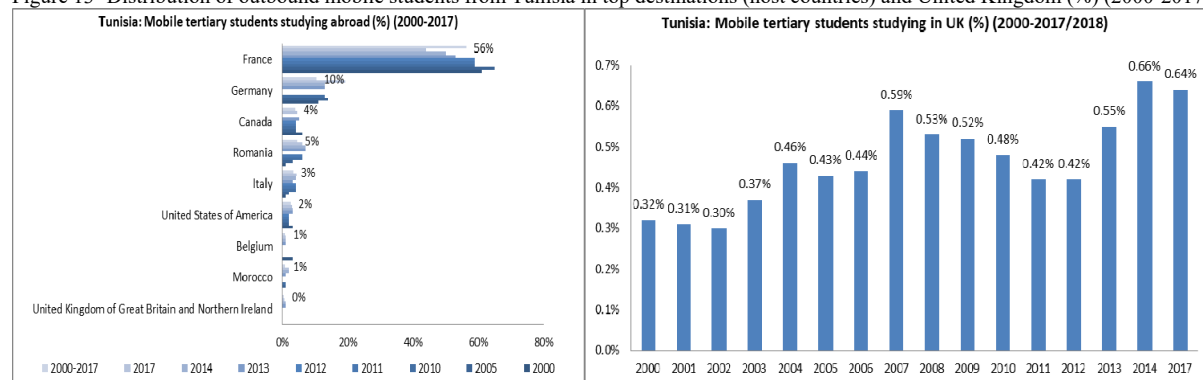
4.2.2.6 Tunisia

The UNESCO– UIS (2020) provides useful indicators on the distribution of internationally mobile tertiary or higher education students from Tunisia and all world regions by host countries for the period (2000-2017/2018), implies several stylized facts. For instance, we find that with a population of 11.57 million and GDP per capita of PPP\$ 10,677, Tunisia shows increasing trends in terms of total outbound mobility ratio, gross outbound

enrolment ratio and outbound mobility ratio over the period (2000-2017/2018), total outbound mobility ratio and gross outbound enrolment ratio are nearly doubled over the period (2000-2017/2018), mainly, total outbound students from Tunisia studied abroad increased substantially from 10286 in 2000 to 22,352 in 2017/2018 (see Table 11). Globally, as lower-middle income Tunisia is ranked below to its peers lower-middle income world countries. Regionally, Tunisia is ranked first at the top in terms of outbound mobility ratio, gross outbound enrolment ratio and inbound mobility ratio, ranked first at the top in terms of intra-regional mobility within the North Africa region, Tunisia, is ranked fourth in terms of total outbound mobile students from North Africa studying abroad, Tunisia contributes 15% of total outbound mobile students from the North Africa region studying abroad, Tunisia, is ranked fourth in terms of total inbound mobile students hosted in North Africa region, Tunisia contributes 7% of total inbound mobile students hosted in North Africa region in 2017/2018(see Table 11 and Figure 13).

According to UNESCO-UIS (2020), internationally mobile tertiary students from Tunisia over the period (2000-2017/2018), implies several stylized facts. For instance, the distribution of the international students from Tunisia studied abroad and hosted by other World regions over the period (2000-2017/2018) implies heavy concentration of Tunisian students studied abroad in few countries, for instance, the majority or more than three quarter (82.87%) of Tunisian students studied abroad studied in nine countries. In particular, the majority of Tunisian students studied abroad studied in the OECD (North America, Western Europe and Canada) (77.40%). This implies that the main destination countries for internationally mobile tertiary students from Tunisia includes for instance, nearly half of Tunisian students studied in France (56.25%), followed by Germany (10.40%), Romania (4.5%), Canada (3.92%), Italy (3.28%), United States of America (2.48%), Morocco (0.88%), Belgium (0.75%), and United Kingdom of Great Britain and Northern Ireland (0.33%), over the period (2000-2017/2018) respectively. We observe that similar to other North African countries the main destination countries for internationally mobile tertiary students from Tunisia is concentrated in few countries, the majority or more than three quarter of Tunisian students studied abroad studied in the OECD (North America, Western Europe and Canada) (81%); while few and less than one per cent in North Africa, mainly, Morocco (0.88%). We observe that few and less than 1 per cent of Tunisian students studied in the United Kingdom of Great Britain and Northern Ireland over the period (0.48%) (2000-2017/2018). We find that the trend of mobile tertiary students from Tunisia studying in the United Kingdom of Great Britain and Northern Ireland implies increasing trend from 0.32% in 2000 to 0.43% in 2005 to 0.48% in 2010 and to 0.64% in 2017/2018, with slight decline from 0.66% in 2014 to 0.64% in 2017/2018. (See Table 11 and Figure 13)

Figure 13- Distribution of outbound mobile students from Tunisia in top destinations (host countries) and United Kingdom (%) (2000-2017)



Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017.

Table 11 - Distribution of outbound mobile students from Tunisia in top destinations (host countries) and United Kingdom (%) (2000-2017)

Main indicators									
General socio economic indicators									
Region	Middle East & North Africa								
Income level	Lower middle income								
Total population (in thousands)	11.57								
Annual population growth (%)	1.1								
Youth population (population 15-24 years (in thousands))	1,756								
Population aged 14 years and younger (in thousands)	2,629								
% of Youth population (population 15-24 years (in thousands))	15.6%								
GDP									
GDP in billions - PPP\$	39.87								
GNI per capita - PPP\$	10677								
GDP Growth	2.5								
Inflation	6.9								
Poverty headcount ratio at 3.10 PPP\$ a day (% of population)	8.4								
Government expenditure on education as % of GDP (2008)	6.25								
R&D as % of GDP (2014)	0.64,103								
Mobility indicators									
Inbound and outbound mobility indicators									
	2000	2005	2010	2011	2012	2013	2014	2015	2017/2018
Total outbound mobility ratio	10286	15038	19725	19503	19026	16851	17825	18186	22,352
Gross outbound enrolment ratio	1,10	1,46	1,87	1,88	1,87	1,71	1,86	1,95	2.5
Outbound mobility ratio	5,71	4,60	5,33	5,39	5,32	4,99	5,37	5,64	7.9
Inbound mobility ratio	1,53	..	0,60	0,56	0,53	1,85	..	2,00	2.3
Net flow of internationally mobile students (inbound - outbound)	-7529,7143		-17521,55	-17470,913	-17125,167	-10615,154		-11744,098	
Distribution of outbound mobile students from Tunisia in the top destinations (%)									
	2000	2005	2010	2011	2012	2013	2014	2017	2000-2017
France	61.00%	65.00%	59.00%	59.00%	59.00%	53.00%	50.00%	0.4399	56.25%
Germany	11.00%	14.00%	13.00%	0.00%	0.00%	13.00%	13.00%	0.1918	10.40%
Canada	6.00%	4.00%	4.00%	4.00%	4.00%	5.00%	0.00%	0.0438	3.92%
Romania	1.00%	3.00%	6.00%	6.00%	0.00%	7.00%	7.00%	0.06	4.50%
Italy	1.00%	2.00%	4.00%	4.00%	4.00%	3.00%	4.00%	0.0426	3.28%
United States of America	3.00%	2.00%	2.00%	2.00%	2.00%	3.00%	3.00%	0.0281	2.48%
Belgium	3.00%	0.00%	0.00%	0.00%	0.00%	1.00%	1.00%	0.0098	0.75%
Morocco	0.00%	1.00%	1.00%	0.00%	0.00%	1.00%	2.00%	0.02	0.88%
United Kingdom of Great Britain and Northern Ireland	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	1.00%	0.0064	0.33%
Total	86.00%	91.00%	89.00%	75.00%	69.00%	87.00%	81.00%	0.8424	82.78%

Sources: Adapted from (1) UNESCO – UIS (2020), based on data accessed on February 02, 2020, (2) UNESCO – UIS (2017), based on data accessed on April 05, 2017, (3) The World Bank World Development Indicators (2017).

Therefore, our findings in this section support the first hypothesis that from national perspective, the pattern and size of migration of higher education students from the North Africa region increased substantially over the past years but the distribution showed considerable variation across North African countries. We find that destination also strongly varies with origin, for instance, the international students from the Maghreb to OECD countries is strongly concentrated toward Continental Europe, while emigration from the other countries including Egypt and Sudan was previously and historically concentrated on Anglo-Saxon countries, but more recently concentrated on Arab Gulf countries and emerging economies in Asia. This second stylized fact suggests that past colonial links and common language of the host country are strong pull factors.

4.3 The determinants and impacts of migration in North Africa countries

This section discusses the push-pull factors (economic, political, cultural and educational) causes and consequences of migration of higher education students from the North Africa region (see Table 12). This section aims to investigate the relevance of the various valuable explanations and interpretations of the causes, motivations, determinants and implications of international students mobility presented in the previous studies in the international literature as presented in the previous section to North Africa.

We observe that one stylized fact implies that the geographical location of the majority of the North Africa countries (mainly, Algeria, Libya, Egypt, Morocco, and Tunisia) is characterised by close location, short geographical distance, and geographical proximity to the UK and Europe. This stylized fact suggests that the short geographical distance and geographical proximity to the UK and Europe motivated the migration of the majority of higher education students from the majority of the North Africa countries to seek better education opportunities in UK and Europe. For instance, our findings discussed in this section above indicate that the distribution of outbound mobile students from North Africa countries in top destinations (host countries) over the period (2000-2017/18) showed considerable variation across North African countries. Our results imply that the top destination also strongly varies with origin, for instance, international students from the Maghreb to OECD countries is strongly concentrated toward Continental Europe, while emigration from the other countries including Egypt and Sudan was previously and historically concentrated on UK and Anglo-Saxon countries, but more recently concentrated on Arab Gulf countries and, emerging economies in Asia. This stylized fact suggests that the geographical location, the historical past colonial links and common language of the host country are strong pull factors. These findings imply that a combination of geographical, historical and cultural explanations (pull factors) is strongly applicable to the North Africa region.

In addition, we observe that political instability and political conflict are serious problems in the majority of North Africa countries (Egypt, Libya, Sudan and Tunisia). For instance, except for Morocco, all North Africa countries experienced regimes changes over the past years (Algeria, Egypt, Libya, Sudan and Tunisia). This implies that the political explanation (push factor) is strongly applicable to North Africa region.

Our findings explained in section 2 above indicate that all North Africa countries experienced economic development challenges that appear from the unsustained economic growth, the high inflation rates, the low GNI per capita income in all North Africa countries that is below the World average and the incidence of high poverty, which remains a very serious problem for nearly a quarter of North Africa population (24%). This implies that the economic explanation (push factor) is strongly applicable to the North Africa region.

Our findings explained in section 2 above imply that the North Africa region is characterised by high population numbers and high average population growth rate, which is above the level of all World regions: Europe and Central Asia, Latin America and the Caribbean, East Asia and the Pacific, South Asia and South Africa (see Table 1). Furthermore, the demographic structure/ composition (population size) implies that the North Africa region is characterized by high share of youth in total population that raises concern. For instance, we find that in 2015, nearly third of the population in the North Africa region is under 25 years of age (32.3% of total population (cf. UNESCO – WB-WEDI (2017), in particular, nearly one in every five people in the North Africa region is aged between 15-24 years (17.6% of total population). These percentages indicate that the North Africa youth will, for the years or decades to come, put increasing pressure on resources in the North Africa

region to provide education, work and social services. This implies that the demographic explanation (push factor) is strongly applicable to the North Africa region.

Our results explained in section 2 above imply that the North Africa region is characterised by considerable weakness concerning the supply of and demand for higher education reflecting the weakness in higher education systems and institutions in North Africa region. For instance, over the period (2010-2015) the weakness in the demand side appears in terms of the gross enrolment ratios in tertiary education in North Africa that implies that less than one third of students in tertiary education age are enrolled in higher education (28.8%), below the World level (35%), and below the majority of world regions. In addition, over the period (2010-2014) the weakness in the supply side appears in terms of the limited financial resources allocated for education as measured by the level of expenditure on education as % of GDP in the North Africa region (4.6%), which is below the World average (5%), OECD (5.5%), Sub-Saharan Africa (4.8%) and Latin America and the Caribbean (5.4%). This implies that the supply-demand gap in educational policies and human capital gap explanation (push factor) is strongly applicable to the North Africa region.

Our results explained in section 2 above imply that North Africa region is characterised by high unemployment rates and youth unemployment rates that are more than twice above the world average and are above all World regions: Arab States, East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, OECD, South Asia, Sub-Saharan Africa, developing countries and least developed countries (see Table 1 and Figure 2). Moreover, some studies in North Africa literature indicate the low return to education in the majority of North Africa countries (notably, Algeria, Egypt, Morocco and Sudan) (see Mebroukine, 2015; Sika, 2015; Khachani, 2015; Assal, 2015; ESTIME Report, 2007, the World Bank, 2008). This implies that the labour market policies and wage gap explanation (push factor) is strongly applicable to the North Africa region. Table 13 illustrates that the various valuable explanations and interpretations of the causes, motivations, determinants and implications of international students mobility presented in the previous international studies in the international literature as presented in the previous section are also applicable to the North Africa region. Our result postulates the relevance of several theoretical explanations that presented in the international literature including the historical, geographical, cultural, political, institutional, social, and economic (macro explanations and supply-demand explanations), demographic, educational policies and human capital gap, and labour market and wages gap explanations). This implies that the determinants of cross-national students mobility from the North Africa countries are largely consistent with the various valuable explanations and interpretations of the causes, motivations, determinants and implications of international students mobility presented in the previous international studies in the international literature as presented in the previous section (cf. Brooks and Waters 2011; Findlay et al., 2012; King and Raghuram, 2013; Shields, 2013; Vögtle and Windzio, 2016).

Concerning the impacts of migration of higher education students from the North Africa region, our results support the third hypothesis that migration of higher education students from the North Africa region lead to mixed positive and negative impacts (e.g. transfer of knowledge, brain gain and skill acquisition for returned migrant students, but weak capacity to retain talents and brain drain for non-returned migrant students) (See Tables 12-13 and Figure 14). Several studies in the literature discuss the reasons for the incidence of brain drain in the North Africa countries. For instance, one 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 emigration takes place continuously; and professionals are often busy with parallel tasks (contracts for teaching or doing research elsewhere) to make their living."²⁰ 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].²¹ 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)²² Table 13 differentiates two groupings of 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. With the exception of Tunisia five of the North Africa countries including Algeria, Egypt, Libya, Morocco and Sudan are incapable of persuading human scientific capital to remain in its home country.²³ Moreover, we observe that North Africa shows poor labour market efficiency, poor capacity to retain talent and poor capacity to attract talent, the North Africa is ranked at the bottom places globally compared to South Africa, Asia advanced countries and developed countries over the period (2016-2017) (see Figure 14).

Table 12- The determinants and impacts of migration in North Africa countries

(A) The determinants of migration in North Africa countries			
	Push		Pull
Algeria ⁽¹⁾	1.	Economic (micro) and macro (supply-demand),	1. Geographical location
	2.	Demographic pressures, structure and composition.	2. Historical: old colonial ties
	3.	Educational and human capital differences.	
	4.	Labour market and wages differences: high Unemployment rate and Youth Unemployment and low wages low return to education.	
	5.	The Arabization of education	
	6.	Persistence of patronage and nepotism	
Egypt ⁽²⁾	1.	Political instability	1. Geographical location
	2.	Economic (micro) and macro (supply-demand),	2. Historical: old colonial ties
	3.	Demographic pressures, structure and composition.	
	4.	Educational and human capital differences.	
	5.	Labour market and wages differences: high Unemployment rate and Youth Unemployment and low wages low return to education.	
Libya	1.	Political instability	2. Historical: old colonial ties
	2.	Economic (micro) and macro (supply-demand),	
	3.	Demographic pressures, structure and composition.	
	4.	Educational and human capital differences.	
	5.	Labour market and wages differences: high Unemployment rate and Youth Unemployment and low wages low return to education.	
Morocco ⁽³⁾	1.	Economic (micro) and macro (supply-demand),	1. Geographical location
	2.	Demographic pressures, structure and composition.	2. Historical: old colonial ties
	3.	Educational and human capital differences.	
	4.	Labour market and wages differences: high Unemployment rate and Youth Unemployment and low wages low return to education.	
Sudan ⁽⁴⁾	1.	Political instability	2. Historical: old colonial ties
	2.	economic (micro) and macro (supply-demand),	
	3.	Demographic pressures, structure and composition.	
	4.	Educational and human capital differences.	
	5.	Labour market and wages differences: high Unemployment rate and Youth Unemployment and low wages low return to education.	
Tunisia ⁽⁵⁾	1.	Political instability	1. Geographical location
	2.	economic (micro) and macro (supply-demand),	2. Historical: old colonial ties
	3.	Demographic pressures, structure and composition.	
	4.	Educational and human capital differences.	
	5.	Labour market and wages differences: high Unemployment rate and Youth	

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

²¹ See ESTIME Report (2007), pp. 36-37, 51-55.

²² See the World Bank (2008) "New Challenges Facing the Education Sector in MENA," pp. 84-86, 110-111, 266-271, 275-276.

²³ See UNDP-MBA Foundation AKR 2009- pp. 207-209.

Unemployment and low wages low return to education.		
Northern Africa ⁽⁶⁾	1. Political instability 2. Economic (micro) and macro (supply-demand), 3. Demographic pressures, structure and composition. 4. Educational and human capital differences. 5. Labour market and wages differences: high Unemployment rate and Youth Unemployment and low wages low return to education.	1. Geographical location 2. Historical: old colonial ties
(B) The impacts of migration in North Africa countries		
	Positive Impact	Negative impact
Algeria ⁽¹⁾	1. Decrease pressures on the labour or employment market.	1. Brain drain and weak capacity to retain talents
Egypt ⁽²⁾	1. Decrease pressures on the labour or employment market. 2. Financial remittances. 3. Alleviation of poverty. 4. Brain gain and skill acquisition for returned migrant.	2. Brain drain and 3. weak capacity to retain talents
Libya	1. Decrease pressures on the labour or employment market. 2. Financial remittances. 3. Alleviation of poverty. 4. Brain gain and skill acquisition for returned migrant.	4. Brain drain and 5. weak capacity to retain talents
Morocco ⁽³⁾	1. Decrease pressures on the labour or employment market. 2. Financial remittances. 3. Alleviation of poverty. 4. Brain gain, brain circulation and skill acquisition for returned migrant.	6. Brain drain: drain on engineering and 7. weak capacity to retain talents
Sudan ⁽⁴⁾	1. Decrease pressures on the labour or employment market. 2. Financial remittances. 3. Alleviation of poverty. 4. Brain gain and skill acquisition for returned migrant.	8. Brain drain and 9. weak capacity to retain talents
Tunisia ⁽⁵⁾	1. Decrease pressures on the labour or employment market. 2. Financial remittances. 3. Alleviation of poverty. 4. Brain gain and skill acquisition for returned migrant.	10. Brain drain and 11. weak capacity to retain talents
Northern Africa ⁽⁶⁾	1. Decrease pressures on the labour or employment market. 2. Financial remittances. 3. Alleviation of poverty. 4. Brain gain and skill acquisition for returned migrant.	1. Brain drain and 2. weak capacity to retain talents

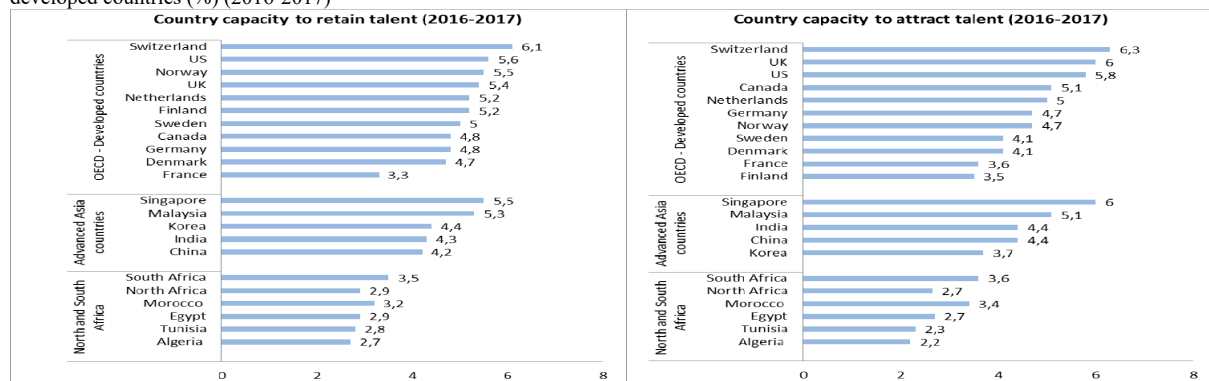
Sources: Adapted from (1) Mebroukine (2015), (2) Sika (2015), (3) Khachani (2015), (4) Assal (2015), (5) Zekri, et.al. (2015), (6) Fargues and Venturini (2015).

Table 13- Human capital flight index in North Africa compared to Arab countries

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	
		Least migration

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

Figure 14- Capacity to retain talent and capacity to attract talent in North Africa compared to South Africa, advanced Asia countries and developed countries (%) (2016-2017)



Source: Adapted from the World Economic Forum - The Global Competitiveness Report (2016-2017)

Our results in this paper are consistent with our earlier findings of Nour (2014) which implies that mobilizing skills through utilization of human capital mobility in the North Africa region can be enhanced by addressing several issues related to mobility of higher education 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.”

Therefore, our results in this section corroborate the second hypothesis that the increasing trend of migration of higher education students from the North Africa region is caused by several push-pull factors (e.g. economic, social, political, cultural and educational). Moreover, our results in this section support the third hypothesis that migration of higher education students from the North Africa region lead to mixed positive and negative impacts (e.g. transfer of knowledge, brain gain and skill acquisition for returned migrant students, but weak capacity to retain talents and brain drain for non-returned migrant students). Our findings in this section corroborate the fourth hypothesis that skills of migrant higher education students from the North Africa region can be better mobilised in their countries of origin by addressing the push-pull factors that determine migration of skills from the North Africa region.

4.4 *The impacts of international students in the UK*

Several studies discuss the impacts of international students in the UK (see Kelly, *et al.*, 2014; London Economics, 2018; Conlon *et al.*, 2019). For instance, some researchers argue that if international students continue to work in the UK after graduating these benefits the UK economy because they are young and UK-educated with specific skills such as language and cultural knowledge that can help UK businesses break into new markets (e.g., Hawthorne, 2008; Brown, 2009; Lomer, 2017, p. 127–198). Research commissioned by HEPI also found that international students who stayed in the UK after graduating made a substantial contribution to the UK tax revenues (Conlon *et al.*, 2019). Others argue that the UK also benefits when international students return to their country of origin. This is because they may become the “UK’s ambassadors” (House of Lords, 2014; Lomer, 2017, p. 99–125), enhancing the UK’s ‘soft power’ by becoming leaders in their origin country (Hillman & Huxley, 2019b), or by creating business and research links with the UK (e.g., Mellors-Bourne *et al.*, 2013; Holden & Tryhorn, 2013; Hill & Beadle, 2014).²⁴

Research has consistently found that international students have positive economic impacts in the UK. Students’ main economic impact comes from them spending money in the UK, including on tuition fees, accommodation, subsistence, and travel. Most of the recent studies examining the economic impact of

²⁴ Walsh, P.W. (2020) ‘International Student Migration to the UK,’ The Migration Observatory (2020), Centre on Migration, Policy and Society (COMPAS) University of Oxford, 21 Mar 2020: <https://migrationobservatory.ox.ac.uk/resources/briefings/international-student-migration-to-the-uk/> Accessed March 30, 2020.

international students have focused on export earnings: expenditure on goods and services in the UK using money brought in from abroad. The most recent estimate of the ‘overall economic impact’ of international students in UK higher education subtracted economic costs (e.g., use of public services) from benefits (e.g., tuition fee income, spending). It found that international students were a net economic contributor: £20.3bn in 2015/16, with non-EU-domiciled students generating 80% (£16.3bn) of the total (Conlon *et al.*, 2018). The higher non-EU contribution was driven largely by the higher tuition fees charged to non-EU-domiciled students. Because international students are typically young and with few dependants, they are thought to generate relatively little cost through demands on public services such as education for children and health (Conlon *et al.*, 2018). Non-EU students tend to pay higher fees for undergraduate and postgraduate courses than UK and EU students, and thus generate more tuition fee revenue per person. This has led researchers to conclude that non-EU students in effect ‘cross-subsidise’ the education of domestic students – for example by generating revenue for improved facilities or by sustaining a wider availability of courses (Migration Advisory Committee, 2018; Hillman, 2020). In the academic year 2017/18, the tuition fees of UK students (making up 80% of all UK HE students) contributed 30% of UK universities’ total annual income, while EU students contributed 3%, and non-EU students (making up 14% of all students) contributed 14%. Tuition fee income from non-EU students has grown in recent years, making up 14% of UK universities’ total income in 2017/18. Tuition fee income from non-EU students has become increasingly important in recent years; in 2000/01 it made up only 5% of UK higher education’s total income.²⁵

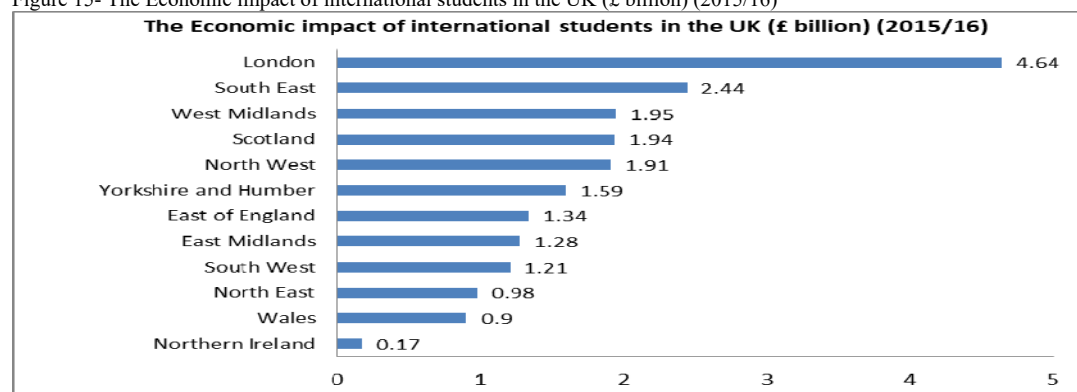
Migration Advisory Committee (2018) report explores the impacts of international students while they are studying, on the economy, educational institutions, domestic students, and wider communities. It considers the impacts of international students once their studies end, both those who remain in the UK and those who leave. Concerning the economic, fiscal and financial impacts, the report indicates that the international students bring an economic benefit to the UK and are an important export market, with the Department for Education estimating their export value at £17.6 billion in 2015. They are also important to the local economies where they study, supporting local employment. International students have direct impacts by spending money in the UK on tuition fees, living expenses, and by friends and family visiting them. International students can provide a vital source of income for the institutions where they study, cross-subsidising research and the education of domestic students. International students have a positive impact on public finances. Regarding the impact on domestic students international students from outside the EEA tend to pay higher fees for studying than domestic students. This subsidises the education of domestic students, for example through wider availability of courses or improved facilities. Domestic students generally have a positive view of studying alongside international students, though there are some who raise concerns over the quality of academic discussions and international students requiring more attention from the lecturer. On balance, the evidence suggests that the benefits of international students outweigh any negative impacts on the educational experience of domestic students. Concerning the impact on the wider community, international students may have some impact on the wider communities in which they live, though these impacts are difficult to quantify and to distinguish from the impact of students in general. Available evidence suggests no adverse impact on communities. Regarding the impacts after study, recent cohorts of international students on a Tier 4 visa have high compliance with their visa

²⁵ Walsh, P.W. (2020) ‘International Student Migration to the UK,’ The Migration Observatory (2020), Centre on Migration, Policy and Society (COMPAS) University of Oxford, 21 Mar 2020: <https://migrationobservatory.ox.ac.uk/resources/briefings/international-student-migration-to-the-uk/> Accessed March 30, 2020.

expiration conditions. The majority leave the UK once their visa has expired, with around a quarter extending their visa, usually for further study. Following changes to the post-study visa rules in 2012, the numbers applying for a visa extension for work have dropped sharply – from over 45,000 to around 6,000. Most international students moving from a Tier 4 student visa to a Tier 2 work visa; move into STEM4 or business-related jobs; they are more likely to come from research-intensive institutions. While many international students who remain in the UK for work report levels of earnings similar to the UK graduates, a sizeable group of non-EU students seem to have surprisingly low earnings. International students who leave the UK after study benefit the UK's soft power and foster ongoing business and research links.²⁶

The International facts and figures Universities UK International (2019) report shows that welcoming new international students every year has economic benefits across the UK. The net economic impact of the 2015-16 cohort of international students over the course of their studies is expected to be around £20.3bn. The economic impact of international students in the UK in (2015/16) is reported high in London (£4.64bn), followed by South East (£2.44bn), West Midlands (£1.95bn), Scotland (£1.94bn), North West (£1.91bn), Yorkshire and Humber (£1.59bn), East of England (£1.34bn), East Midlands (£1.28bn), South West (£1.21bn), North East (£0.98bn), Wales (£0.90bn), and Northern Ireland (£0.17bn) respectively. (See Figure 15)

Figure 15- The Economic impact of international students in the UK (£ billion) (2015/16)



Source: Adapted from the International facts and figures Universities UK International July 2019, p. 9

5. Conclusions and policy recommendations.

This paper uses both the descriptive and comparative approaches to provide overview of migration of higher education students from North Africa to the United Kingdom (UK). We fill the gap in the African literature and present a more comprehensive and recent analysis of migration of higher education students from the North Africa region to the UK using UNESCO recent secondary data on international students mobility in tertiary education. We provide an interesting comparative analysis of migration of higher education students from the North Africa region to the UK. A novel element in our analysis is that we examine migration of higher education students from the North Africa region to the UK from both national and regional perspectives; mainly we discuss migration of higher education students for each individual country in North Africa region (Algeria, Egypt, Libya, Morocco, Sudan and Tunisia) and then discuss the total for the entire North Africa region. Therefore, we provide an extremely valuable contribution to the increasing debate in the international literature concerning the increasing interaction between migration and increasing internationalisation of higher education. Our findings

²⁶ See Migration Advisory Committee (2018) 'Impact of international students in the UK,' London, UK,' Migration Advisory Committee, September 2018, pp. 3-4.

support the first hypothesis that from national perspective, the pattern and size of migration of higher education students from the North Africa region to the UK increased substantially over the period (2000-2017/2018) but the distribution showed considerable variation across North African countries. Our results corroborate the second hypothesis that the increasing trend of migration of higher education students from the North Africa region to the UK is caused by several push-pull factors (e.g. economic, social, political, cultural and educational). Our results support the third hypothesis that migration of higher education students from the North Africa to the UK lead to mixed positive and negative impacts (e.g. transfer of knowledge, brain gain and skill acquisition for returned migrant students, but weak capacity to retain talents and brain drain for non-returned migrant students). Our findings corroborate the fourth hypothesis that skills of migrant higher education students from the North Africa region can be better mobilised in their countries of origin by addressing the push-pull factors that determine migration of skills from the North Africa region. Our findings imply that migration of higher education students from North Africa remain an essential 'issue of concern', and should be at the top of political agendas for the North Africa countries. Particularly, brain drain from North Africa must become a public policy concern of the sending countries in North Africa and for the receiving countries in Europe and USA. An accurate assessment of brain drain requires the availability of accurate, reliable and detailed data. However, in the case of North Africa, most of these data are either unavailable, or difficult to access, the scarcity of data makes it difficult to discuss this issue adequately.

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