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Strategic Plan for the Absorption and Utilization of High-Skilled Labor



Partners

Research Center – Intercollege, Cyprus
Center for Strategic Studies, Jordan
Intercultural Association Grammelot, Italy
Association of Civil Society and Development Institute, Turkey

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Introduction

Brain Drain can be defined as the movement of skilled and educated individuals from one country to another in search for a better job, improved career prospects and therefore an overall better life. It is triggered by the lack of suitable jobs and career prospects in the mother country and by the enhanced prospects in the host country. It usually affects the better skilled and educated young citizens of a country. In the case of two of the four countries participating in this study, Jordan and Turkey, brain drain can be thought of in terms of a national policy to secure much needed hard currency from abroad in the form of remittances. In the case of the two other countries Cyprus and Italy it reflects more on the inability of the two countries to enable the necessary preconditions for creating enough value added jobs and career prospects for its best and brightest. As shown from the four cases presented here the brain drain affects equally highly developed countries as well as less developed ones.

This point signifies the importance of the problem for both developed and less developed nations and the need to address it in a systematic and comprehensive manner. The brain drain in the European context directly affects the challenge that European leaders set for themselves in transforming Europe. This will be carried out through the Lisbon Agenda which is the economic and social reform programme of the EU¹ that broadly aims to make Europe, into the most competitive and dynamic knowledge based economy by 2010. Linked with this strategy are programmes for economic development, investment in research and development and of course education strategies². At this point it looks unlikely that Europe will be able to reach the goals it has set for itself. But this can be the subject matter for yet another research project.

This action has as its main goal the cooperation and exchange of ideas among the young researchers participating in an international environment, laying the bases for a more coherent and larger action under the 7th Framework Programme of the EU, or other programmes. In order to achieve this goal, the young researchers under the guidance of their mentors engaged in a high-level research project, dealing with socio-economic challenges in the Mediterranean, and have as a team reached valuable outcomes that can act as inputs and insights for further research. The young researchers have developed a “Strategic Plan for the absorption and utilization of high-skilled citizens by the source countries” that will have as direct beneficiaries the official public authorities of the four countries, and as indirect beneficiaries, international organizations dealing with the issue of migration and development and, of course, migrants themselves.

In its objectives, the proposed project will firstly examine the issue of “brain drain” in the four Mediterranean countries. Specifically it will assess the current situation of migration of expertise in the European area, the legal basis that exists in the European Union, the Council of Europe and other international organizations. Successful practices implemented in the EU, such as the development of the source countries, the repatriation of high-skilled migrants, and their absorption and accumulation, will be recorded. At a second stage, the project will examine the current situation in the four participating countries, and evaluate the effectiveness of the practices followed. These practices as well as the overall situation in these countries will be compared and measured as to their impact on development.

¹ ISCHYS, *ibid*, Alexandrou Christina, Kyriakides Sofianos et al, *Achieving the Lisbon Goals in Cyprus, The role of a National Youth Policy*, ISCHYS, 2006, pp. 9

² *ibid*, pp. 13

In order to design a well-founded Strategic Plan, the young researchers have completed an analysis of the different social, economic and political conditions in the four countries, assessed possible deterioration and improvement of conditions, and drew some conclusions on the future migratory trends of high-skilled people. This much longer background document lays the theoretical background and explores the relevant issues for each country in more detail and was edited by Debora Derlagen. This report comprises of six chapters including the introduction and conclusion and the four cases one for each country, listed in strictly alphabetical order.

In **Chapter 1: Brain Drain and Brain Gain: Cyprus** Tania Charalambidou and Skevi Voskaridou of the Research Center -Intercollege present the case of Cyprus by utilizing the available limited economic and social data and by drawing on discussions with colleagues and policy experts. A constant theme through out the research is the limited data on which to draw from. This problem is more apparent in the cases of Cyprus and Jordan. Probably the extent of brain drain in Cyprus is the least severe among the partners. But then again if the offered estimation that 20% of students studying abroad do not return back home after the completion of their studies proves accurate should signal that Cyprus has a more severe problem than anticipated. If the best brains do not return then some other country gets the benefit.

In **Chapter 2: Brain Drain and Brain Gain: Jordan** Prof. Ghassan Omet and Ibrahim Saif from the University of Jordan present an interesting case and a national policy that actually seeks to gain advantage from the brain drain through the remittances that young Jordanian graduates sent back home from their outposts in the Gulf States. The paper presents more questions for further research than answers to questions. This practice has serious long term social and economic consequences that need to be addressed. Jordan is the only partner that is not a member or candidate for membership of the EU but in a number of ways it shares with the other partners, challenges that are more pronounced in the context of a more developed state

In **Chapter 3: Brain Drain and Brain Gain: Italy** Marida Gesumaria from the Intercultural Association Grammelot portrays a mildly bleak picture from Italy and its efforts to reorganize the tertiary education system and retain its best brains. As in the case of Turkey Italy experiences both brain drain and brain gain as some of its scientists leave for better employment opportunities in Western Europe and America and some of the posts they leave behind are filled with scientists from Eastern Europe that are willing to work for less and with less. The call for reform of the Italian educational and research is clear and well presented as is the need for more public and private funding.

In **Chapter 4: Brain Drain and Brain Gain: Turkey** Prof. Dr. Necdet TIMUR and Assoc. Prof. Dr. Necdet SAGLAM of the Association of Civil Society and Development Institute in Eskisehir present the case of Turkey which contributes for an interesting reading with far reaching political, economic and social consequences. Turkey's first "brain drain" wave began in the 1960s, with doctors and engineers, being among the first group professionals and academics emigrating, mostly to Western Europe. This was followed by a second wave of less educated workers who emigrated to Europe taking advantage of bilateral agreements between Turkey and a number of European countries, that were experiencing labour shortages. This policy was intended to lower the high level of unemployment for workers and allow them to move abroad to work temporarily and send back remittances for their families. This policy had some unintended consequences for both the mother and the host countries as most of the emigrants instead of returning back they sent for their families and settled in the host countries.

The authors also point out that high skilled migration tends to improve the welfare of the host country while the welfare impact of migration on the source country is ambiguous. By contrast, low-skilled migration has an ambiguous welfare impact on the host country while generally improving welfare there need not be a conflict of interest between source and host country but there may well be³.

In Chapter 5: Conclusions and Recommendations the main issues discussed in the four country specific chapters are retrospectively assessed, as they are brought together in an effort to highlight core considerations, concerns and challenges, and point out similarities and differences between the four national experiences.

³ Jakob von Weizsäcker, WELCOME TO EUROPE, bruegelpolicybrief, ISSUE 2006/03, p.6.

Brain Drain and Brain Gain: Cyprus

I. Introduction

Since independence in 1960 Cyprus has enjoyed long periods of economic growth and prosperity, in a protected economic and social environment that promoted consensus among the social partners. This paternalistic environment extended to all spheres of public life. The events of the summer of 1974 brought all this to a standstill and, for two years at least, Cyprus suffered unprecedented levels of high unemployment, negative growth and economic and social hardship. Gradually the situation was reversed and the economy began to expand rapidly. The reconstruction and modernisation that was achieved was so remarkable that it was characterised as an 'economic miracle'⁴. More recently Cyprus has been enjoying conditions of full employment for a long time, even though the unemployment rate began to creep modestly higher in more recent years⁵.

During the years 1974 -1975 significant numbers of Cypriots emigrated in search for jobs and better lives. This emigration can be distinguished into two streams. The first has to do with Cypriots (both Greeks and Turks) that emigrated with their families to countries that already had a significant Cypriot communities from the 1940's, 1950's and early 1960's. These countries included the UK, Canada, Greece, Turkey, South Africa, Australia and New Zealand. The other stream had to do with Cypriots that went abroad temporality to work for few years. Destinations included countries of the former Eastern Block such as Bulgaria and Czechoslovakia and countries in the Arabian Gulf and Libya. In the Arab countries the concentration of Cypriots and their families was such that primary schools were set up to provide education to the pupils from Cyprus. This period signifies the most pronounced phenomenon of brain drain of skilled, highly skilled and educated Cypriots.

Cypriots have always shown a desire for education and therefore a high percentage of high school graduates tend to continue their studies in Cyprus or abroad. Upon graduation most of those newly university graduates are expected to come back to Cyprus to seek employment and establish families. It is estimated that about 20% of Cypriot graduates of foreign universities choose to stay abroad after graduation at least for a few years.. Nowadays, high-skilled and skilled people in Cyprus face difficulties in finding stable, good quality jobs that will provide the foundation on which to build their financial independence, plan their future and take decisions about family⁶. More recently more and more young graduates experience frustration in achieving the same levels of prosperity as their parents. There is no hard data available on the number of people who either do not return from their studies abroad or emigrate from Cyprus because they can not secure career employment.

The relatively high unemployment for high-skilled people is not interrelated with foreign workers coming to the island⁷. As a rule, immigrant workers are employed in manual, unskilled, low-paid and low-prestige jobs in which Cypriots show no interest. Furthermore, a significant number of immigrants perform "atypical" work, mainly of a seasonal nature⁸. Communication issues, level of sophistication, Cypriot citizenship and assimilation with the

⁴ For an economic analysis of the period see Christodoulou 1992, 1995 and Theophanous 1995.

⁵ Ministry of Finance, *National Lisbon Programme Summary*

⁶ Alexandrou Christina, Kyriakides Sofianos et al, *Achieving the Lisbon Goals in Cyprus, The role of a National Youth Policy*, ISCHYS, 2006, pp. 9

⁷ Cyprus Labour Institute, *ibid*, pp. 1

⁸ *ibid*, pp. 3

local culture are the main reasons that foreign workers fail to secure high level employment in Cyprus.

II. National Plans on employment

The Lisbon Strategy is an economic and social reform programme of the EU⁹ that broadly aims to make Europe, by 2010, the most competitive and the most dynamic knowledge-based economy in the world. Linked with this strategy are programmes for economic development, investment in research and development and of course education strategies¹⁰. Governments are encouraged to work with other social partners in the process of promoting the implementation of the Lisbon Programme. For that reason, the government of Cyprus has prepared and submitted its National Lisbon Programme, which reflects its broader development policy and reform agenda¹¹.

With a view to implementing the Lisbon Agenda, the First National Action Plan (NAP) for employment 2004-2006 sets out the guidelines that Cyprus should follow¹². It refers also to the need to review the issue of “the employment of foreign workers from third countries”. Cyprus has already transposed the anti-discrimination acquis and it is in the process of raising awareness to make full use of the new measures¹³.

Within this macroeconomic backdrop, the 2004 Cyprus NAP for Employment reports the following unemployment rates for 2003: 4.1% overall (3.8% for men and 4.6% for women), 1% for the long-term (i.e. 12 months and beyond) unemployed (0.8% for men and 1.3% for women), and 8.9% for young people. The increase in long-term unemployment during the slowdown of 2002-2003 was noticeable (from 0.7% in 2002 to 1% in 2003), the increase being more substantial for men (from 0.4% to 0.8%) than for women (0.9% to 1.3%). In Cyprus just under 25% of the number of people unemployed are long-term unemployed¹⁴. Despite this deterioration in macro economic conditions, unemployment in Cyprus is generally lower than is the case in the EU15 (8% and 4.4% respectively).

Key Macroeconomic Indicators

% Annual Change	1995 -2004	2005	2006 Projected
GDP	3,7	3,9	3,7
HCPI – Inflation	2,8	2,0	2,5
Unemployment Rate	3,8	5,3	5,5
Employment Growth	1,8 (1996 -2004)	2,6	1,5
Nominal Earnings	5,7	4,8	4,8
Productivity Growth	1,6	1,2	2,2
Current Account Balance (as a % of GDP)	3,7 (1996 -2004)	-5,4	-5,9

⁹ ISCHYS, *ibid*, pp. 13

¹⁰ *ibid*, pp. 13

¹¹ Ministry of Finance, *National Lisbon Programme Summary*

¹² Republic of Cyprus, *National Action Plan for Employment 2004 – 2006*, *ibid*

¹³ Cyprus Labour Institute, *ibid*, pp. 4

¹⁴ University of Cyprus, Department of Economics, *Cyprus*, “Personalise Action Programme for a new start: France, Statements and Comments”, by Louis N. Christofides, pp. 1 - 4

In 2004 there was a relative decline in unemployment. It is also worth pointing out that Cyprus employs a very large number of legal foreign workers (over 12% of the gainfully employed). In addition, it has absorbed substantial numbers of illegal workers. Finally it is estimated that about 8,000 -10,000 Turkish Cypriot workers from the north are now working in the south¹⁵.

Employment creation was satisfactory, exhibiting a growth rate of above 2% per annum in recent years. Labour market conditions remained tight, with the unemployment rate, based on the labour force survey for 2006, at 5.5%. The upward trend in unemployment observed since 2002 affects, mainly, females and young people. An increasing number of women, wish to be employed only under flexible employment conditions. – which are rare in the private sector in Cyprus- with a view to better combine family and professional obligations. It also affects young people seeking better jobs, in line with their qualifications¹⁶ and expectations.

Labour shortages (e.g. in the sectors of hotels and restaurants, trade and construction and at the occupational level in technical and low skilled occupations) have been addressed, to a large extent, by an increased supply of foreign workers and Turkish Cypriots. It should be noted that the substantial increase of foreign employment in recent years does not appear to have, significantly, affected unemployment among the unskilled domestic labour force. Annual increases in nominal earnings averaged 5.7% over the 1996-2004 period, reflecting productivity improvements and tight labour market conditions¹⁷.

Accordingly unit labour costs expanded at an annual rate of 4% over the same period exceeding the rate of improvement of labour productivity and affecting competitiveness, particularly in labour intensive activities. However, the rapidly rising number of foreign (legal and illegal estimated at 120.000 evenly divided) and Turkish-Cypriot workers is exerting a moderating effect on wages, which is reflected in a moderation of earning increase to 4.8% in 2005-2006. This moderation trend is expected to become more pronounced in the coming years¹⁸.

Though unemployment in Cyprus is low by EU standards, some aspects of this phenomenon should be of concern, given the strength of labour demand and the large number of foreign workers. To begin with, the large number of *long-term* unemployed (25% of the unemployed) is surprising. It is not clear why this situation persists. Secondly, the unemployment rate is higher for the young people, women and individuals over 54 of age. Targeted steps could be helpful to these groups and something like the Personalized Action Plan (PAP) could be a very valuable tool¹⁹.

Nevertheless labour demand in Cyprus has been robust. This combined with the fact that slowdowns, have to this point had modest effects on the unemployment rate, suggests that the Personalized Action Plan for a New Start might not be of immediate relevance²⁰.

¹⁵ *ibid*

¹⁶ Ministry of Finance, *National Reform Programme of Cyprus, Progress Report*, October 2006, pp. 18

¹⁷ *ibid*

¹⁸ *ibid*

¹⁹ UCY, "Personalise Action Programme for a new start: *ibid*

²⁰ *ibid*

III. Public Policy on Training and Education

On the face of full employment the Cyprus economy, there was a tendency for the professional training system to be oriented mainly towards training to alleviate the lack of skills rather than towards strengthening the employability of the unemployed and inactive²¹. Active measures are in place to prevent unemployment through forward planning about the long-term labour needs of the economy and various training schemes²². More recently there is a gradual development and establishment of training programmes, targeted to specific groups with low participation in training activities²³.

Indeed, one priority stated in the 2001 Joint Assessment Plan for Cyprus deals with the long-term unemployed. There are plans to expand the network and improve the housing and electronic infrastructure of the District Labour Offices in order to improve access to their services. The internet will be used more effectively to provide self-help both to employees and employers²⁴.

The Human Resource Development Authority of Cyprus (HRDA) is a semi-governmental organization which refers to the Minister of Labour and Social Insurance²⁵ and it is mainly responsible to create the necessary prerequisites for the planned and systematic training and development of Cyprus's human resources, at all levels and in all sectors, for meeting the economy's needs, within the overall national socio-economic policies²⁶. The HRDA aims to prevent and combat unemployment, through improving the employability of selected target-groups, (newcomers, unemployed and inactive women), by providing services of vocational guidance, training, placement, and work experience²⁷.

In the field of education Cyprus has participated in local and international programmes to improve and enhance the capacity building for learning and teaching²⁸. The ministers responsible for higher education in the countries signatory to the Bologna Declaration agreed that there is a need to introduce a system that is more uniformly structured and 'readable' in order to consolidate the European Higher Education Area by 2010.

One of the most important developments in the educational sector is the establishment of the *Panepistimio Kyprou* (University of Cyprus), a state university, as of September 1992. Earlier this year a new public university, *Technological University of Cyprus*²⁹, began offering courses, the *Open University of Cyprus* accepted its first graduate students and three private colleges of tertiary education attained university status. Other important changes in recent years are: compulsory education until 15 years of age, the establishment of the nine-year basic education, the enrichment of the curriculum with classes in technology and computer science, the broadening of specialities in technical education, the introduction of the common examinations in the last class of the *Lykeio* (lyceum). A very recent development in the system is the introduction of a new type of upper secondary school, the *Eniaio Lykeio*

²¹ Republic of Cyprus, *National Action Plan for Employment 2004 – 2006*, *ibid*, pp. 13

²² UCY, "Personalise Action Programme for a new start: *ibid*

²³ Republic of Cyprus, *National Action Plan for Employment 2004 – 2006*, *ibid*, pp. 13

²⁴ *ibid*

²⁵ Background at: <http://www.hrdaauth.org.cy/hrdaen/hrdaen/history/historyen.htm>

²⁶ Mission at:

<http://www.hrdaauth.org.cy/hrdaen/hrdaen/annualreport/ANAD%20Annual%20Report%202004.pdf>

²⁷ Republic of Cyprus, *National Action Plan for Employment 2004 – 2006*, *ibid*, pp. 13

²⁸ Cyprus Education at: http://www.enostos.net/education/index_cy.htm

²⁹ Unesco "Education for All: the Case of Cyprus" at:

http://www.unesco.org/education/wef/countryreports/Cyprus/rapport_1.html

(comprehensive lyceum) which aims at offering a general comprehensive secondary education at this level³⁰.

Cyprus has one of the highest numbers of university and higher education students on a per capita basis –about 75% of secondary school graduates attend some form of higher education either in Cyprus or abroad (2004/05)³¹. The majority of students at the tertiary level study in the fields of business, secretarial studies, education, social studies and computer technology.

IV. Research and Development

The further growth of Research and Development (R&D) is one of the most vital aims of the Lisbon Strategy agenda³². Extensive research and specialization can lead to the creation of a stronger and easily adaptable workforce, the establishment of long-life learning and the attraction of more people into employment³³. Compared with the other EU countries, Cyprus is one of the two worst performers, along with Malta, in the field of R&D. The Ministry of Finance explained that this is because there is no research culture, an insufficient research infrastructure and weak links between research organizations and enterprises³⁴. Not to mention that there are no significant private or state funds available for research.

The member states are expected to increase investment in Research in order to reach the target of 3% of GDP by 2010 while at the same time increase the investment of the business sector in 2/3 of the total R&D investment. This aim is of course not easily achievable for countries like Cyprus, which are not developed extensively in the field of research and devote only small amounts of their GDP in R&D. For Cyprus, even the 2008 target of 0.65% of GDP for Research is a very ambitious goal³⁵. Increasing the funds available for research will certainly improve the career opportunities for young graduates. It will also encourage more of them to return back home after graduation.

For the past few years the Research Promotion Foundation is sponsoring research programmes that enable junior and senior researchers, that work abroad, to return to Cyprus and work on their fields of expertise with funds partly provided by the Foundation. These programs support up to five scientists in each category for up to three years. The Foundation is also supporting young graduates that would like to get into research at the Masters and Ph.D. levels. Up to five students under 35 years of age at each category are eligible to participate.

³⁰ European Guidance Network - Fit for Europe "Education System" at: http://www.fit-for-europe.info/webcom/show_page_ffee.php?wc_c=15927&wc_id=1&wc_lkm=67202&PHPSESSID=1...

³¹ Eurydice: The Education System in Cyprus at:

<http://194.78.211.243/Eurybase/Application/frameset.asp?country=CY&language=EN>

³² ISCHYS, *ibid*, pp. 13

³³ *ibid*

³⁴ *ibid*, pp. 22

³⁵ *ibid*, pp. 18

V. Suggestions

Increase female participation rates:³⁶

- Scheme for the promotion of training and employability of economically inactive women, co-financed by the ESF (European Social Fund).
- Action aiming at expansion and improvement of care services for the children, the elderly, the disabled and other dependents, co-financed from the ESF

Further development of human capital³⁷:

- Continuous qualitative improvement of the educational system – Adaptation to labour market needs
 - Implementation of a programme for introducing information technology in all levels of education
 - Promotion of e-learning
- Increase opportunities for university studies in Cyprus through the further development of universities, both public and private.

Last but not least the Cyprus Government should actively support through appropriate actions the small and medium size enterprises through which further economic and social development and job creation could become possible³⁸.

VI. Conclusions

The consensus is that up to now Cyprus has not experienced significant levels of brain drain or it might be that the problem was not given proper attention. On the contrary it is assumed that most Cypriots prefer to return to Cyprus and accept a lower level job than they could achieve abroad because of strong social and family ties. It is estimated that about 20% of university graduates do not return to Cyprus after graduation. There is no hard data to support this estimation which if it proves accurate would certainly underline the existence of a problem.

Starting at about the turn of the century the middle class, that used to be the backbone of society and economy, has been under threat by the lack of enough good paid jobs for the ever expanding numbers of young university graduates. Of course this underutilization of young people with good studies and high drive for success is not sustainable. Sooner or later this trend will lead to social unrest and or a mass exodus, of young graduates, to countries that offer more opportunities. Given the relatively high levels of unemployment in the EU maybe this exodus will lead to other countries such as the USA, Canada and Australia that enjoy higher levels of prosperity and already have established Cypriot and Greek communities.

It seems that the economy is not creating enough high value added jobs. Instead it is creating more low value added jobs, which usually go to non-Cypriots. The economy suffers from low productivity rates (and therefore lower competitiveness) compared to other EU countries At the same time Cypriot society entertains high aspirations and young people

³⁶ Ministry of Finance, *National Lisbon Programme Summary*

³⁷ *ibid*

³⁸ Republic of Cyprus, *National Action Plan for Employment 2004 – 2006*, *ibid*, pp. 16

sustain even higher expectations. The economy must move forward with restructuring and diversification so that it would be in a position to generate more challenging jobs³⁹.

Cyprus is located in the Eastern Mediterranean, an area with great geo-strategic and geo-economic influence. Tourism has been an engine of growth and if restructured it can lead to even better results. Furthermore, Cyprus has the potential to serve as a regional academic, medical and financial centre and as a true hub, which provides for the needs of the broader area. It is important that the social partners should give more emphasis on further expanding the economy along the lines described above in brain intensive, value added services. In this regard, if Cyprus is successful it will turn itself into an important asset of the Union⁴⁰.

³⁹ Theophanous Andreas and Tirkides Yiannis (2006)

⁴⁰ *ibid*

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Brain Drain and Brain Gain: Jordan

I. Introduction

The sending of remittances by migrant workers is really an old topic in the study of migration, but one that recently has attracted renewed attention by researchers and policy-makers. This interest is due to several reasons including the fact that official flows of workers' remittances to developing countries have increased from \$31.2 billion in 1990 to more than \$199 billion in 2006 (Mohapatra, 2007). Similarly, the fact that about 3 percent of the world's 6.4 billion people (191 million) were international migrants in 2005 and that about 33 percent, 32 percent, 28 percent, and 7 percent of the migrants moved from south to north, south to south, north to north, and from north to south respectively (Martin, 2006), the issue of migration has been attracting a growing research interest.

The sheer volume of remittances has captured the attention of academics, policy-makers, international organizations, and others. Much of this research is devoted to a number of issues including the size and determinants of remittances⁴¹, the economic role of remittances including its impact on poverty and inequality⁴², labour markets⁴³, human capital⁴⁴, investment and savings⁴⁵, and on economic growth⁴⁶.

The fact that immigration policies in receiving countries is increasingly tilted in favour of skilled migrants (Beine et al., 2003), the issue of the brain drain has generated a lot of research interest. This research interest examined, for example, the impact of migration prospects on gross human capital formation (Biene et al., 2001 and 2003), impact of skilled migration on remittances (Kangasniemi et al., 2004 and Fiani, 2006) and the inclination of skilled migrants to return and their impact on productivity and technology diffusion (Commander et al., 2004). On average, these works conclude by stating that skilled migration has some significant positive effects on developing countries. In other words, the positive impact turns the brain drain into a brain gain⁴⁷.

Against the above brief account of the literature, this part highlights the migration challenges, in terms of the utilization of highly skilled labour, which face the Jordanian economy. In section II, a brief account of the background to Jordanian migration is presented. Section III completed this part by raising a number of challenges which must be addressed if the Jordanian economy were to maintain, if not maximize, the benefits from Jordanian (highly skilled) migrants.

II. Migration in Jordanian: Some Background

Following the 1973 Arab – Israeli War and the rising oil prices, the Arab oil-producing countries initiated many ambitious development plans which required manpower. To meet this challenge, all Gulf countries recruited workers from abroad (including Jordan). Consequently, the Arab

⁴¹ See, for example, Lucas and Stark (1985), Fiani (1994 and 2002) and Higgins et al. (2004).

⁴² See, for example, Adams (2005) and Adams and Page (2005).

⁴³ See, for example, Hanson (2003) and Chami et al. (2003).

⁴⁴ See, for example, Cox et al. (2003), Cordova (2005) and Mckenzie and Rapoport (2005).

⁴⁵ See, for example, Woodruff and Zenteno (2004) and Parrado (2004).

⁴⁶ See, for example, Chami et al. (2003).

⁴⁷ In addition to these works, the literature has examined the determinants of migration as well as the determinants of specific types of migrants such as highly skilled workers and graduates (see, for example, Biene et al., 2006 and Gungor and Tansel, 2007).

(Gulf) region has become a major destination for labour migrants. For example, in 2005, the region hosted about 10.4 percent of all international migrants in the world and more than 26 percent of all migrants in the less developed regions

Like all Arab states, Jordan is a recent creation, having been established in 1921 within borders created by the European colonial powers. Since its' creation, the Hashemite Kingdom of Jordan has passed through many external and internal disturbances including the 1948 and 1967 Arab-Israeli Wars. These two Wars resulted in a large influx of Palestinian refugees into Jordan. Given the fact that Jordan is a small country with limited resources, many of the Palestinian refugees went to look for work in the Gulf. Indeed Palestinian refugees found it relatively easy to migrate to the Gulf for work given the fact that following the 1973/4 oil price increase, all Arab oil-producing countries initiated many ambitious development plans which required manpower.

Against this brief account, one should not be surprised to learn that since the mid 1970s, workers remittances have become a significant factor in the country's economic development. Moreover, it is estimated that the total number of Jordanians working in the Gulf countries is equal to 400,000.

Relative to the circumstances which led to Jordan being reliant on migration and remittances, it must be pointed out that the Jordanian economy has been consistently suffering from unemployment. In addition, it is useful to note that highly educated people, and even people with medical, engineering, and computer science education, have been finding it difficult to find employment in the country. This is why successive Jordanian governments have promoted and facilitated the migration of Jordanians to the Gulf region. Indeed, this is why the Jordanian private sector (as well as the public sector) has been investing heavily in the education sector, especially at the University level and this is why, it is argued, the Jordanian economy is not likely to suffer from the brain drain problem. On the contrary, the presented evidence shows that the Jordanian economy has managed to turn the brain drain into a brain gain. Having said that, a number of challenges remain and these will be discussed in the following section.

III. Migration and Unemployment: Challenging Issues

The fact that Jordanians who work in the Gulf countries do not represent any serious brain drain issue, it is felt important, as far as the Jordanian economy is concerned, to research many, hitherto not examined, issues and these include the followings.

First, what are the social - demographic characteristics of the Jordanians working in the Gulf including their age, marital status, total number of members per household, education level, and occupation before emigration.

Second, what are the main features of Jordanian emigration to the Gulf countries including reasons of emigration, length of time period spent at work at home and abroad, whether wife works or not, whether or not wife (and children) lives with the household head, current type of employment, and the social security status.

Third, what is the experience of the Jordanians working in the Gulf region in terms of the dynamics of the labour market's competitive conditions. In other words, are Jordanians facing greater levels of competition from other nationals for their labour services. No matter what the answer to this issue is, knowing the working conditions of Jordanians in the Gulf should enable Jordanian policy-makers to draw some long-term plans that maximize the emigration benefits.

Fourth, it is worth examining the foreign currency remittances including the average income earned, how much is remitted, method of remitting, to whom are the remitted funds transferred, use of the remitted funds, and a number of questions whose objective is to arrive at some estimate of “unofficial” remittances.

Finally, based on the findings of such research, Jordanian authorities can attempt to enhance the positive impact of migration and remittances on the national economy. For example, are the demographic characteristics of Jordanians working in different countries in the Gulf different? Do they have more or less similar job experiences, job types and remitting behavior? What can be done to reduce the unofficial means of transferring remittances? What are the primary determinants of remittances and what can be done to increase them? Do Jordanians working in the Gulf use their remittances in establishing small and medium-sized enterprises in Jordan? Do Jordanians use their remitted funds to invest in assets like land and housing? If the answer is yes, does this observation result in increasing property prices to the "detriment" of Jordanians who work at home? Where do Jordanians remit their funds? Are remittances being sent largely to the Capital or spread all over the country?

In addition to the above, it must be stated that the demographic changes in the MENA region remains the key challenge as far as all Jordanians (and the national economy) who work in the Gulf region. It is common knowledge that, for example, over the next two decades, the labour force in Saudi Arabia is expected to increase from 7.31 million to 14.25 million. Similarly, the Egyptian and Jordanian labour forces are expected to increase by about 93 percent and 68 percent respectively. These figures indicate that the MENA countries in general must create huge numbers of new jobs to absorb the new labour market entrants. Moreover, these demographic observations indicate that Jordanians who work in the Gulf are expected to face greater levels of competition from local (Gulf nationals) and others (Egyptians) for their labour services. In other words, the Jordanian challenge lies not so much in reducing the brain drain issue but in how to keep (and perhaps increase) those Jordanians who currently work in the Gulf region. By providing well examined answers to the above-mentioned research issues, Jordan can meet the challenge of migration.

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Brain Drain and Brain Gain: Italy

I. Introduction

Italy was and still is a country characterized by a considerable outflow of researchers and other highly qualified experts. Nevertheless, this outflow of human resources for science and technology could be at least partially compensated by the simultaneous influx of foreign researchers.

The most probable destination of these potential flows would inevitably be the Research Institutions, where the involvement of foreign researchers would not be hindered either by the need to undertake teaching in a not very widely-known language like Italian (as would happen in the universities) or by the lack of research investments by the Italian industrial system. And numerous Italian Public Research Institutions are undoubtedly centres of excellence in their respective scientific sectors, and there would be no lack of a potential capacity of attraction for foreign researchers, but actually, Italy seems still not be particularly aware of the value and potential benefits coming from hosting foreign students: no specific policies have been adopted to develop this resource.

All more advanced Countries let their own talents leave, recruiting others from abroad. Italy is characterized by the shortage of brain gain: only in Europe, Italy imports ten times less high skilled intellectual workers (0,33%) than those ones exports (3,44%), without talking about emigration towards USA, that removes further 4%. With less than 2% of the foreign visiting researchers (thirty times less than the USA, ten less than Germany, the latter is doing well), Italy is in the last places as regards the international exchange of talents.

The stock of talents moving around the world is on the increase: in the 2001 they were 1,5 million of scholars coming from 75 countries, in the 2025 UNESCO expects they will be 8 million. And the destinations are not taken for granted at all like a decade ago. The visa policy in USA (after 9/11) has diverted elsewhere thousands of talents, towards Europe and towards the asiatic “*tigers*”, but Italy remains among less desired countries.

Italy has a good international reputation as regards education⁴⁸, but it is considered a hostile environment to work and research. Between 2000 and 2004 the number of foreign students in Italy has increased in 63%; between 2002 and 2005 the number of foreign graduated has almost doubled; but it's difficult to calculate how many foreigners, after the graduation, remain in the Italian firms and research centres.

Until 2005 a law prohibited the foreigners from enrolling in courses of specialization at Italian universities. The foreign teachers employed by Italian universities are few dozens: even at universities like *Ca' Foscari* in Venice, famous for its high level of internationalization, the presence of foreign teachers is not over the 2% of teaching staff, whereas at American or

⁴⁸ In Italy there are institutions of excellence, schools of high education, created on the french example of “*grandes ecoles*” net and born to keep up with the other European Countries and the USA. They are institutes dedicated to doctoral and post-doctoral didactics, provided with a permanent teaching staff, its own balance and independent managerial staff. They are: Istituto Italiano di Scienze Umane di Firenze, Scuola Superiore di Catania, Istituto di Studi Avanzati di Lucca, Scuola Normale Superiore di Pisa, Scuola Superiore Sant' Anna di Pisa, Istituto Superiore Universitario di Formazione Interdisciplinare di Lecce, Istituto Universitario di Studi Superiori di Pavia, Scuola Internazionale di Studi Avanzati di Trieste.

British universities it varies from 30 to 70%. The competitions⁴⁹ (*concorsi*) at universities and research centres are published only on the Official Gazette, up to some years ago it wasn't available for consultation on Internet either, and it's still only in Italian. Not many are the universities that, on own initiative, publish their own announcements of competition on the web. Very few private and public universities (Bocconi in Milan, University of Trento) have been recently successful in getting derogations of law in order to give prestigious researchers wages suitable to their abilities and international standards, instead of the newcomers' basic pay⁵⁰.

All of it in an international picture where what is more worth for the global competition is no longer so much availability of basic commodities as that one of human capital, ideas, innovative ability.

II. Brain Drain: Brains in the Cage⁵¹?

Recently the Italian press, popular newspapers as well as more academic-oriented articles, have reported the uneasiness of many Italian college graduates forced to work abroad because of the lack of job and research opportunities in the country (see, for instance, Severgnini (2001), ADI (2001), Dulbecco (2002)). Some people claim that part of the responsibility of this situation lies with the lack of financial support and appropriate incentives to research. In Italy, both in the public and in the private sector, resources devoted to research are both fewer and less productive than in other advanced economies. However, the situation of the Italian research sector, that still employs a very small fraction of Italian college graduates, is not the only factor pushing "Italian brains" to emigrate or to remain abroad after studying in foreign universities. The Italian labor market exhibits a combination of institutions and traditions that protect those who already have a job and harm those who are looking for a job. These features are present also for the highly skilled segment of the labor market and affect mostly young graduates who are searching for their first job. It is, therefore, young people at the end of their studies who are most affected by the lack of competitiveness and transparency in hiring practices; personal and family contacts are still a prevalent instrument used in finding a first job. Nevertheless, in spite of widespread anecdotal evidence on the "brain drain" from Italy, a more precise statistical analysis is needed to quantify (and "qualify") the phenomenon. It would be possible to try to quantify the flow of highly educated Italians towards foreign countries using, for example, representative and reliable data through the Register of Italians Abroad (AIRE). This database has information on personal characteristics such as schooling, region of origin, year of emigration and others, for all Italians who are currently abroad. It is the most complete database on Italian residents abroad and its access is granted by the Italian Ministry of Domestic Affairs. It is possible to reduce the causes of Italian brain drain to two large rationales.

The first is related to the attitude Italian politicians have towards scientific research; under a mainly humanistic education, the average politician believes that science cannot have an

⁴⁹ The competitions at Italian universities last one year on the whole, they have scarcely transparent criteria, where what is worth as qualification are the research projects published long before, and not work in progress (the current part and the core of cv), and interviews are in Italian (the possible lessons will be only in Italian as well).

⁵⁰ Smargiassi M., *Porte chiuse ai cervelli stranieri*, Repubblica, Dec. 2006.

⁵¹ Such title comes out from a collection of stories from 20 Italian researchers, published at the beginning of 2003 with a common tale to tell: a further denunciation, a window on the difficulties young people face every day in Italy's research realm, and a source of sad surprises. It is an album of snapshots of a daily struggle for survival. The initiative is the work of Italy's 4-year-old PhD student association, Associazione Dottorandi e Dottori di Ricerca Italiani (ADI).

immediate, useful effect on society, and that, consequently, most of the scientific research does not deserve to be funded by the Government.

Italy invested (2005) only 1% of GDP in research, but, on a general level, public research expenses don't diverge significantly from those ones in other countries: public expenses in R&D is equivalent to 0.5% of GDP in Italy, against 0.6% in Japan, 0.7% in the USA, 1.1% in EU. That makes a great difference concerns the private expenses in R&D which don't go over 0.5% in Italy, while it is equal to 2.4% in Japan, 2% in the USA, 1.1% in EU.

It is very ambitious to achieve 2.5% of GDP in research expenses by 2010, whose 2/3 funded by the private sector.

The second reason concerns the academic system and the academic community, seen as a place where nepotism, bureaucracy and corruption hold sway. These two hypothesis are correlated; a certain degree of nepotism and corruption was certainly favoured by the tight finances which the scientific academic community was forced to administrate, given that Government funding has never been very generous.

Universities encounter such problems because there is little incentive for professors to improve their schools' performance, because of guaranteed employment and a lack of effective sanctions. Like public research centres, universities rely too heavily on transfers from the State, which are not tied to performance. Performance-related transfers could increase competition between institutions and thus enhance their quality. To improve this quality further, teaching staff ought to be likewise subject to merit-based systems of promotion and compensation.

It is more and more common for academic researchers working in Italy to send their "pupils" to spend long periods abroad, while waiting for a position to become available at their research centres. Although at present these young researchers are considered by the press to be part of the brain drain phenomenon, it would be more appropriate to collocate them among the restricted and luckiest group of migrants destined to return home.

The relatively low level of research intensity in Italy is mainly explained by the low share of private R&D spending. This low intensity translates in a low number of researchers in the business sector. This outcome could be in part accounted by the specialization of the Italian industry in traditional and mature sectors.

In fact another impediment is the very small size of the majority of Italian firms. Small-sized firms are mainly family-based and are less prone to accept the participation of financial institutions and institutional investors in the companies' capital, which would represent an important source of funding for research and innovation. It's out of doubt that the lack of investments in R&D by Italian companies shows both the sectorial structure of Italian economy – that penalize sectors with a high intensity of R&D – and the dimensional structure of the firms that, also in situations with equality of sector, tend to be comparatively smaller and to invest comparatively less in R&D⁵².

⁵² It is meaningless to have high goals of R&D if Italy continues to be still deprived of those productive factors, especially skilled labour, that favour the growth in the high tech sectors. It's necessary a turning point to come out of that vicious circle where a low offer of human capital leads to a model of low tech specialization, which, in its turn, discourages the demand of human capital. It emerges the requirement of a double action: on the offer, with horizontal politics of support to the innovation, training and internationalization of small medium-sized firms, by creating spin off in the high technology, registering patents, investing in risk capital; on the demand from the human capital, through larger investments in the advanced education.

Among about 300.000 Italian high skilled work force living abroad in the OECD Countries, 45% stay in North America (exactly 32% in the USA and 12.6% in Canada). 40% remain in Europe (9.3% in France, 8% in the United Kingdom, 6.9% in Switzerland, 6.2% in Germany). Outside Europe, the Country attracting more Italians is Australia, whereas the Asiatic Countries considered by OECD (Japan, South Korea and Turkey) attract only 0.6%⁵³. These data confirm that the Italian problem lies not into the drain issue, but into the high percentage of skilled labour among those who left the Country, and such phenomenon concerns particularly the university scientific research field.

III. From Brain Gain to Brain Exchange: which Strategies?

Italy is the European Country with the smallest number of university students coming from other nations and of foreign people occupied in activities of S&T⁵⁴ and the percentage of Italian graduates emigrated is ten times higher than the one of foreign graduates present in the Country. The high qualified migratory flow is, then, asymmetric, that means that human resources going out of the Country are greater in number than the ones coming in. This condition of drawback depends on a low degree of internationalization of training processes and on a low degree of investments in R&D both public and private.

In the last years, Italy has appointed some instruments and measures for the coming back of Italian researchers and the arrival of foreign scholars. But this is not enough to rebalance the budget between migratory flows of high qualified personnel going out and coming in, caused by years of a politics that is not able to sustain research and human resources.

The so-called operation 'brain buster', launched by the MIUR⁵⁵ (with the law DM 26/01/2001) aimed to attract back Italian scientists and/or foreign academics working in the research sector abroad. The state-financed "Brain Re-entry" programme brought foreign and Italian-born scholars based in other countries to Italian universities on contracts of up to three years that provided for both research and didactic activities.

But the effects of this operation have been rather disappointing: according to means of information, only 466 researchers and professor (about 300 italians of whom) have participated, about 1% of Italian researchers abroad, with physics and computer science the most represented fields.

And in fact in 2006 the Government has suspended this five-year-old programme to reverse brain drain through short-term academic hiring, choosing instead to pay for permanent positions. The move has provoked strong criticism among leaders of the nation's universities.

Besides, according to data gathered by CENSIS⁵⁶ (2002) the main push factor to the high skilled migration would be the eventuality to work in the advanced research field more than the mere salary attraction, in lack of infrastructures and scientific equipment strengthening.

⁵³ According to EU's data (DG-Research 2003) around 34.000 Italian expatriated work in the S&T field in the other European Countries, like Germany (15.000), France and Belgium (more than 5.000) and United Kingdom (over 4.000).

⁵⁴ Science and Technology.

⁵⁵ Ministry of University and Research in Italy.

⁵⁶ Censis was founded as a social study and research institute in 1964, becoming a legally recognised Foundation in 1973 through Presidential Decree. It enjoys the support and participation of several large public and private institutions, is located in Rome, and the staff is composed approximately by 30 researchers and 15 research assistants.

The 2002 Guidelines for the National Research Programme established the ambitious target for private R&D as a ratio of GDP of 1% by 2006, which would mean more than doubling the current level. The Government had therefore introduced a tax credit for business covering 10% of R&D expenditure in 2004 (“Tecno- Tremonti”). The budget impact of this measure was estimated at €650 million (around 0.05% of GDP). However, the tax credit was unlikely to help innovative start-ups as they usually paid low or no tax at the beginning of their activities. In 2005, a tax deduction from the IRAP tax base for personnel expenditures related to R&D was introduced. Other measures mainly targeted at start-ups were the establishment of a public guarantee fund and of a public venture capital fund, for innovative projects, with the objective of reducing financial risks for start-up financing and at the same time stimulating private venture capital provision, very low in Italy. Moreover, a digitalization plan for small and medium-sized enterprises was implemented with the help of public funds, mainly covering service sectors like tourism, education and research. Finally, private R&D was enhanced by public development and funding of new technological districts and applied projects.

In 2003 (DM 20/3/2003) the Government allocated some resources to call back some of those brains researching abroad. Following such operation, at present 96 researchers have moved back to Italy. The candidates willing to work in an Italian university are selected through the *chiamata diretta* system and not through the usual *concorsi* procedure. The programme is addressed to scholars of any nationality holding a PhD qualification in any discipline or equivalent experience and residing abroad from at least three years. Contracts are temporary and they last a minimum of two years and a maximum of four years. Scholars can apply directly to the universities they are in contact with, to the CRUI (Italian Rectors’ Conference), which will identify an interested university, or directly to the Evaluation Committee of the MIUR. Universities then have to apply to the MIUR. Through an academic senate deliberation, they call a researcher back, co-fund (10% of all the costs of his/her research programme), and provide him/her with facilities and resources to allow the research to be carried out. Some of them did not take into any serious consideration the actual commitment of the Government in this area and call for a specific policy to attract back scientists, especially those who have been particularly brilliant. One suggestion is to involve the European Community to balance scientific growth promoting the return of scientists back to their country of origin.

Under the 2004 Budget law, a number of additional measures was adopted: a) tax bonuses for expatriate researchers who return to Italy in the next few years (€20 million); b) government appropriations for public research bodies to invest in research and innovation and to finance industrial research programmes (€600 million); c) funding for scholarships (€20 million) and merit bonuses (€10 million); d) increased operational funding for public and private universities (an additional €310 million) and subsidies for hiring researchers (€40 million); e) €20 million in funding to carry out national public research projects; and f) inauguration of the *Istituto Italiano di Tecnologia* (IIT) in Genoa (€50 million in 2004 and then €100 million per year over ten years). Based on a model similar to that of MIT in Boston and founded jointly by the MIUR and the Ministry of the Economy, IIT could make it possible to consolidate relationships between private and public initiatives and resources. The Institute encourages private businesses to take an active part in technological development and training in leading-edge technologies in order to spur productivity growth. Its goal is to become an international centre of excellence for advanced scientific research in technology, and to attract researchers and experts from around the world.

Finally, a third policy followed by the Government aimed to the creation of a network (called **DAVINCI**, Database Accessibile Via Internet dei ricercatori Italiani Non residenti in Italia ed operanti all'estero presso Centri universitari, laboratori industriali o organizzazioni Internazionali), to organize the Italian scientists' *diaspora* abroad. The objective was the creation of a database, accessible by internet, arranged by the Ministry of Foreign Affairs and consisting of data willingly inserted by the participants. It collects information about activities, research interests and abilities of the Italian researchers community working abroad. So far the network has 1357 resarchers and scientists (427 of whom in Germany, 295 in the United Kingdom, 124 in France, 119 in the USA). Nevertheless, in comparison with other scientific networks, DAVINCI network hasn't been used for the projects' development yet. It consists of a database (incomplete) of Italian researchers abroad.

In addition to the "brain buster" operation, there have been isolated and sporadic initiatives promoted by local authorities and private companies. Among others it is possible to mention some temporary contracts available to young researchers who wish to pursue a research project in some local companies and small grants for trainingcourses, conferences, workshops. Moreover, private initiatives, such as Italy's Telethon Foundation, have sponsored some researchers (about 20 up to now) resident abroad and willing to go back to Italy.

The few foreign researchers⁵⁷ that come in Italy are attracted by the good opportunities of study and scientific training, more than by the possibility of a stable job in the field of R&D or by the existence of bilateral agreement between Countries. Most of them stays in Italy less than one year and a very little percentage more than five years.

The most talented researchers, quite apart from their nationality, move to Countries where there are higher incomes, where more funds are dedicated to research and where it is headed by more authoritative persons, where it gives better results and perspectives.

"Italy lacks something like 20 thousands researchers, but every year 10 thousands of our graduates leave the Country to go and work abroad, so we will never fill this gap unless wellcoming foreign researchers" this is the better comment of Giuseppe Remuzzi⁵⁸, director of the Mario Negri Institute in Bergamo⁵⁹, that points the finger also at the hierarchical organization of the schools of specialization, that doesn't take in account the criteria of merits (professors are chosen by criteria that hardly award the best, while it would be necessary put universities in competition by making their programs different).

In the Italian research laboratories only the 2% of the researchers is foreign, instead of the 30% in the British ones or the 10% in the Spanish ones. The main obstacle is the excessive bureaucracy that doesn't make easy the foreign researchers' admission to Italy, in particular the oriental researchers (chinese and indian), but also the American ones, at any rate non-European, because of the trouble to get the immigration visa; the unreasonable claim on the immediate return of the research investments which, by nature, give middle and long term returns, and the meagreness of the investments are other obstacles as well.

⁵⁷ 33% of foreign researchers in Italy comes from the EU, particularly from France, Germany and Spain, while 35% from other Countries (East Europe, Russia, Romania, Albania), a little percentage from South America and Far East. On the whole the European Countries tend to recruit foreigners from Europe itself.

⁵⁸ Quotation included in the fortnightly magazine ADUC – Cellule Staminali, n°115, Jun 2006.

⁵⁹ Quoted from a speech of the Professor in occasion of the presentation of the international conference *Respiration day 2006* that took place in may 2006 in Parma. Mario Negri Institute is involved in Pharmacological Researches and works in the biomedical reserach field.

The research's quality of the few Italian researchers is enough good, at the level of the individual there is competence and proposal. But a research-system is lacking, the research demand as well, because it hasn't been set the priority of it.

Italy is hardly able to attract researchers from the asiatic Countries, that are considerable places of origin of the best brains for Countries like USA, Canada, Australia, where the oriental researchers deal prevalently with physics, biology, chemistry and engineering.

Consiglio Nazionale delle Ricerche (CNR)⁶⁰ developed a survey⁶¹ (October 2003) to pose questions to foreign researchers working in public funded research institutes and was piloted in Italy, gathering informations on internationally mobile scientists and engineers, and asking questions to uncover 'push' and 'pull' factors of international migration of research scientists and engineers. It also provided for the respondents to make general observations about their stay abroad. A total of 459 research institutes were contacted and more than one quarter of them had foreign researchers on board. The majority of responses came from institutes that accounted for some 80% of public research activity.

Age is a factor of length of stay: 44% of persons under the age of 30 planned to stay for one year or less and 36% for one to three years. Almost all of the foreign researchers under the age of 30 regarded their stay in Italy as temporary whereas the older the age group, the greater the percentage of foreign researchers told of intentions to stay in Italy for a long period. The majority of scholarship researchers told of plans to stay in Italy for one year, or at most 2-3 years, the typical length of a fellowship or scholarship. The provision of a suitable contract of employment in Italy is an effective means of securing long-term presence of foreign scientists and engineers. Economic conditions in Italy (e.g. salary) were well down on the 'push' scale of priorities and few cited difficulties in finding work adequate to their qualifications at home as a reason to go to Italy. Many foreign researchers chose Italy because of the opportunities for study and the scientific and training reputation of the institute(s); many felt Italy was at the forefront of research in his/her field. These are clear 'pull' factors for Italy. Availability of scientific equipment was identified as an important 'pull' factor. Foreign researchers tended to hear of their opportunity in Italy by one of two ways: an invitation from the institute or through information received by colleagues and friends. Job notices published in professional journals were also cited. EU-born researchers cited the Internet and transfer programmes, both of which were cited significantly less by non-EU born foreign researchers; the latter group showed a tendency to discover the opportunity in journals and more so than their EU-born colleagues. Many respondents told of 'paperwork' barriers encountered in obtaining work permits and papers. This was particularly the case for non- EU born researchers. Housing availability and costs was identified as a problem by two thirds of the respondents; for workers from the EU it was the most frequently cited difficulty. Half of the respondents reported they had no problems with language barriers; this may be partially explained by the use of English in the international scientific community.

⁶⁰ The National Council of Researches is a large-sized body (it employs 8.082 people, 4.085 of them are researchers over the age of 50 on an average, and 1.120 are administrative workers) but it has problems of real scientific productivity.

⁶¹ Data collected by this pilot survey carried out for the project ERAMIT (European Research Area Mobility in Italy), funded by the European Committee (Research Department) through the VI Framework Programme for Research and Technological Development, and coordinated by the Foundation CRUI, in partnership with APRE and CNR. Main goal of this project was the creation of national networks of Centres for the researchers' mobility, giving assistance and information to foreign researchers for their stay in Italy.

The Italian scientific institutes⁶² are chosen as a place for the completion of research training by many young academics from EU countries, particularly from France, Germany and Spain, all of which have a long history of strong cultural links with Italy. In addition, the Italian institutes absorb a significant inflow of mature academics from East European countries and from a number of countries outside Europe. Even so, since the number of foreign researchers intending to settle down on a permanent basis or for a long period in Italy is low, Italy has yet become a country that attracts a significant brain drain flux, not even from less economically developed countries. On a more general level, the professional pull factors (i.e. the scientific prestige of the host institution and the availability of high level scientific facilities), when a reasonable salary level is guaranteed, is the most important reason of the mobility of scientists, while the possibility of career development seem to be less attractive. This is a key difference with respect to the general case of skilled migrations. Furthermore, the migrations of the researchers are mainly driven by the presence of international scientific networks, while in general the skilled migrations are usually channelled by intermediation agencies.

Although on the rise, the level of human capital and technological innovation is not what one could expect from a country that has reached such an advanced stage of development. Italy must pursue its efforts to raise the level of education, and of tertiary education in particular. Also efforts must be made to give priority to the Mezzogiorno to further reduce disparities and enhance productivity. At present, the Italian educational system is highly centralised, and educational spending per student and by region is the same for each level of education, despite the South's more pressing needs. The positive effects of education being much greater for regions in the South, and the benefits extending beyond productivity, public funds ought first to be channelled towards those regions.

More public funding in this area is unlikely to be socially rewarding unless the reform of university and public research centre governance is accelerated, objective merit-based mechanisms are introduced, and public efforts are matched by greater involvement of the private sector in the financing of applied research.

⁶² Besides CNR, IIT, Mario Negri Institute and the Univesity Centres of Excellence mentioned before, it's worth refering to Ifom (Foundation of Molecular Oncology, it's a no profit high tecnology centre of research, founded in Milan in 2003), Dibit (Department of Bio-technologies belonging to San Raffaele Institute of Milan and dedicated to basic, translational and clinical research; it was inaugurated in 1992), the new National Institute of molecular genetics belonging to Foundation Hospital Policlinico, Mangiagalli and Regina Elena, ENEA (a public agency operating in the fields of energy, the environment and new technologies to support Country's competitiviness and sustainable development) and ASI (Italian Space Agency).

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Brain Drain and Brain Gain: Turkey

I. Introduction

Turkey's first "brain drain" wave began in the 1960s, with doctors and engineers among the first group of emigrants. During that period, Europe was the most popular destination for Turkish professionals and academicians. Political instability and crisis, followed by the military coup in 1960 are believed to have instigated this initial exodus of highly skilled individuals.

As far as brain drain is a complex issue understanding of the phenomenon is highly contextualized. The context is built up of many interrelated characteristics like demographic characteristics and trends, the rates of employment and unemployment, the general education level, in particular the educational level of the labour force, the country's wealth/poverty, the level of life satisfaction in the country (i.e. how people feel about things related to their lives), the current reforms in R&D and Higher Education (HE) sector, language skills, the operating health care system and so on. Alongside these, characteristics such as national cultural tradition and mentality also constitute part of the context of the brain drain issue. These specific and interrelated demographic, economic and social characteristics underlie those challenges, which Turkish R&D and HE sectors faced during the period 1990-2007 and still are facing nowadays. Setting the broader context and grasping the complex picture helps facilitate understanding of the brain drain phenomenon in Turkey.

High skilled migration tends to improve the welfare of the host country while the welfare impact of migration on the source country is ambiguous. By contrast, low-skilled migration has an ambiguous welfare impact on the host country while generally improving welfare there need not be a conflict of interest between source and host country but there may well be. This raises the question how could the positions of host and source country be reconciled, if indeed there were a conflict?⁶³

II. Turkish Immigration

Large-scale Turkish labor emigration to Europe started with an agreement signed by the Turkish and West German governments in 1961. The pact coincided with a West German economic boom, and the migration of growing numbers of Turkish internal migrants from rural areas to major urban centers. The pact aimed to provide the German economy with temporary unskilled labor, "guest workers," while thinning the ranks of Turkey's unemployed. It was expected that these workers would return to Turkey with new skills and help reorient the Turkish economy from rural agriculture to industry. Turkey signed similar agreements with other European countries, including Austria, Belgium, Holland, France, and Sweden. Many of these guest workers confounded expectations, however, by settling down and even bringing their families to join them. Furthermore, it was often skilled laborers who emigrated.

The economic downturn in Western Europe that arrived with the oil crisis of 1973 ended the recruitment of labor from Turkey. However, Europe's recession coincided with an economic boom in the Middle East, allowing Turkish workers to immigrate to countries

⁶³ Jakob von Weizsäcker, WELCOME TO EUROPE, bruegelpolicybrief, ISSUE 2006/03, p.6.

such as Libya, Saudi Arabia, and Iraq. This emigration rarely involved entire families. The Turkish presence in Iraq (and to a lesser extent, other Arab countries) was reduced by the 1991 Gulf War. In the early 1990s, meanwhile, Turkish companies won construction and industrial contracts in the Russian Federation and other parts of the Commonwealth of Independent States, creating opportunities there for Turkish workers, engineers, and managers.

As a result of this emigration, remittances sent by Turkish immigrants and workers abroad have been a major foreign currency input for the economy since the early 1960s. Remittances steadily increased as a percentage of Turkey's annual trade deficit, reaching a peak in 1994 of 62.3 percent, and dropped to their lowest level in 2000 with 20.4 percent.

After the end of labor recruitment from Turkey, Turkish emigration to Europe continued through family reunification in the 1980s and most of the 1990s. In a final aspect of emigration, the last few years have witnessed an increase in the number of highly qualified professionals and university graduates moving to Europe or the CIS countries. Today, it is estimated that there are approximately 3.6 million Turkish nationals living abroad, of whom about 3.2 million are in European countries, a substantial increase from 600,000 in 1972.

The large size of Turkey's population and the concern that migration on a large scale would take place from Turkey to the EU after accession is an argument that is frequently put forward against Turkey's membership of the EU. There are even those who speak of Turks "flooding" Western Europe when membership is granted and free movement of labour is allowed. Turkey has a young population and the population growth rate has been steadily decreasing. The ratio of working adults to the total population is currently 65 percent. According to projections, this ratio will approach 70 percent in 2025 before starting to decline.

The impact of any postponement in the initiation of negotiations for accession, let alone the prospect of denied membership, could have a detrimental effect on Turkey's political stability and economy. Turkey may again become a source of immigration due to asylum, family reunification and irregular migration. Without the prospect of accession, immigration is more likely to increase in the short and medium term. Prospects of accession will not eliminate immigration from Turkey. Immigration will undoubtedly continue, but the context, the number and the composition of Turkish immigration will be very different from what it has been so far or what could be the case if Turkey were to be deprived of the prospect of EU membership. The new context would be one that would generate more employment prospects in Turkey. This would be accompanied by a long transition period for free movement of persons.

III. Brain Drain/Gain Related Factors in Turkey

A brain drain or human capital flight is an emigration of trained and talented individuals ("human capital") to other nations or jurisdictions, due to conflicts, lack of opportunity or health hazards where they are living. It parallels the term "capital flight" which refers to financial capital that is no longer invested in the country where its owner lived and earned it. In this chapter reasons of brain drain from Turkey to abroad are going to discuss. The reasons are economics, social, education policy, unemployment, science and technology policy and others.

1. Economic and Politic Reasons

Models of high skilled emigration support the expectation that reductions in the average level of human capital slow economic development; and the first order effect of emigration is unambiguously to reduce human capital. The loss of human capital holds back potential economic growth. Further fallout would be upward wage pressures for remaining skilled workers and hence increased inequality.⁶⁴

The process of globalization seems to have created two opposing forces, outsourcing and international migration, which are likely to have a balancing impact on the global economy. While the developing countries are losing skilled labour through 'brain drain' to their developed counterparts, they are gaining remittance earnings from developed countries. At the same time, offshore outsourcing from the developed countries has created new employment and other opportunities in developing countries. Although the final impact of outsourcing is somewhat controversial, it is very likely that companies will intensify off shoring in future due to substantial cost advantages. The outflow of skilled manpower from developing countries is also likely to increase due to growing demand for 'replacement migration' from developed countries.⁶⁵

Turkey continues to improve its macroeconomic fundamentals in 2006, achieving uninterrupted growth for a fifth consecutive year. The average compounded growth rate realized as 7.8% during the 2002-06 period and 5.7% as of September 2006, representing a sustained growth path in contrast to shaky growth pattern of the past.⁶⁶

2. Demographic, Social and Economical Trends and Labour Conditions in Turkey

The quality of life and labour condition can effect to brain drain. There are problems in urban and rural areas in Turkey for labour participation. There is also strong evidence that the decline in labour force participation has gone hand in hand with rural urban migration induced urbanisation. To a large extent this pattern has to do with the different conditions that households face in the respective locations. Simply put, in rural areas it is a lot easier for men and women to satisfy the criteria used for identifying participants: Firstly because of the dominant role of agriculture, and secondly because of the overlap in the work and home environments of agricultural households. Consequently all members participate in household based production activities. Households which migrate to urban areas have difficulty maintaining the continuity between the domains of market and non-market production, and members specialise further in one or the other of these activities. Increased educational opportunities allow children to stay in school longer, and result in reduced teen participation rates. Finally, skill requirements of jobs in urban areas induce selective participation.

Another effect on brain drain is salaries. In Turkey relatively high payroll taxes are levied on employees (20.5 percent) and employers (20.5-26 percent) to finance social security. An international comparison of payroll tax rates concluded that Turkey's combined rates

⁶⁴ B. Lindsay Lowell and Allan Findlay, Migration Of Highly Skilled Persons From Developing Countries: Impact And Policy Responses Synthesis Report, International Migration Papers 44, International Labour Office, Geneva.

⁶⁵ Habibullah Khan & M. Shahidul Islam, Outsourcing, Migration, and Brain Drain in the Global Economy: Issues and Evidence, U21Global Working Paper No. 004/2006, September 2006.

⁶⁶ Turkish - U.S Business Council, Turkey Brief: Turkish - U.S. Relations, March 2007.p.10-11.

were significantly higher than the average rate (25 percent) for middle-income countries. When Turkey's taxes on labour -income and payroll- are compared with European and other OECD countries, the relative burden depends on the family status and earning level of the worker.

Turkey's population stood at 72 million in 2006. Roughly two thirds of the population (65 percent) lives in urban locations with 20,000 or more inhabitants. Between 1990 and 2000 the population grew at an average annual rate of 1.83 percent. The growth rate was 2.68 percent in urban areas and only 0.42 percent in rural areas. The large difference between the two is attributable to rural-to-urban migration.

In parallel to economic development in Turkey, the structure of the labour market is also changing. As can be seen in Table-1, the distribution of employment by sector is developing in favour of industry and services.

Table-1: Development of sectoral shares in employment (percent)

		1995	2000	2004	2005	2006	2007	2014	2020
Turkey	Agriculture	44,1	36,0	33,2	32,4	31,6	31,0	26,5	21,0
	Industry	16,0	17,6	18,4	18,4	18,5	18,7	19,0	21,0
	Services	39,9	46,4	48,4	49,2	49,9	50,3	54,3	58,0

Demographic factors may have important effects on migration flows. Many experts and social scientists working on EU social policies point out that the shortage of skilled labour, starting in the 1980s, will be the basic factor affecting the labour markets in Europe. It is a known fact that the increase of the elderly population in all European countries in the 2000s and the reduced participation of the young population in the labour markets will result in a considerable shortage of skilled personnel in the member states, where employment is concentrated in production involving the use of high technology. Turkey holds an important potential to fill the deficit of skilled labour for the EU in the coming period.

3. Education Policies

Primary education involves the education and training of children in the age group of 6 to 14. Primary education is compulsory for all male and female citizens and is free at State schools. In the last educational period of primary education, information about vocational educational programmes covered in secondary education has been given to students in order to inform them which professionals related with this programmes and studies has been carried out in guidance services. Primary education institutions consist of eight-year schools where continuous education is provided and primary education diplomas are awarded to the graduating students.

Secondary education includes all education institutions of a general or vocational and technical character of at least three years following primary education. The objectives of secondary education are to give students a common minimum overall knowledge, to familiarize them with problems of the individual and society and to seek solutions, to ensure that they gain the awareness that shall contribute to the socio-economic and cultural development of the country and to prepare them for higher education, for both higher education and a profession or for life and employment, in line with their interests and aptitudes.

Higher education comprises of the education institutions at every stage based on secondary education with the term of at least two years. The purpose of higher education is to raise the students in line with their interests, capabilities and skills according to the human force necessity of the society at higher level and various stages and science policy of the country, to conduct research in scientific areas, to make publications illustrating the research and investigation results and promoting science and technology, to provide opinion on researches and investigations requested by the Government, to disclose the scientific data that shall raise the general level of Turkish society and enlighten the public opinion and to provide non-formal education services

In the 2000-2020 periods, with the regulation providing entrance to vocational colleges from vocational high schools without examination, the number of students of vocational colleges rose significantly (40 percent). As can be seen from Table-2, the weight of the vocational and technical schools in the education system is expected to rise.⁶⁷

Table-2: Schooling rates in secondary education (percent)

Years	2000	2007	2014	2020
Secondary Education	62,0	79,5	95,9	99,2
-General Secondary Education	37,2	41,0	44,0	44,8
-Vocational and Technical	24,8	38,5	51,9	54,4

Another important indicator of the increase in the education level and quality in Turkey, and therefore in the educated workforce, is the number of students in universities and colleges. Looking at the schooling rates in higher education in Table-3, it was 29 percent in 2000 and it is estimated to rise to 49.5 percent in 2020. These figures exclude graduate education but include extended education.

Table-3: Schooling rates in higher education (percent)⁶⁸

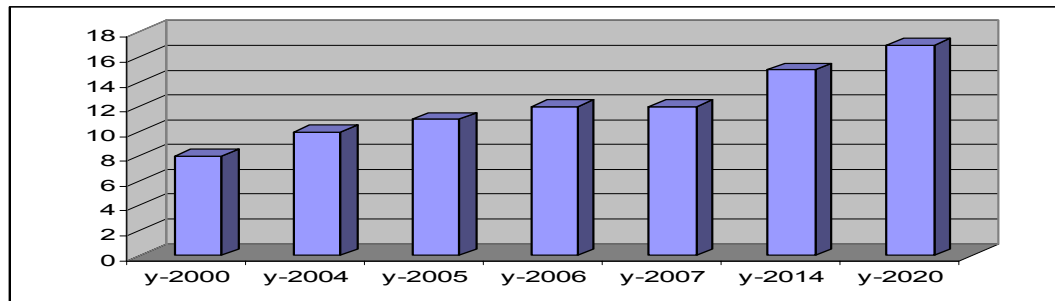
Years	2000	2007	2014	2020
Higher Education	29,0	40,3	45,5	49,5

One of the most important indicators of the increasing quality of the workforce is the share of the workforce that has received higher education in the total workforce, which is rapidly increasing in Turkey. Examining the share of the workforce that has received higher education in the total workforce in Figure 2 below, it is expected that this share, which stood at 8.8 percent in 2000, will rise to 17.9 percent in 2020. A Turkey with a predominantly young population and with nearly half its total workforce having received higher education would provide important contributions to the labour market in the EU after accession.

⁶⁷ Mehmet Aslan, A Panorama of Turkey's Migration Regime on the Prospects of Turkish Immigration to the EU on the Eve of the Membership Negotiations Turkish Employment Organisation (İŞKUR), Peer Review 23 – 24 June 2005.

⁶⁸ Graduate education excluded but extended education included.

Figure 1: Share of workforce that has received higher education in total workforce in Turkey (percent)



Turkish Universities do not have enough capacity for increasing demand. That's why many students go to abroad for university education. According to Ministry of Education statistics, a total of 21,570 Turkish students were studying abroad with their own means in mid -2001. Two-thirds of these students chose universities in Western Europe and North America, while a significant proportion (22 percent) also chose the Turkic republics in Central Asia as study locations. The majority of private students are pursuing undergraduate studies and nearly 90 percent of them are male. This gender gap also persists at the postgraduate levels of study, being slightly higher in the technical fields in comparison to the social sciences. In addition to private students, there are several thousand government-sponsored students who are studying abroad, most of them at the postgraduate level as part of the goal of training academicians to fill positions in state universities. The great majority (90 percent) of the government-sponsored students are studying in the United States and Great Britain.

4. Science and Technological Policy

Scientific research in Turkey is primarily carried out by the universities. However, there are other autonomous research institutions and organizations like the Turkish Atomic Energy Council (TAEK), the Scientific and Technical Research Council of Turkey (TUBITAK) and the Atatürk High Institute of Culture, Language and History. TÜBITAK was founded in 1963.

Total R & D expenditure, as percent of gross domestic product (GDP), increased from 0.32% in 1990 to 0.67% in 2002, (2) the fraction of R & D in the total expenditure for technological innovation increased from 6.6% in 1995-1997 to 29.2% in 1998-2000, and the number of papers in the journals covered in the Science Citation Index (SCI) of the Institute for Scientific Information increased from 464 in 1983 to 12160 in 2003 - a more than 26-fold increase in the last two decades.⁶⁹

The perception of the brain drain as a serious problem has increased following 1994 and 2001 economic crisis, and has also attracted the attention of national authorities. In 2000, the Turkish government decided to form a joint task force of experts from the

⁶⁹ Ali Uzun, *Scientometrics*, Volume 66, Number 3, February, 2006, Science and technology policy in Turkey. National strategies for innovation and change during the 1983-2003 period and beyond, p. 551-559.

Turkish Atomic Energy Agency, the Turkish Academy of Sciences (TÜBA) and TÜBİTAK, in order to investigate Turkey's brain drain problem.⁷⁰

Turkey's R&D and Innovation level is not within the desired ranges when compared to OECD and EU countries; significant developments have been achieved in recent years. Turkey's rise to 19th place in 2005 in the world scientific publications list shows that an important capacity has been created in production of academic knowledge. However, the increase in the research capacity is not transformed into technology and commercial products since the cooperation between research institutions and the real sector has not yet reached the desired levels. Other reasons hindering transformation of research outcomes into products and services in a sufficient rate may be counted as disproportionate weight attributed to success in international publications in academic career promotion; and lack of sufficient demand in the real sector, due to their insufficient awareness and experience about how to increase competitiveness through R&D and innovation⁷¹.

There are various supports provided by many institutions for strengthening the capacity of R&D and innovation. Indeed, while the resources allocated from the budget to R&D by the public in 2003 was USD 114.3 million on 2006 prices, they reached USD 523.8 million in 2006. It is estimated that overall R&D expenditures reached 0.8% of the GNP.

The EU 6th Framework Program in which Turkey participated in order to develop R&D and innovation capacity has emerged as a major opportunity. However, Turkey has failed in getting a return in the level of the contribution she made, due to her insufficient research capacity.

The report "Lisbon Review 2004: An Assessment of Policies and Reforms in Europe"¹¹ published by the World Economic Forum Report provides an overview of Turkey's performance in key areas including innovation in comparison to EU candidate countries and new member states. According to the study, Turkey lags behind all EU member states and candidate countries in the 'innovation and R&D' sub-index (which corresponds to "developing a European area for innovation, research and development" dimension of the EU's Lisbon Strategy). Nonetheless, although Turkey is the only candidate country which does not have a fixed expected date for EU accession, it is ranked above Bulgaria and Romania in many individual categories and in the overall ranking.⁷²

IV. Brain Drain to Abroad for Study and Work

There are a large number of private students pursuing undergraduate studies overseas. Part of the explanation for this can be traced back to the inability of the higher education system in Turkey to absorb the demand for education at the university level. Demographic factors, including a high population growth rate and a high percentage of the young in the total population, have led to both an expansion in demand for schooling and an increase in the Turkish labor force. Labor force participation rates, however, have

⁷⁰ *Cumhuriyet*, 14.01.2000.

⁷¹ State Planning Organization, Information Society Strategy (2006-2010) July 2006

⁷² European Commission, Enterprise Directorate-General, European Trend Chart on Innovation, Annual Innovation Policy Trends and Appraisal Report, Turkey, 2006.

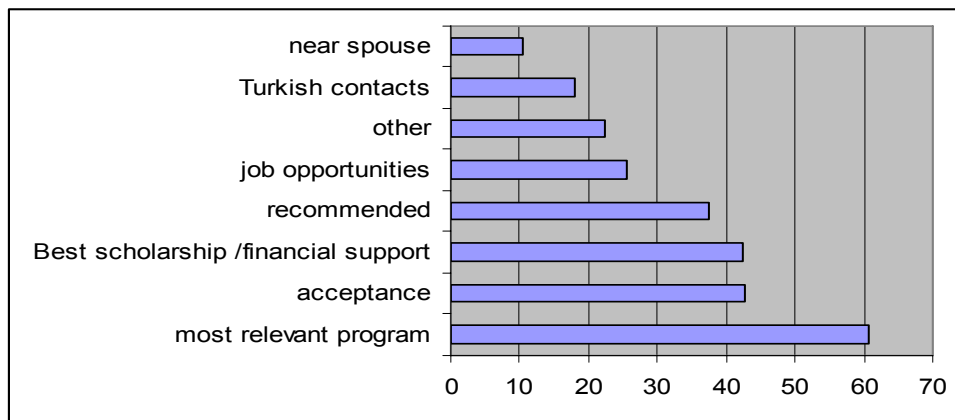
not kept pace with population growth, showing instead a decline over the years. This is attributed partially to the “discouraged worker effect” from a lack of employment generation⁷³ despite a high growth rate compared to OECD levels, except during the crisis periods.⁷⁴

A study⁷⁵ presents the findings of a survey conducted by the authors during the first half of 2002, which investigates the return intentions of Turkish students studying abroad at the undergraduate and graduate levels. Previous survey studies that have examined the Turkish brain drain include Oguzkan⁷⁶ and Kurtulus⁷⁷. While Oguzkan’s study is based on a survey conducted in 1969 of 150 respondents holding a doctorate degree and working abroad, the Kurtulus study looks at the responses of 90 students studying in the United States in 1991.

1. Reasons for Choosing Current Institution of Study Abroad

Various factors have been cited as being important in choosing an overseas study location. For three-fifths of the respondents the fact that their institution provided the most relevant program for their field of specialization was important in their decision for choosing their current institution. One undergraduate student indicated that she chose to study an American university because she was provided greater diversity in terms of the fields of study and curriculum. This information is summarized in Figure 1(see also Tansel and Güngör’s survey).

Figure 2: Reasons for Choosing Current Institution (by % of respondents marking category)



⁷³ Senses, F. (1994), “Labour market response to structural adjustment and institutional pressures: The Turkish case,” *METU Studies in Development*, Vol. 21, No. 3, pp. 405-448.

⁷⁴ Tansel, A., “Economic development and female labour force participation in Turkey: Time series evidence and cross province estimates”, in T. Bulutay (Ed.) *Employment of Women*, State Institute of Statistics, Ankara, pp.111-151.

⁷⁵ Aysit Tansel and Nil Demet Güngör, ‘Brain Drain’ From Turkey: Survey Evidence of Student Non-Return”, ERF Working Paper 0307.

⁷⁶ Oguzkan, T. (1975), “The Turkish brain drain: Migration of tendencies among doctoral level manpower”, in Krane, R.E. (Ed.) *Manpower Mobility Across Cultural Boundaries: Social, Economic and Legal Aspects, The Case of Turkey and West Germany*, E.J. Brill, Leiden, Netherlands.

⁷⁷ Kurtulus, B. (1999), *Amerika Birlesik Devletleri’ne Türk Beyin Göçü* (Turkish Brain Drain to the United States), Alfa Basim Yayim Dagitim, Istanbul.

2. Why Study Abroad?

One out of every four respondents indicated that the most important reason for studying abroad was “the prestige and advantages associated with study abroad”. Many indicated that they wanted an international education because they believed that international study programs offered higher quality education. For 17.6 percent of the respondents “lack of facilities and necessary equipment to carry out research in Turkey” was the most important reason for studying abroad.

While the majority of students enrolled in bachelor’s and master’s degree programs stated that “prestige or better quality education” was their most important reason for studying abroad, for those in doctorate programs or doing postdoctoral work lack of resources and facilities for doing research was the top reason.

3. Initial Vs Current Intentions about Returning to Turkey

Various factors have been cited as important for student non-return, including political instability, lower salaries and lack of employment opportunities in the home country when studies are completed, as well as a preference to live abroad. In addition to these factors, several other features of Turkey’s political economy are considered to be important in explaining the Turkish brain drain. These include the lack of a national research and development strategy, distortions in the education system and foreign language instruction in schools, all of which have important labor market consequences⁷⁸.

There were significant differences in the respondents’ initial and current intentions about returning to Turkey. More than half of all respondents (53 percent) indicated that their initial intention was to return to Turkey. Only about 9 percent indicated that they had left Turkey without the intention of returning. When asked about their current intentions, only 13.5 percent indicated that they would return immediately after completing their studies. The majority, 35.3 percent, indicated that they would return but not soon after completing their studies, while 27.9 percent expressed that they would probably return, and 22.1 percent indicated that it was either unlikely for them to return or that they would definitely not return. These figures indicate that the proportion of those who do not intend to return has more than doubled after experience abroad. Thus, it appears that overseas experience increases the likelihood of non-return.

4. Compulsory Military Service as a Reason for Not Returning

The military service requirement for males in Turkey is generally viewed as a career interruption. For a considerable number of male respondents, postponing their military service was an important reason for pursuing study and work opportunities overseas. Military service in Turkey ranges between 15 to 18 months, and thus represents a significant break from participating in the labor force.

⁷⁸ Kaya, M. (2002) “Beyin göçü / erozyonu” (Brain drain / erosion), Technology Research Centre Report, Osmangazi University, Eskisehir, November 5, 2002.

V. Turkey's Potential Towards Future and Strategies

As brain drain is a complex issue understanding of the phenomenon is highly contextualized. The context is built up of many interrelated characteristics like demographic characteristics and trends, the rates of employment and unemployment, the general education level, in particular the educational level of the labour force, the country's wealth/poverty, the level of life satisfaction in the country (i.e. how people feel about things related to their lives), the current reforms in R&D and Higher Education (HE) sector, language skills, the operating health care system and so on. Alongside these, characteristics such as national cultural tradition and mentality also constitute part of the context of the brain drain issue. These specific and interrelated demographic, economic and social characteristics underlie those challenges, which Turkish R&D and HE sectors faced during the period 1990-2007 and still are facing nowadays. Setting the broader context and grasping the complex picture helps facilitate understanding of the brain drain phenomenon in Turkey.

Turkey's science and technology policy and strategy, established step by step from 1990's until now is consistent with the vision of EU and the basic philosophy of ERA. By participating in the 6th FP, Turkey not only contributes to the realization of ERA from the standpoint of science and human resources but also integrates into EU in the fields of science and technology. The harmony of the national research programme with EU's political priorities and goals and their development in positive direction through interaction should provide increasing resources to be used more efficiently both in Turkey and abroad. The translational cooperation ensured by means of the framework programmes is expected to create an economic added value at national level as well as a real "European Added Value". Turkey's opinion on the following six basic objectives to increase effectiveness of EU in science and technology stated in the Communication from The Commission, "Science and technology, the key to Europe's future" and on other issues related with the FP7 are given below.⁷⁹

- Creating European centre of excellence through collaboration between laboratories
- Technology platforms
- Strengthening the basic research
- Making Europe more attractive to the best researchers
- Research infrastructure
- Improving the coordination of national research programmes.

The relationship of R&D and innovation policies identified in Vision 2023 to the Information Society Strategy is addressed under four headings:

- Developing effective support models for R&D,
- Supports for R&D-based, innovative and high value-added ICT production
- International cooperation,
- Usage of ICT in R&D and innovation activities.

⁷⁹ TÜBİTAK The Scientific and Technical Research Council of Turkey, Turkey's Opinion On The Consultation Paper "Science And Technology, The Key To Europe's Future-Guidelines For Future European Union Policy To Support Research", Published By The European Commission On 16 June 2004, National Coordination Office, For EU 6th Framework Programme, TÜBİTAK, April, 2005

Although still very low compared to other emerging markets, there is an increase in Foreign Direct Investment (FDI) from less than one percent of GDP in previous years to 2.6 percent in 2005.⁸⁰ The main objectives of the science and technology strategy of Turkey are to increase:

- the demand for R&D,
- the number and quality of scientists, and vocational and technical staff,
- the Gross Domestic Expenditures in R&D (GERD) as a percentage of GDP.

In line with these objectives, the main targets for 2010 are to increase the share of GERD/GDP to two percent (from 0.66 percent in 2002) (half of this amount is to be funded by the private sector), and the number of full-time equivalent R&D personnel to 40,000 (from 28,964 in 2002). It is also intended to increase the number of vocational and technical staff proportionally.

Since the beginning of 2000s, national and international efforts to move towards information society are growing at an increasing pace across the world. The European Union has been taking an important part in these efforts, which have intensified with the effect of the ICT-based productivity increase and economic growth achieved especially in the Northern American countries in the 1990s. The Lisbon Strategy introduced by the European Council in 2000 envisions Europe becoming the world's most competitive and dynamic knowledge-based economy by 2010.

The priority areas and challenges addressed in all these information society initiatives generally focus on the following for gain and the main target of increasing the R&D investments in Turkey.

- Sustainable growth and increasing competitive power
- Increasing quality of life
- Eliminating digital divide
- Increasing human resource competencies and employment
- Effective provision of citizen-focused public services in multi-channel environment
- Promoting e-commerce
- Ensuring standardization and security in Information Society applications
- Creating value by developing market-oriented R&D and innovation
- Making broadband communication infrastructure commonly available.
- Enriching the content and information society applications
- Benefiting from convergence potential of technologies
- Leveraging media channels in the development of Information Society
- Ensuring that the national innovation system functions well
- Increasing R&D investments and demand for R&D in the private sector
- Enhancing the cooperation between the research community and industry
- Stimulating R&D through public procurement
- Increasing R&D activities in the defence sector

⁸⁰ European Commission, Enterprise Directorate-General, European Trend Chart on Innovation, Annual Innovation Policy Trends and Appraisal Report, Turkey, 2006

- Increasing international cooperation on R&D, particularly with European countries
- Increasing awareness of science, technology and innovation

In order to create a society open to innovation, there are actions for establishment of science and technology centres, increasing the number of and spreading Internet cafés, spreading the e-commerce network in the country, revising the purchasing policy regulations of the public administration and preventing brain drain.

Brain drain is an important problem since both due to macroeconomic conditions and less developed R&D base, qualified human resources and researchers, which are the most important capital for innovation, prefer to leave the country. Innovation policy actions should include measures to retain skilled human capital and researchers in the country and to reverse brain drain. The following should support for brain gain.

- The labour law should be revised with a view to giving space to flexible working patterns;
- The high tax and social security cost burden on wages should be relieved;
- Social dialogue among private sector, public authorities and social partners should be strengthened and necessary measures to remove obstacles should be taken;
- More emphasis should be given to the vocational and technical schools and the education system at these schools should be modernized;
- The education system should be restructured by strengthening the relations between education manpower and employment;
- Lifelong learning, distance learning and e-education should be promoted;
- The share of GNP spending for education should be increased;
- Private sector investment in higher education should be encouraged;
- Funding measures for “knowledge carriers” or mentoring schemes in firms should be developed;
- Funding for collaborative projects involving groups of smaller firms with research infrastructures should be provided;
- Policy- making process conducive to brain gain policy should be established;
- Better work environment (flexible work hours, relaxed setting, etc.)
- Forming and supporting a brain finder team to draw brains to Turkey.

V. CONCLUSION

UN sources also indicate that Turkey is 24th among countries sending skilled workers abroad. These figures make it clear that there is a substantial outflow of educated individuals from Turkey to the rest of the world, which makes skilled emigration an important area of investigation for policy makers in Turkey. The international mobility of Turkish students has significantly increased and some of them are staying abroad after their education. That’s why Turkey must development of education capacity at Higher Education and developing working and living conditions. Turkey must increase R&D investments in the share of GNP.

Turkish Government, academia, business industries and people living and training abroad must work together to end the phenomenon of brain drain. Turkey must now

consider the alternative phenomena of brain gain and brain circulation through appropriate planning. Turkey must form a scientific Diasporas networks for brain gain. The future depends on it.

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Conclusions and Recommendations

Migration works to partially moderate international differences in the balance between the demand for and supply of specialized skills.⁸¹ In the short term, migratory movements support positively the adjustment process of the economy, the inflow of workers under the assumption of full employment has shown to increase, or at least not to decrease *per capita* income in the receiving countries. Although remittances back home can be an important element of the economy, the lack of skilled workers may lead to sector malfunction, compromising the development of the society and consequently its economic growth. On the other hand, emigration can bring opportunities, as happened with India which from being a sending country in the 1980's became a destination for outsourcing by the turn of the Century⁸².

Although it is of vital importance for a country's economic growth to have available high-skilled professionals in areas much needed, as in IT and scientific research, it is also true that no matter what the equation will be, the fact is that migratory movements of human capital is inevitable, due to the simplest rule of economics that says "supply follows demand", and therefore the human capital as any other scarce resource will be available where is most valuable and not necessarily, where just most needed.

Some general patterns in the studies of international movement of the highly educated shows that: a) the highly skilled are much more mobile than the less educated (an unanimous assumption among most scholars and academic articles), b) in many disciplines, especially for the higher levels of qualification, international experience is a valuable or necessary tool of training; those who possess it are more likely to migrate than those who have not made any foreign contact; c) the international migratory flows of high-skilled are greater when there are large gaps in job opportunities or living standards between the sending and the receiving country⁸³. Other factors like: differences in the quality of life between home and host countries, educational opportunities for children, socio-political security systems, wages, job opportunities and interaction with other high skilled colleagues also play a significant role in the migratory movements⁸⁴.

Immigration and its consequent "brain drain" among the high-skilled labour force is an ongoing phenomenon which affects countries in many different ways, it can become an important economic policy seeking emigrants' remittances which not only is a source of income to the country but also help in the formation of human capital for the future emigrants as happens in Jordan (and to some extent Turkey back in the 1960's and Turkish Cypriots in the past few years), where successive Jordanian governments have promoted and facilitated the migration of their nationals to the Gulf region and have signed a number of agreements with countries like Oman, Kuwait, and Saudi Arabia, to

⁸¹ J.F. Helliwell "Checking the Brain Drain: Evidence and Implications" Options Politiques, September 1999 p. 16. at: <http://www.econ.ubc.ca/nfortin/econ490/papers/helliw.pdf>

⁸² G. Das "The Indian Model" Foreign Affairs July/August 2006 vol.85 n.4 p.9

⁸³ J.F. Helliwell "Checking the Brain Drain: Evidence and Implications" Options Politiques, September 1999 p. 16 at: <http://www.econ.ubc.ca/nfortin/econ490/papers/helliw.pdf>

⁸⁴ W.J. Carrington / E. Detragiache "How Extensive is the Brain Drain" 1998 IMF Working Paper 98/102 (Washington) at: <http://www.imf.org/external/pubs/ft/fandd/1999/06/carringt.htm>

guarantee the inflow of currency via the remittances sent home by their emigrated nationals.

The Jordanian case points out that the phenomenon has actually a positive effect on the country because of the remittances sent home and because the foreign labour markets attract the excess university graduates and ease social tensions that may lead to social unrest. Nevertheless the research is pointing out to a number of issues that require further study that will help alleviate future problems and make sure that the economic and social benefits are disbursed as widely and evenly as possible.

Brain drain, by driving valuable work force out of the country can cause a governmental reaction on an attempt to revert the wave as happened in Turkey where political instability, economic crisis, wage differential, lack of opportunity and scientific environment, received considerable attention from the Turkish media and politicians, leading the country to introduce important reforms on their educational system, to promote the creation of new high education institutes and scientific research centres such as TAEK, TUBITAK, and to increase their participation in various research studies on a project basis with EU, NATO, WHO, the Atomic Energy Organization, UNESCO and other international organizations, aiming to generate opportunities and a knowledge-based society, reversing the brain drain and creating incentives to repatriate their nationals.

Italy's case illustrates the great divide between North and South and the lack of policy initiatives and directives from the local and national governments allowing Italy to lose their best minds year by year. Notwithstanding, North having more universities than South, it still has a bigger number of foreign students and remains an open drain where Italian talents will slip away, seeking better career opportunities.

On a more general level, the professional pull factors (i.e. the scientific prestige of the host institution and the availability of high level scientific facilities), when a reasonable salary level is guaranteed, is the most important reason of the mobility of scientists, while the possibility of career development seem to be less attractive. This is a key difference with respect to the general case of skilled migrations. Furthermore, the migration of researchers is mainly driven by the presence of international scientific networks, while in general skilled migration is usually channelled by intermediation agencies.

Although on the rise, the level of human capital and technological innovation is not what one could expect from a country that has reached such an advanced stage of development. Italy must increase its efforts to raise the level of tertiary education and give priority to the Mezzogiorno to further reduce disparities and enhance productivity. At present, the Italian educational system is highly centralised, and spending per student and by region is the same for each level of education, despite the South's more pressing needs. The positive effects of education being much greater for regions in the South, and the benefits extending beyond productivity, public funds ought first to be channelled towards those regions.

More public funding in this area is unlikely to have the maximum impact possible unless the reform of university and public research centre governance is accelerated and objective merit-based mechanisms are introduced. Last but not least the increased public funds in research should be matched by the private sector. After all the Lisbon

Agenda stipulates that 2/3 of the funding for research should come from the private sector

In Cyprus although the problem of unemployment amongst university graduates has been curtailed in recent years due to an increase in demand for highly educated labour force, the island still suffers brain drain in favour of the countries where its nationals have studied, with the possibility of an increasing brain drain as a result of accession to the EU unless counterbalanced by improved and attractive opportunities for employment of the highly-skilled. Cypriots are known to have strong family values and love for their country that makes it more likely for them to return.

It seems that the economy is not creating enough high value added jobs. Instead it is creating more low value added jobs, which usually go to non-Cypriots. The economy suffers from low productivity rates (and therefore lower competitiveness) compared to other EU countries at the same time Cypriot society entertains high aspirations and young people sustain even higher expectations. The economy must move forward with restructuring and diversification so that it would be in a position to generate more challenging jobs⁸⁵.

In brief the challenge, it is not to simply stop the brain drain phenomenon, nevertheless sending and hosts countries could and should provide schemes to transform the brain drain into a brain exchange. This arrangement brings positive outcomes for both home and host countries, since the former will gain in human capital when the emigrant returns home, it will profit from remittances and will be positively influenced in the formation of new human capital. The host country will benefit from immigrating human capital to manage demand/supply problems and will not burden the social welfare and job market with permanent immigrants; it will also gain in sharing knowledge.

For such a win/win situation to happen, positive regulation must be put in place in sending and receiving countries. Sending countries to counter balance the brain drain could use policies as:

- Improved regulation for remittances
- Creation of migrant networks
- Incentives to returnees, bringing back valuable human capital
- Repayment policies to ensure that the state will be compensated for the costs invested on their nationals' education.
- Use innovative measures to revert the brain drain as investment in R&D, investment in the knowledge base industry, creation of jobs and opportunities to lure the high-skilled emigrant to return home and to retain their nationals.

Host countries, being the stronger partner, should develop a framework to protect themselves and the source country as well, remembering that social, political and economic problems in the developed world will eventually put more pressure in developed societies in the future, therefore the creation of a more equal and balanced

⁸⁵ Theophanous Andreas and Tirkides Yiannis (2006)

world economy will, in the long run, work in favour of everybody. To create a culture of brain exchange rather than one of brain drain, effective measures must be implemented:

- As regard to the practice of recruiters, codes of practice should be encouraged so that countries and recruiting agencies will recruit in a responsible way avoiding to employ from specific countries and sectors where there is an identified risk of labour shortages of skilled persons.
- Developed countries should encourage student returns by alternatively making student grants conditional on the student's return home
- Migration policies should encourage a temporary working permit long enough to make a real difference in financial terms to the immigrant and its remittance back home, instead of permanent visas that will lead to the brain drain.

In general, developed and developing regions should focus in becoming the targeting destination of mobile qualified labour force, by strategically promoting niches of interest concentrating human capital, intensive research and production activities around specific areas. To modify the asymmetric movement and distribution of global talents, countries must implement creative strategies to provide world-class education opportunities, construct knowledge-based research and development industries and must throughout the time sustain the required investment for these strategies.

One of the biggest challenges during the research was to find reliable national data on the actual numbers for brain drain in each partner country. This lack of comprehensive migratory data, a common definition for the concept of immigrant and the acknowledgement of the quality of the human capital migrating⁸⁶ has affected the work. In further more detailed and in depth research, measures will be taken to take this into consideration and one of the tasks will be to estimate the extent and severity of the phenomenon in the participating countries. The colleagues from Turkey and Italy had access to relevant national studies and were able to include in their work useful data and comments.

⁸⁶ D. Guellec "Piecing Together the International Picture" at: <http://www.scidev.net/dossiers>

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