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IRPPS/CNR

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**The reasons of scientists mobility: results from the comparison of outgoing and ingoing fluxes
of researchers in Italy**

by

M. Carolina Brandi[♦], Sveva Avveduto[♦], Loredana Cerbara[♦]

Abstract

IRPPS/CNR finalised, in 2001, a questionnaire designed to mine information about foreigners engaged in research in Italy. We found that the numerical presence of foreign researchers was not proportionately negligible with respect to the total number of researchers in Italian public research institutes. This survey therefore demonstrates that Italian research institutes were securely connected to the international circuit of scientists and allowed us to recognize some of the main reasons of these peculiar migrations. However, the intake of foreign researchers in Italy is far lower than the outflow of Italian researchers abroad, though the dimension of the last flux is extremely hard to be determined, since no reliable statistical records are collected on this topic. Because of this reason, we recently started a new survey dedicated to the Italian researchers working abroad. Being their total number unknown, we are using the “snowball sampling” method in order to reach the highest number of subjects. The starting sample was taken from the DAVINCI data-base, available on the web site of the Italian Ministry of Foreign Affairs and composed by data voluntarily inserted by about 2000 Italian researchers working abroad. All the registered scientists were asked by e-mail to fulfil a questionnaire, basically equal to the one used for the previous survey on the foreign researchers working in Italy. Though this research is just started, its preliminary results seem to confirm the findings of the previous one concerning the reasons of what we might call the “natural mobility” of researchers: when scientists move abroad, they are generally motivated by a desire to engage in quality work, whereas other considerations that are very important to other professionals, such as economic compensation, are less important. By the way, our surveys also revealed a basic difference between the outgoing and ingoing fluxes of researchers in Italy: while the large majority of foreign scientists working in Italy plan to come back home, the largest share of the interviewees Italian researchers working abroad do not will to do the same. In both cases, the chief reasons for the scientist’s reluctance to settle in Italy can be ascribed to the unlikelihood of permanent contracts of employment and the poor prospects for career advancement in Italian public research institutes, universities and companies. This unfortunate situation, jeopardizing the Italian capability to compete in the present day knowledge based economy, is also confirmed by the results that we gathered from the analysis of the subsamples of Italian graduates working abroad from the 2007 yearly AlmaLaurea Survey on Italian Graduates’ Employment Conditions.

1. Introduction¹

To respond to the growing demands being placed on science to come up with solutions for socio-economic problems, as well as by the increasing interchange between the world of research and technological innovation in systems of production, the most industrialized countries find themselves in need of an ever-larger number of highly qualified people to engage in research work.

Highly qualified migrations can thus be a significant resource for the host country. Actually, the positive effects of the arrival of highly skilled immigrants are immediately apparent and include increased research and development activity arising out of the enhanced availability of skilled

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¹ We thank C. Crescimbene for the data mining of the surveys discussed in this paper

workers operating in these sectors and of their possible collaboration with their country of origin, as well as of the increased number of enrolments in science degree courses as a result of study migration. It must also be considered a major economic activity as it has the potential to create business activities and therefore employment by immigrant entrepreneurs. The mobility of highly skilled personnel also acts as an essential complement to the flows of goods and capital in the globalization of the cross-border economy and as an essential component of PhDs and scientists' career (Avveduto, 2010).

Concerning the country of origin, the improved level of the tertiary education in many intermediate developing countries and the ongoing economic changes affecting Eastern Europe produce an increasing number of specialists that do not easily find an adequate job in their home countries: high skilled migrations might thus act as a driving force to counteract the intellectual unemployment in the country of origin.

In recent decades, particularly in the more developed countries and in the bodies that manage the world economy, such as the WTO and the OECD, but also in many academic studies (see, e.g. Findlay, 1990; Salt & Singleton, 1995; Lazonick, 2007), it has been thus a widespread opinion that, in the current age, international migrations of skilled personnel are basically positive and can no longer be defined as a "brain drain". On the other hand, many researchers, while admitting that the free circulation of persons is an inalienable and fundamental right of the individual regardless of the premises on which he/she is based², have instead always reiterated the validity of the concept of "brain drain", above all if it refers to migration from a developing country to a technologically advanced one (see, e.g., Iredale, 1999; Brandi 2004; Bach, 2006). With respect to the brain drain problem, decisive importance is expressed by the size of the flows and the ratio between emigration flows and high skilled immigration in a given country (Docquier & Marfouk, 2004) and thus the loss of highly skilled personnel. Clearly the negative effect is stronger the fewer the human resources a country is capable of producing internally for science and technology. Furthermore, it is not even certain that migration is ultimately an advantage for the individual migrant, since this migration elite is constantly at risk of finding itself a position of contractual weakness and can thus be forced to accept under-skilled jobs. Other problems, such as the lack of protocols concerning the recognition of the academic qualifications and the language barrier, can also play a role in producing underemployment of highly qualified migrations. Indeed, even if high skilled immigrants have a systematically higher employment rate than other immigrants, their participation in the higher levels of the labour market in the host country is always lower than the native citizens of these countries (OECD, 2007). In addition, the rate of underemployment is much higher than in native workers of the host country. This phenomenon is present in all the host countries but takes on significant proportions above all in southern European countries (Italy, Greece, Spain, Portugal), in several Scandinavian countries³ and among women.

2. The EU project "The Brain Drain: emigration flows for qualified scientists" and the IRPPS/CNR survey of foreign researchers in Italy

Data and figures on the brain drain this phenomenon are scarce and scattered among countries and institutions. It is a typically difficult kind of information to get, as following the movement of high a personnel is by no means and easy task, if the flow is no linked to specific programmes; the international bodies though started to devote a considerable attention to this field from the late nineties.

² As it is stated in the Charter of the United Nations

³ However, in these countries, the problem of underemployment is restricted to the case of refugees, who represent a significant share of the whole population of immigrants in Scandinavian countries.

In order to evaluate the complex relationship between the mobility of researchers and the mobility of skills in international scientific circles, European Union started in 2000 the research project "The Brain Drain: emigration flows for qualified scientists", to study the brain drain trends, the push pull factors that moved people around, and to collect qualitative and quantitative data through three different surveys: European researchers movements towards US and Canada; foreign researchers in Italy; the relationships between foreign direct investments and entrance of new researches in Hungary. In the framework of this project, we finalized, in 2001, a survey designed to mine information about foreigners engaged in research in Italy (Brandi, Cerbara, 2004; 2005). Of the 459 research structures situated throughout the country that received the questionnaire, only 60 failed to respond, while 268 reported that they had no foreign workers in the period in question. Out of a total of 378 foreign researchers employed in the remaining 131 research structures, 241 (64%) responded to the questionnaire. Given the rather small number of subjects involved in the survey, we were only able to make inferences about some very general tendencies. Even so, they are interesting, since the numerical presence of foreign researchers was not proportionately negligible with respect to the total number of researchers in Italian public research institutes. This survey therefore demonstrates that these institutes were securely connected to the international circuit of scientists and allowed us to recognize some of the main reasons of these peculiar migrations.

Among European Union citizens, the most numerous were the French, Germans, and Spanish who, together, account for 63.3 per cent of EU research workers in Italy. Romania⁴ too account for a significant share. Of the other European countries, the majority came from Russia and Albania. Of those from the Far East, the vast majority (75.9 per cent) came from China. Across the entire spectrum of nationalities, women were considerably fewer in number than men. The foreign scientists who responded to our survey had an average age of 36 years. Foreign research workers from member states of the European Union were notably younger than those from other countries, and 40 per cent of them were under 30. The majority of other foreign workers belonged to the 31-40 age group, though some were older than 40. Women were on average younger than their male colleagues.

As regards the fields of scientific inquiry, the foreign researchers in Italy operate mainly in Physics, Biology, Chemistry and Engineering. These are the very same disciplines that have been able to amass most resources in recent decades, and are therefore best placed to cultivate international contacts.

With reference to the difficulties that they encountered during their stay in Italy, many interviewees mentioned the inconveniences involved in obtaining work papers and permits of stay, as well as Italian bureaucracy in general. These problems provoked strong denunciations from many non-EU research scientists (and in particular from the few research workers from North America).

Surprisingly, these bureaucratic impediments were also considered important by researchers from European Union countries.

It was certainly no surprise to find that almost all the interviewees mentioned finding affordable accommodation as one of their main problems, and for workers from EU countries, it was by far the most frequently mentioned difficulty. Other possible sources of difficulties, such as the language, the lack of information about Italy before travelling to the country, or problems relating to the family, did not figure in any statistically relevant manner.

A large majority of interviewees (71 per cent) intended to return to the country of origin.

The completion of the period of time decided in advance was considered a very compelling reason for returning home by 60.9 per cent of respondents and fairly compelling by 26.7 per cent.

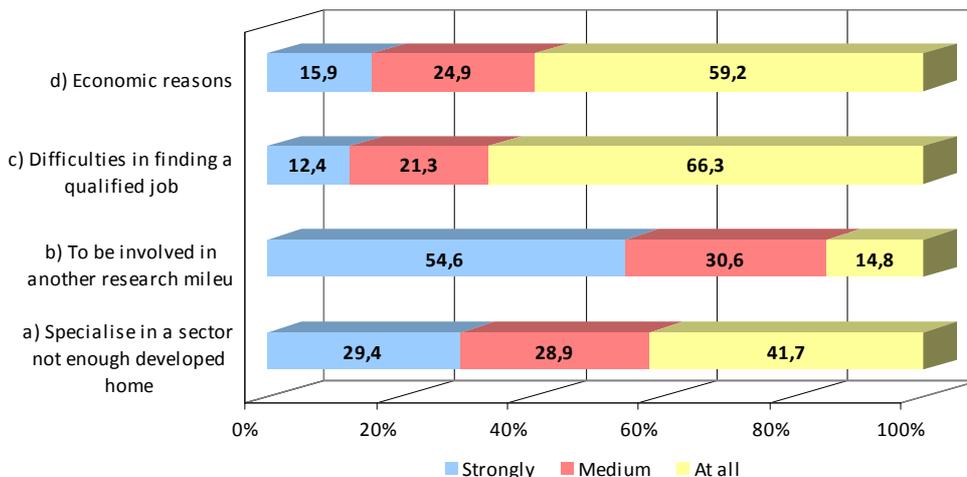
⁴ At that time, not yet a full member of EU.

The percentage of those who said the brain drain was considered a major problem in their home country was 68.7 per cent. One of the most interesting questions we posed in our survey asked interviewees to state their chief motivation for leaving their home country. The motivation advanced by the largest number of respondents was a desire to get contacts with other research environments, which more than half the sample considered very important, and 30.6 per cent considered fairly important. A smaller but significant number of respondents (29.4 per cent) indicated an ambition to specialize in a field that was insufficiently developed in their home country as the chief deciding factor, and 28.9 per cent considered this fairly important. Similarly, the desire to have greater freedom in work and life was a very or fairly important factor for 54.0 per cent of our sample. The survey found that very few of the respondents cited difficulty in finding work adequate to their qualifications in their home country as their main reason for leaving. Economic considerations also came well down in the scale of priorities, which is hardly surprising given the low salaries of scientific workers in Italy. The number of those who cited political reasons or the desire to join family members was negligible.

Among the diverse factors encouraging researchers to leave their home countries, we found that instituting contacts with a different scientific environment, while of importance for our sample as a whole, was decisive among those who intended to remain in Italy for less than a year. If we measure this factor on a scale of relevance ranging from 1 to 3, we find that those planning to stay in Italy for less than one year accorded it a value of 2.7. Conversely, difficulty in finding suitably qualified work in the home country was of practically no relevance (score: 1.1) for those intending to stay in Italy for one year or less. Similarly, economic considerations were of negligible importance for those planning short-term stays, who thus rated it with a relevance value of just 1.3, but were rather more important for those intending to remain in the country for longer (1.6-1.7).

Regarding the push factors that led the respondents to leave their country of origin, we found that the geographical location of the country of origin made a difference. For example, difficulty in finding work adequate to qualifications, which measured extremely low on the scale of relevance for the sample as a whole, nonetheless had a rather significant relevance for researchers from EU countries. On the other hand, economic considerations were not important for these researchers, which is in keeping with the average for the sample as a whole, but out of step with researchers – especially if male - from European countries outside the EU, who attach considerable importance to economic considerations (Figure 1).

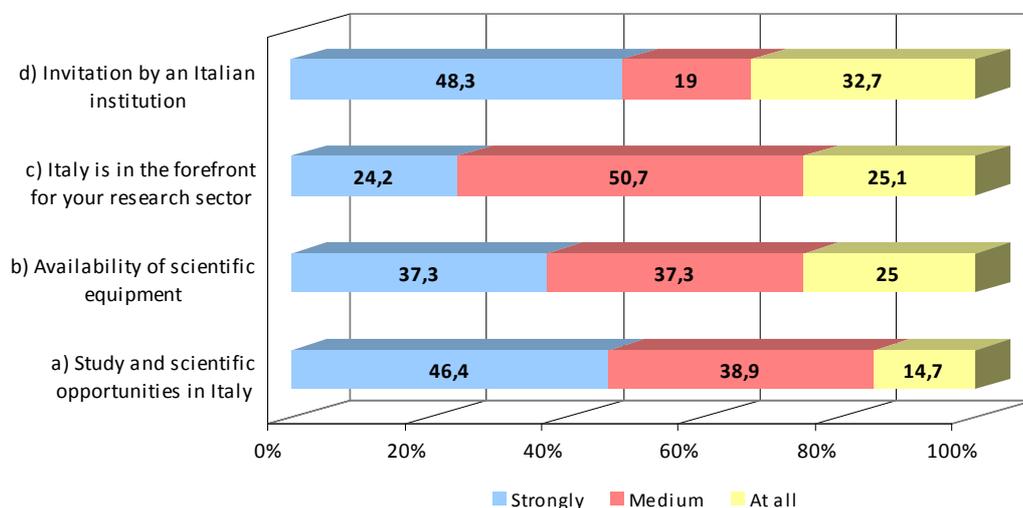
Figure 1 - Please state how much each of these reasons has influenced your decision to leave your Country (Push Factors)



Source: IRPPS - CNR, European Project "The Brain drain for qualified scientists" (2001-2004)

With respect to the professional factors that drew the migrants to Italy, a large proportion of interviewees declared that they had chosen this country because they felt it offered good or excellent opportunities for study and scientific training, and this is an extremely significant finding. Invitations from Italian research institutes were also decisive, being considered very important by 48.3 per cent of the interviewees, and fairly important by 19 per cent. Further, many of the respondents believed that Italy was at the forefront of scientific research in their field. The availability of scientific equipment was very important for 37.3 per cent and fairly important for 37.7 per cent of those who chose Italy as their destination. On the other hand, the possibility of securing a more stable post of employment and the existence of bilateral agreements between Italy and the country of origin seemed to matter little. With respect to the non-professional factors that drew the immigrants to Italy, the only factor with any real weight was a sense of cultural affinity. Knowledge of the Italian language and geographic proximity were not important factors (Figure 2).

Figure 2 - Please state how much each of these reasons has influenced your decision to leave your Country (Push Factors)



Source: IRPPS - CNR, European Project "The Brain drain for qualified scientists" (2001-2004)

The respondents did not report having been attracted to Italy as a country that was easy to enter and reside in - perhaps because Italy is not, in fact, easy for foreign workers to enter. Our survey turned up very few cases of people coming to the country owing to the Italian origins of their family. Similarly, very few came to Italy because they had married an Italian citizen or because they were accompanying a spouse who had found work in Italy.

The professional pull factors showed few variations between one discipline and another, though the few exceptions are interesting. For example, the fact that Italy is advanced in a given area of science was considered fairly important by all immigrant researchers, but in certain fields such as agriculture and human and social sciences, it was one of the most important factors of all.

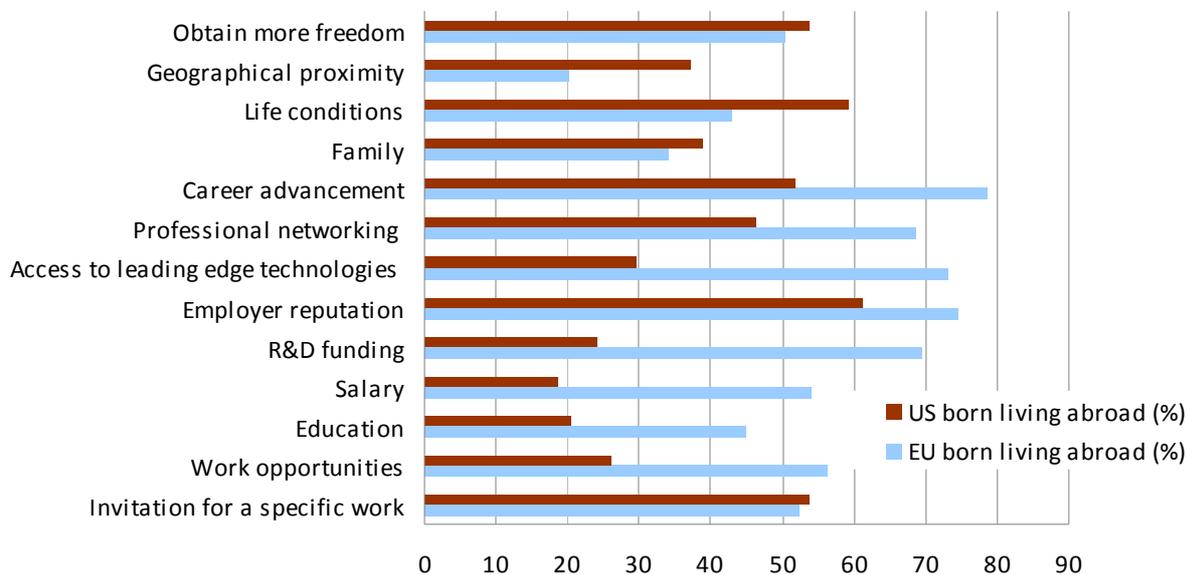
On average, the possibility of obtaining a more stable post of employment was not a significant factor, and in the field of chemistry its relevance is practically nil. Geographical origins do not seem to have a great influence on the decision to choose Italy as a country of destination. Nonetheless, it ought to be noted that the availability of scientific equipment was important for a higher percentage

of non-EU than EU citizens (apart from those from North America). The existence of bilateral agreements for scientific co-operation was considered a fairly important factor by citizens from non-EU countries, but not by those from EU countries.

In the framework of the same European project "The Brain Drain: emigration flows for qualified scientists", the MERIT, University of Maastricht, conducted a survey concerning the scientists international mobility through an intermediary organization based in USA, the American Association for the Advancement of Science (AAAS). AAAS members were invited to complete the survey if they were working in a country other than their country of birth or if they had worked outside of their country of birth previously (Avveduto, Hansen, 2003). This survey was designed to provide information about EU-born working abroad as well as non-EU-born that were working (or had worked) in Europe, by using a questionnaire basically equal to the one we used for our survey on foreign researchers in Italy. There were more than 1,100 eligible respondents: among them one third were born in the EU, more than one quarter in the US.

This survey shows that the most important reasons cited for keeping European scientists and engineers abroad relate to work quality: better career advancement opportunities, broader scope of activities; better access to R&D funding; broader job opportunities and access to leading edge technologies. The most important factors cited for EU-born planning to move from their home country are similar: broader scope of activities, better access to leading edge technologies, career advancement opportunities and better access to R&D funding. These are the very same reasons found by our survey of foreign scientists working in Italian research institutes, confirming that the main reason for the international move of scientists is the quality of the research that they can perform. However, it is interesting to note that the US-born scientist interviewed by MERIT quote for their reason to move abroad only the broader scope of activities and access to leading edge technologies (Figure 3).

Figure 3 - Reasons for going abroad

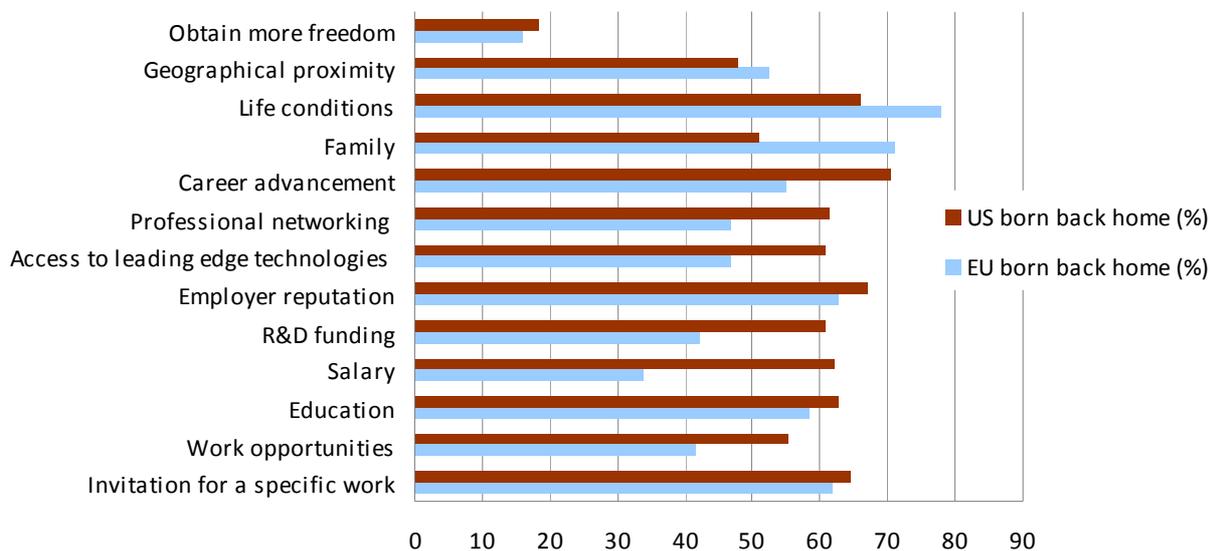


Source: MERIT and IRPPS - CNR, European Project "The Brain drain for qualified scientists" (2001-2004)

Furthermore, from the MERIT survey it turns out that for the EU-born, the most cited reason for the return was family responsibilities followed by living conditions while for the US-born returning

home it was contract ending, broader scope in activities and better access to R&D funding (Figure 4).

Figure 4 - Reasons for coming back home



Source: MERIT and IRPPS - CNR, European Project "The Brain drain for qualified scientists" (2001-2004)

This fact suggests that the international migrations of US-born scientists are actually a case of “brain circulation”, while the ones of EU-born scientists can be often better represented by the “brain drain” model.

3. Italian researchers abroad

The phenomenon of the Italian scientists emigration is certainly not a characteristic only of recent years as evidenced by the fact that among the twelve Italians so far awarded the Nobel Prize in Chemistry, Physics and Medicine, only Giulio Natta (Nobel Prize for Chemistry in 1963) has made all his research in Italy. Furthermore, the flow of highly skilled migration has often been the subject of political debate and rules aimed at facilitating the return of the “brains” have been often included in Italian laws, but they had so far only very limited effect. A fortiori, it has not yet found a way to contain, within physiological limits, the flows of outbound researchers in Italy that are substantially higher than those inward-bound (OECD, 2006).

Though it is actually well known that many researchers leaves Italy every year to practice their profession in a foreign country, the same quantitative dimension of the phenomenon is so far unclear. Even if in fact anyone working in universities and research in Italy has witnessed numerous cases of colleagues (usually young people early in his career but not only) that leave Italy, if the statistics of the host nations, especially the USA, clearly show significant inflows of Italian researchers (see e.g. Brandi, 2008), if it is very common to find names of Italians who are working in foreign scientific institutions among the authors of scientific publications, a reasonably complete census of Italian researchers abroad is still lacking. On the other hand, the realization of such a database is not easy.

Actually, when a researcher moves to a foreign country, he often do not enroll in the Register of Residing Abroad Italians (AIRE), since this entry is not mandatory and does not involve substantial

benefits. Furthermore, if his migration occurs in the first phase of his career, soon after obtaining the doctorate or so, often the young scientist quickly loses contact with the research group with which he was trained and, in any case, even when these scientific contacts last, no longer he remains in the official documentation of his previous Italian institution.

Thus, all trace of the outbound researcher are lost, but for the one in the previous residence municipality registry office, where he is recorded only as “graduate, cancelled because of expatriation” ; however no information concerning his activity before the move or the job he will perform in the host country is recorded. Furthermore, especially when the researcher does not plan a permanent expatriation, he often not even cancel himself from the registry, so his migration is totally unknown.

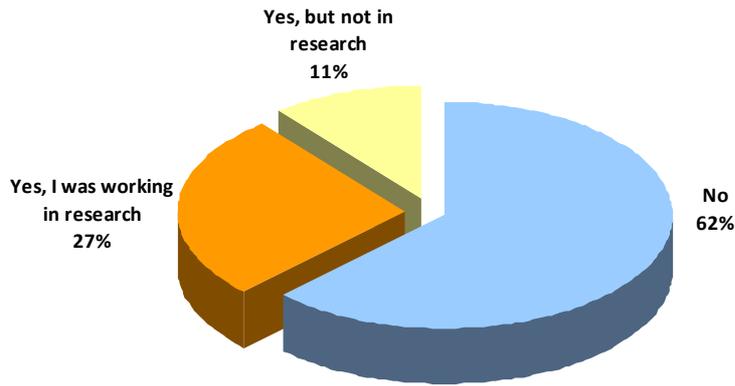
Because of these reasons, we recently started a new survey dedicated to the Italian researchers working abroad. Being their total number unknown, we are using the “snowball sampling” method in order to reach the highest number of subjects. The starting sample was taken from the DAVINCI data-base, available on the web site of the Italian Ministry of Foreign Affairs and composed by data voluntarily inserted by about 2000 Italian researchers working abroad, including their location, present institution, research interest and others. All the registered scientists were asked by e-mail to fulfil a questionnaire, basically equal to the one used for the previous survey on the foreign researchers working in Italy, and to diffuse the same questionnaire between their Italian colleagues they know to work abroad. To date, we collect answers from 5% of the outbound Italian researchers enrolled in the DAVINCI data base. It is thus a relatively small number, for sure inadequate for quantitative statistical analysis; by the way it is not negligible respect to the total number of the people registered in this data-base and the preliminary results we get are quite interesting.

The researchers who answered our questionnaire are mainly men (the women being about one third of the total), mostly married and, in about one half of the cases, with children. They are young, but not very much: their average age is between 30 and 39, though more than one third is over 40. About one half among them is living in the host country since more than ten years but nearly the entirety maintained the Italian citizenship, tough about one third also get the citizenship of the host country.

Concerning their formation, all disciplines are represented among the interviewed: in majority, they are graduate in Engineering, in Physics and Natural Sciences, but graduates in Humanities and Health Sciences are also present. Nearly everyone held a doctorate too, with a disciplinary distribution similar to the one of the degrees.

In majority, they did not work before to leave Italy; however, more than one third had some work experiences before the migration. Among this group, more than three quarter worked in universities or in research institution (Figure 5), but only a small minority was appointed of teaching duties. On the other hand, about one third of the emigrated researchers left a permanent position in Italy and none was performing non qualified jobs at home.

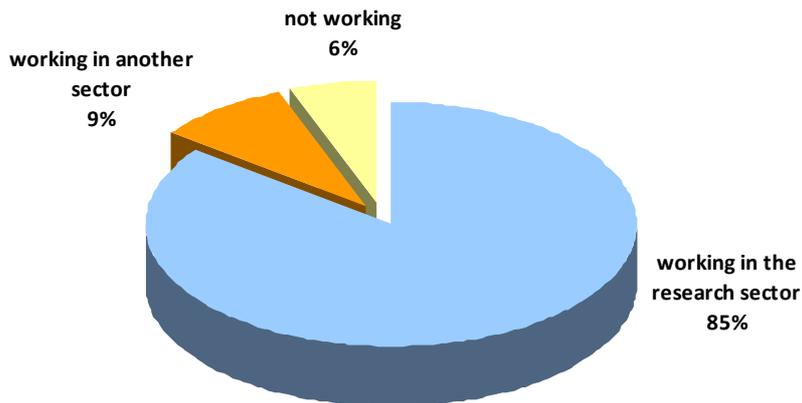
Figure 5 - Did you work in Italy before your move abroad?



Source: IRPPS- CNR Survey on Italian Researchers abroad 2010

As it was to be expected, due to the nature of the sample, nearly all who answered are presently working in research.

Figure 6 - At present you are



Source: IRPPS- CNR Survey on Italian Researchers abroad 2010

About one half of the interviewed works in European countries: among these, the most frequently chosen host country is the United Kingdom, where about one quarter of the Italian researchers who answered the questionnaire work. A significant number of answers came also from France, Germany, Belgium and Switzerland; however, a number of Italian researchers also answered from many other European countries.

About one third of those who answered from extra-European countries works in the USA: this finding is not surprising, considering that this country has always been the privileged destination of researchers migrations. A less predictable result is the fact that the same number of answers came from Brazil. This instance can have two possible, not exclusive, explanation. On the one hand, Brazilian economy had a very strong and rapid growth during the last ten years, mainly due to the considerable strengthening of its research system (though it has a tradition dating back to the

beginning of the 20th century). On the other hand, Brazil has a very strong presence of Italian immigration: we cannot thus exclude the possibility that the respondents from this country are second generation Italian immigrants, who maintained the citizenship of the country of origin. Concerning other extra-European countries, a significant number of answers came from Canada, a country where our survey revealed the presence of a very active network of Italian researchers working here, from Argentina and from Australia. However, some answers came from Asian countries and in particular from Japan, Korea and Malaysia.

Almost everybody works in universities or in other higher education institution of university level (such as the French *Grandes écoles*). Among these, we found all the most reputed universities of the world, such as Harvard, Cambridge (UK and USA), the Sorbonne, the London University College and many others. In any case, they were “*teaching universities*” or other higher education colleges where research activities were not performed. In many other cases, our interviewed works in very prestigious public research institutions, both international (such as CERN in Genève) and national (such as NASA or DLR, the German space research agency). Just a few work in private companies: this case occurs in pharmaceutical or biotechnological American firms only.

Usually, the working relationship with the institution, where at present the interviewed works, started many years ago and, in one third of cases, ten years or more ago. More than one half of the interviewed has a permanent contract; furthermore, among those with a fixed term contract, more than three quarter have contracts lasting three years or more and more than one half even longer term contracts. These facts show that in all cases the work relations are basically stable.

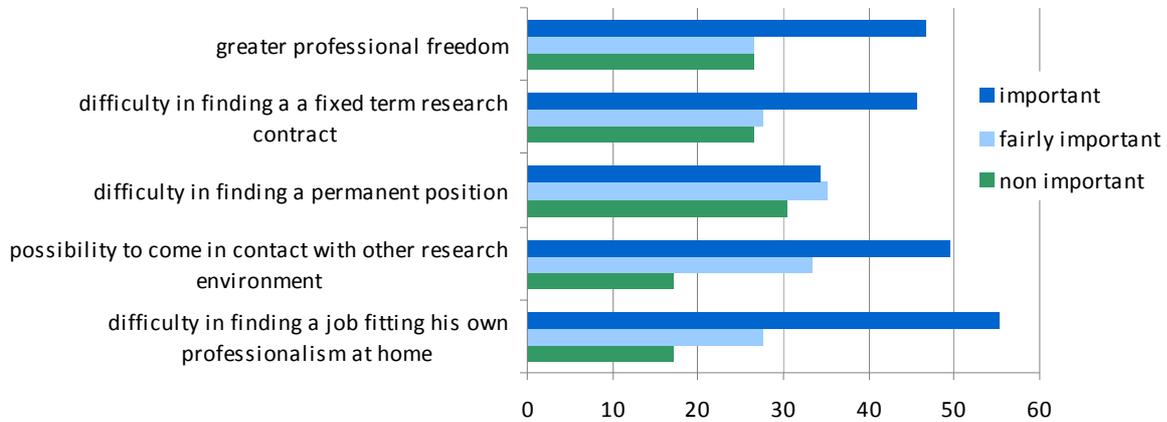
The presently performed job has been found mainly through the researcher own contact network and Internet: each of these channels allowed one quarter of the interviewed to find the present job. Many other answers indicate scientific journals and association, as well as personal invitation by the present employer, as the way to find a position abroad, while the cases of use of mobility programs, EU official networks or job agencies, though present, are very few.

The professional position of the respondents is, in a large majority of cases, very satisfying: about one third is full chair professor, a quarter is senior researcher or research director, and almost all the other are researcher or lecturer. Just in a few cases, they are research fellowship holder or have other working relationship. In about two third of the cases, their contracts (both permanent and temporary) is paid on internal funds of an universities; in the other cases, is paid on internal funds of a research institution or foundation. Just in a few cases the contracts are supported by a national, international or European Union project, while hardly any is supported by private companies funds. Concerning the migratory project, a quarter only of the interviewed plans to move back to Italy, while the large majority have no intention of repatriating. However, the analysis of the answers to the question about the length of the foreseen staying in the host country shows a clear bimodal distribution, with two maxima, both including about one half of the answers. These two maxima are centred on a foreseen length of the staying in the host country of 2-3 years and of more than 20 years, respectively. Such a distribution proves the overlapping of two different populations, the first made by people who reached a position that is now considered as the definitive one, the second by who is still looking for his own way in the life. On the other hand, the significant propensity of many Italian researchers working abroad to the territorial mobility is proven by the fact that more than one half of the respondents had working experiences in other countries, beside Italy and the present host country.

In the matter of the reasons that pushed the interviewed to migrate (Figure 7), the difficulty in finding a job fitting his own professionalism at home is by far the most important: this factor is evaluated “very important” by more than one half of respondents and “fairly important” by one third more. Other reason having a significant influence on the decision to move are the difficulty in finding a permanent position or just a fixed term research contract: both factors are judged “very” or

“fairly important” by about two third of the interviewed. A further push factor is the possibility to come in contact with other research environment. Also the search for a greater professional freedom, beyond academic or political influences, is evaluated as important, while the need of freedom from family and social influences carries a much lower weight.

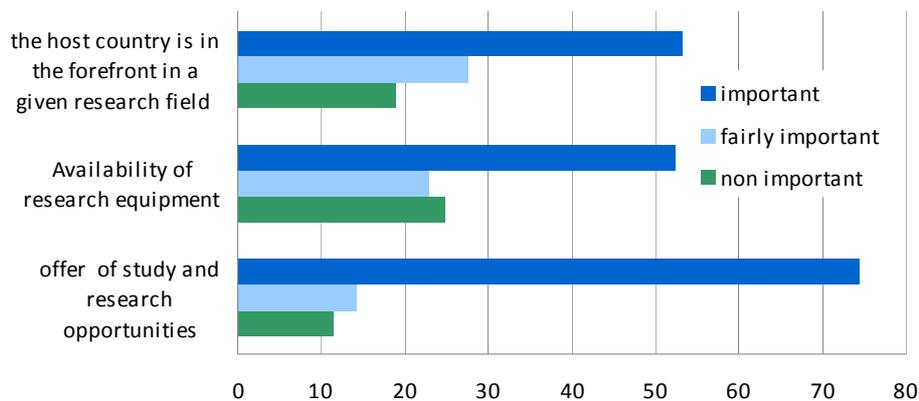
Figure 7 - Push factors



Source: IRPPS- CNR Survey on Italian Researchers abroad 2010

Concerning the reasons that attracted the researchers in the host country, the leading one is its offer of study and research opportunities: this pull factor is considered very important in three quarter of the cases and fairly important in all the other cases. The availability of scientific facilities and equipments and the fact that the host country is in the forefront in a given research field are also evaluated “very” or “fairly important” , as well as the opportunity of a more stable position. The answers concerning the role of an invitation of a foreign institution as a pull factor splits our sample in two separate groups, with a nearly equal weight, being “very important” in the first one and non influential at all in the second one: most probably, this partition reflects the different professional level of the migrant when he took the decision to move (Figure 8).

Figure 8 - Pull factors



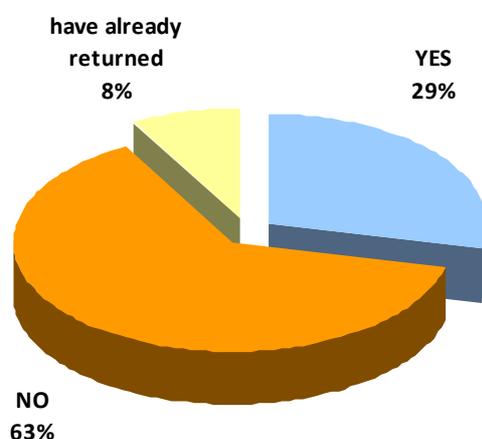
Source: IRPPS- CNR Survey on Italian Researchers abroad 2010

The presence of bilateral agreements between Italy and the host country, the incentives to the qualified immigration, the ease of entry and staying, the geographical proximity, the cultural affinity and the knowledge of the language were found to be basically non influential. Hardly anybody chose the host country because of personal reasons, such as the need to join the partner working there or the marriage with a citizen of the host country.

The large majority of the respondents stated that they had no significant problems in moving abroad: just some problems in learning of the language and in lodging at affordable price were evaluated as “fairly important”. A very large majority found no problems due to other reasons, such as the lack of information concerning the host country, the bureaucracy in order to get the permit of stay and work, the eventual family reunification, the social integration of the researcher and of his family.

Only 29% of the interviewed plan to move back to Italy, while the large majority have no intention of repatriating (Figure 9).

Figure 9 - Have you the intention of returning to Italy?



Source: IRPPS- CNR Survey on Italian Researchers abroad 2010

A small percentage of the respondents was back in Italy at the time of the questionnaire compilation: we asked these people to state the reason of their repatriation. The main one turned out to be the fact that good work opportunities developed at home. Among other reasons, both the conclusion of a work or formation period decided in advance and the fulfillment of predetermined scientific goals, because of the move was started, were stated in one half of cases. The role of family reasons on the repatriation are also interesting: the answer to this question are partitioned in equal shares between who evaluates this factor “very important”, “fairly important” and “insignificant”. Just a few stated that cultural differences with the host country had a decisive influence on the repatriation, while none attached importance to religious differences.

Who declared to not intend to come back in Italy was asked to state the reason of this decision. Nearly the entirety gave high or fairly high importance to the fact of working in a country where their own research area is in the forefront (actually, this factor is considered of the highest importance by three quarter of the respondents). However the high wage and the feeling at ease in the host country are also considered very or fairly important.

Last two questions concerned the opinions of the interviewed about the “brain drain” problem. In the matter of the consequence in Italy of their expatriation, about one half of respondents believes that it will be negative, because of the loss of competences or of the investment done in their formation, that has been paid by Italy and is now used by another country. However, the other half of respondents feels that it is positive, because of the inclusion of Italy in an international scientific network and of the possibility of a stronger participation in international projects.

Last, also in the matter of importance given in Italy to the “brain drain” problem, respondents split in two groups of about the same size: the first one believes it receives a scarce or null attention, the second one feels it is highly or fairly highly considered.

4. The emigration of graduates: results from "AlmaLaurea" 2007 Survey

This conclusion is also supported by the “AlmaLaurea” 2007 survey (Cammelli, 2008).

In this occasion, young Italian graduates working abroad in that year were also interviewed for the first time. In this way, it was possible to carry out a study aimed at assessing whether the phenomenon of working abroad is an investment, an escape from the difficulties in their country of origin or a homecoming for foreign nationals who graduated in Italy. The data from the AlmaLaurea 2007 Survey on the work abroad of young people who have graduated in Italy (Brandi and Segnana, 2008) are therefore very useful for discussing, on an objective basis, the nature and consistency of skilled migration, at least for young graduates.

AlmaLaurea, in 2007, interviewed 44,009 graduates one year after graduation, of which 22,096 had obtained their title in the old university system (single degree level after 4 or 5 years) and the others in the reformed system, that introduced the double level: a baccalaureate after three years and a master level after two further years: between them, 27,345 earned the three years title and 21,215 the five years one. The elaboration on working abroad only considered old system graduated who earned the title in 2002 and 2006. It therefore excludes the 2004 graduates and those possessing only the first degree who are working abroad.

Within this sample, 404 graduates in 2006 and 544 graduates in 2002 were working outside their national borders. Thus, among those who were interviewed in 2007 both at one year and five years after graduation, the percentage was 4%.

Extrapolating this percentage over the total figure of graduates in 2006, we can deduce that around 5000 graduates in Italy have moved abroad within one year after graduation. Of course, this figure also includes the foreign students, returned to their country of origin after completing their studies in Italy: it actually turned out that, among those who claimed to work abroad, just over 70% (between people graduated both for one and five years) has Italian citizenship. However, these data show that migration of young graduates, although still limited, is growing rapidly, given that among the graduates of 1999, the percentage of those working abroad for a year after graduation was three times lower .

Nevertheless, the most interesting data are those involving Italian nationals who have graduated in 2002, considered that the work abroad of those who have graduated from a single year may just be a transitional experience, which does not result in a loss to the Italian stock of highly qualified human resources, and the return home of foreign nationals may represent, at most, a failed revenue.

Five years after graduation, the reasons for migration are due in almost half the cases to the search for better working conditions, a key indicator of an effective permanent, or at least long term, transfer.

The main countries of destination of Italian graduates are France (12.4%), the United Kingdom (11.9%) and Spain (10.8%). This distribution, however, is substantially determined by expatriation reason: those who have left Italy in search of a better job are directed mainly to the United Kingdom (19.2%), France (12.6%) Spain (11.4%) and USA (9.8%). These data thus confirm the fact that the

U.S. is one of the favorite destinations for Italian skilled migration: only a few European countries receive a greater number of young Italian graduates.

The most frequent degrees among those who work abroad are the same as among the larger group of graduates who work in Italy: Humanities, Modern Languages, Engineering, and Economy/Statistics. However, the percentages of graduates in Science and Technology who emigrate are significantly higher than those found among the graduates in Humanities, though the low number of total graduates in Science in Italy tends to under represent this group in the sample of all graduates working abroad. Quite obviously, only a minor percentage of graduates in Law and Science of Education, which are two of the most numerous groups among those who work in Italy, works abroad, as these degrees offer specific preparation for the Italian labor market only.

Among those working abroad, it is more common to be employed in large enterprises, while the young graduates work in Italy mainly in small ones. This situation, which is very significant because the difference is almost 10 percentage points, depends on the Italian economic structure, which is greatly made of small and micro enterprises, but also on the fact that it is certainly unusual for a small company to look for qualified staff abroad.

As regards the distribution by branch of activity, the survey data show that migration of graduates, with increasing time since graduation, tends to focus on research, teaching, (almost in every cases, in universities) and high technology, while those working in traditional sectors (such as trade and construction) are more likely to come back home, possibly after work experience abroad.

Whatever the work abroad, the decision to move is taken soon enough. In fact, transfers abroad have taken place for three years or more in 63% of cases among the 5 years graduates group. Furthermore, the data show that, with the increase of years after graduation, work abroad becomes more and more the result of a personal initiative, compared to what happens to those who remain in Italy, which is rather often the result of family networks or of personal relationships.

The answers to many questions of the questionnaire clearly show that the reason for the migration of young graduates is mainly due to the fact that the employment status of graduates abroad is much better than those who work in Italy.

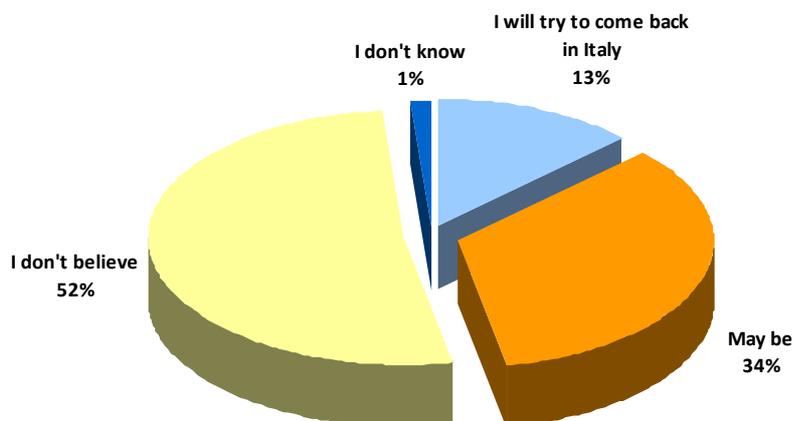
It actually appears that, among those who work abroad, wages are much higher and the percentage of those who are employed as managers, directors and executives is more than twice that found among those who work in Italy. It is also more common for graduates who remain in our country to only work as a collaborator or consultant, or even without a contract, even five years after graduation, while these cases are virtually absent among those working abroad. It should also be added that among the graduates in 2002 who work abroad, 54.7% had a permanent contract, while for those who work in Italy this percentage is 47, 6%: therefore, in contrast to what it is often stated, get a permanent place is easier abroad than in Italy.

Another indicator of better conditions for working abroad is the fact that among those working abroad the assessment of the use of skills acquired in university studies is higher than that of those who work in Italy, as well as the one of utility of the degree for their work.

The survey data show, however, that even among those working abroad, the situation of women is significantly worse than the one of men. Among women, constituting 50.3% of the total sample, in fact the percentage of executives and average wages are significantly lower. However, the situation of women abroad is much better than the one of their colleagues working in Italy, which are even more disadvantaged than men.

With the passage of time, the possibility of a return so becomes less and less likely both for women and for men: five years after graduation 52 out of a hundred people employed abroad see very unlikely to return to our country.

Figure 10 - Do you plan to come back in Italy?



Source: Survey AlmaLaurea, 2007

5. Conclusions

In conclusion, our studies show that, in case of what we might call the “natural mobility” of researchers, when scientists move abroad, they are generally motivated by a desire to engage in quality work. Accordingly, the prestige of the host institute, the equipment it puts at their disposition and the working environment are determining factors, whereas other considerations that are very important to other professionals, such as economic compensation, are less important. However, our survey came across several major similarities between scientists and professional migrations: both groups were far more disposed to temporary rather than permanent migration; furthermore, scientific migration, in common with other forms of skilled migration, is considerably influenced by the attitudes towards foreigners not only of the immediate working environment, but of the potential host society as a whole.

By the way, our surveys also revealed a basic difference between the outgoing and ingoing fluxes of researchers in Italy: while the large majority of foreign scientists working in Italy plan to come back home, the largest share of the interviewees Italian researchers working abroad do not will to do the same. In both cases, the chief reasons for the scientist’s reluctance to settle in Italy can be ascribed to the unlikelihood of permanent contracts of employment, the poor prospects for career advancement in Italian public research institutes, universities and companies and the lack of research funds, that are the first, obvious but mandatory, requirement for a proper research organization. This unfortunate situation, jeopardizing the Italian capability to compete in the present day knowledge based economy, is also confirmed by the results that we gathered from the analysis of the subsamples of Italian graduates working abroad from the 2007 yearly AlmaLaurea Survey on Italian Graduates’ Employment Conditions.

We can thus conclude that the intake of foreign researchers in Italy will follow to be far lower than the outflow of Italian researchers abroad, though the dimension of the last flux is still extremely hard to be determined, since no reliable statistical records are collected on this topic. It is evident that, in this condition, the national scientific system risks to collapse, because of the lack of an adequate number of qualified, motivated researchers.

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