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## “Brain Drain Competition” Policies in Europe: a Survey<sup>♦</sup>

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### **Abstract**

To obtain the “1.2 million additional research personnel, including 700.000 additional researchers” necessary to “irrigate” the industries science-based, The EU stresses that it is not sufficient increase the investment in Research. We have to stop the European Brain Drain. We have to reverse it; “Europeans who have moved abroad would love to come home”. We have to remember that the “Brain Drain should work in both directions”, then we have to attract foreign brilliant scientists and compete to the US A.

In this paper we give a survey of the principal “Brain Drain Competition” policies implemented in Europe. The key strategies and mechanisms found are: making the academic system more open and flexible; improving the regulatory conditions particularly on immigration; better sign-posting and information at national level; dedicated grants for foreign researchers; adapting income situations to market forces; providing tax reductions specifically for researchers and knowledge workers; more active international marketing and support for international researchers.

Finally, we analyse the effects of these policies on the Brain Drain in Europe by giving examples of countries (i.e. UK, France, Germany, Belgium, etc) that that effectively reverse the Brain Drain and attract foreign researchers, and the exemplum of the Italy that it is “a countries that supplies talent to Europe and the Americas”.

**Keywords:** Brain Drain, Migration policies, Human Capital, High skilled workers.

**JEL Classification:** F22, I23, J24, P16

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## Introduction

In this paper we give a survey of the principal “Brain Drain Competition” policies implemented in Europe.

First we analyse briefly the Brain Drain phenomenon in Europe and how the European Union suggests to the Member States to solve this problem.

Second, we analyse and report the several “Brain Drain policies” implemented in Europe. The key strategies and mechanisms found are: making the academic system more open and flexible; improving the regulatory conditions particularly on immigration; better sign-posting and information at national level; dedicated grants for foreign researchers; adapting income situations to market forces; providing tax reductions specifically for researchers and knowledge workers; more active international marketing and support for international researchers.

Finally, we analyse the effects of these policies on the Brain Drain in Europe by giving examples of countries (i.e. UK, France, Germany, Belgium, etc) that that effectively reverse the Brain Drain and attract foreign researchers, and the exemplum of the Italy that it is “a countries that supplies talent to Europe and the Americas” and that suffer a dramatic ‘drain’ of its researchers.

## 1. Brain Drain in Europe

The Brain Drain phenomenon is relevant in Europe and it is considered a key factor in a *knowledge-based economy*. As we report below, there are several scientific articles, studies, EU’s Report and newspapers’ articles that emphasize how the Brain Drain is important.

In the Time Europe, “How To Plug Europe's Brain Drain” Jeff Chu reports<sup>1</sup>:

***“Brain Drain isn't a purely academic problem. Billions of euros and tens of thousands of jobs are at stake, because science drives economic growth in the IT, biotech and pharmaceutical sectors. Europe can't afford to fall further behind.”***

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<sup>1</sup> Time Europe - How To Plug Europe's Brain Drain - Europe's best and brightest scientific minds are leaving in droves for the U.S. — and billions of euros and thousands of jobs are at stake. Here's how Europe is trying to lure them back - BY JEFF CHU

Furthermore, the recent Commission Communication “Investing in research: an action plan for Europe” (2003) stresses that<sup>2</sup>:

*“More and more adequately skilled researchers will be needed in Europe in order to fulfil the targeted increase of investment in research by 2010. Increased investment in research will raise the demand for researchers: about 1.2 million additional research personnel, including 700.000 additional researchers, are deemed necessary to attain the objective [In head count. These are orders of magnitude, the precise results depending on hypotheses retained. There were about 1.6 million researchers in Member States and acceding countries in 2000.], on top of the expected replacement of the ageing workforce in research.”*

Moreover, Andrew Wyckoff, analyst of the Organisation for Economic Cooperation and Development, says:

*“Growth in the future will come from industries that are science-based, Europe needs scientists to irrigate them.”*

Finally, Martin-Rovet, D. (2003) “Opportunities for Outstanding Young Scientists in Europe to Create an Independent Research Team”, writes:

*“Researchers want centres of scientific excellence and access to the best and latest scientific equipment. They want increased research funding and better salaries. They look for a society where science is respected and where their social status is esteemed. [...] Young scientists need independence and autonomy. The best of them want to create their own teams and to acquire scientific as well as financial responsibility for managing their own project. For this they need time money and personnel. These conditions are only partially available in Europe; unfortunately we all know that even if the science is excellent the R&D funding is often insufficient. The recognition of a reasonable status for scientists and scholars has still a long way to go and the traditional academic hierarchy frustrates the young and reduces their productivity.”*

That message is getting through to Europe's politicians, including policymakers at both the national and EU levels. Amid the chronic complaints about bureaucracy and lack of resources, there are signs of progress<sup>3</sup>. Some European institutions, public and private, Europeans offer researchers better funding, better facilities, better support for entrepreneurship and competition, and an overall better environment for world-class science.

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<sup>2</sup> [COM(2003)226 final and SEC(2003)489 of 30.04.03.]

<sup>3</sup> Time Europe - How To Plug Europe's Brain Drain - Europe's best and brightest scientific minds are leaving in droves for the U.S. — and billions of euros and thousands of jobs are at stake. Here's how Europe is trying to lure them back - BY JEFF CHU

Of course no single European country has the **Brain power** or the financial clout to challenge America's scientific pre-eminence but several European countries implement mechanisms and strategies to attract researchers. Furthermore, the EU is trying to develop a European Research Area — a "common market" for science — building networks, pooling strengths and raising standards regionwide. The objective of these policies can be identify in what the German Chancellor Gerhard Schröder noted when presented his government's priorities for 2004,

*“Only if we manage to keep our innovation at the top will we be able to reach a level of prosperity that will allow us to keep our welfare system in today's changing conditions”.*

EU leaders vowed to make the union “*the most competitive and dynamic knowledge-based economy in the world*” by 2010. But, as reported the Time Europe, “one of the most worrying signs of their failure is the continued Drain of Europe's best and brightest scientific brains, who finish their degrees and pursue careers in the U.S. Some 400,000 European science and technology graduates now live in the U.S. and thousands more leave each year”. A survey released by the European Commission found that only 13% of European science professionals working abroad currently intend to return home.

Furthermore, only Finland and Sweden have reached the EU goal of spending 3% of GDP on research. For the whole union to hit the target by 2010, R&D investment must grow by 8% a year — nearly twice the 4.5% annual increase recorded since 1997.

## 2. How the EU suggests to solve the Brain Drain problem in Europe?

Breimer of LERU, [League of European Research Universities] says:

*“At Lisbon in 2000, the EU set its own challenge: to compete. What this means is that **Brain Drain should work in both directions** — we should make ourselves attractive to the U.S., too. If Europe follows the lead of its most innovative institutions, it can do just that, and it will have a ready audience: Europeans who have moved abroad would love to come home”.*

To compete, to obtain the “1.2 million additional research personnel, including 700.000 additional researchers” necessary to “irrigate” the industries science-based, The EU remind that it is not sufficient increase the investment in Research. We have to stop the European Brain Drain. We have to reverse it, “Europeans who have moved abroad would love to come home”. We have to remember that the “Brain Drain should work in both directions”, then we have to attract foreign brilliant scientists.

In the paragraphs below, we analyse deeply these concepts.

### *a) “More Research for Europe – towards 3% of GDP”*

The subsequent Spring European Councils (Lisbon 2000, Stockholm 2001, Barcelona 2002 and Brussels in 2003) have endorsed the ERA (European Research Area) and set a series of objectives inviting the Commission and the Member States to take due account of the possible shortage of human resources in R&D as well as of the importance of enhancing the training and mobility of researchers.<sup>4</sup> The issue of human resources in R&D was also raised in the context of the 3% objective<sup>5</sup>, particularly in the Communication “More Research for Europe – towards 3% of GDP” which underlined the fact that Member States and the research community need to be aware of the risk that a lack of sufficient human resources in R&D constitutes a bottleneck to the attainment of the 3% objective. This is further developed in the recently adopted Communication “Investing in research: an action plan for Europe”.

### *b) Reverse the Brain Drain and “make Europe attractive to researchers from the rest of the world”*

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<sup>4</sup> Communication From The Commission To The Council And The European Parliament Researchers In The European Research Area: One Profession, Multiple Careers (Brussels, July 2003 COM(2003) 436 final ).

<sup>5</sup> At the March 2002 Barcelona European Council, the EU agreed that overall spending on R&D in the Union should be increased with the aim of approaching 3% of GDP by 2010.

The EU needs to attract researchers from the rest of the world”. To do it, European Commission President Prodi has called for up to 1.7 million immigrants to fill an EU-wide labour shortage through a system similar to the US “green card” for “qualified immigrants”<sup>6</sup> (AFX 2001).

Furthermore, in the report of the European Commission: “*High Level Expert Group on Improving Mobility of Researchers - Final Report (4 April 2001)*”, we found the following important notes:

*The Commission adopted on 18 January 2000 a Communication “Towards a European Research Area.” The Communication deals with adequate human resources for the future needs of European research. Greater mobility of researchers, **promoting a European dimension into scientific careers and making Europe attractive to researchers from the rest of the world** are among the key elements for achieving this. [...]*

*The European Research Area was taken up during the Lisbon European Council on 23-24 March 2000. The European Council asked the Council and the Commission, together with the Member States where appropriate, **to take the necessary steps to remove obstacles to the mobility of researchers in Europe by 2002 and to attract and retain high-quality research talent in Europe.** [...]*

*The Research Council of 15 June 2000 adopted a resolution, in which it invited the Member States and the Commission **to cooperate in order to identify and take action in view of removing present obstacles to the mobility of researchers to facilitate the creation of a genuine European scientific community.***

Additionally, in this report, there are “Good practice examples” of policies and initiatives of the Member States with the aim to give to the others members some suggestions and “Benchmarking Mechanisms and Strategies to attract Researchers”. Some of these examples are reported in the next chapter.

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<sup>6</sup> “EU’s Needs Immigration to Fill 1.7 Million Skill Shortage”, AFX European Focus, 2001.

### **3. “Brain Drain Competition” Policies in Europe**

In this chapter we give a survey of the principal “Brain Drain Competition” policies implemented in Europe. The key strategies and mechanisms found are: making the academic system more open and flexible; improving the regulatory conditions particularly on immigration; better sign-posting and information at national level; dedicated grants for foreign researchers; adapting income situations to market forces; providing tax reductions specifically for researchers and knowledge workers; more active international marketing and support for international researchers.

We have divided these policies in seven macro –groups: immigration policies, incentives to the researchers and their family, grants and scholarships, tax and salaries, investment in Research, marketing and recruiting policies, studies and analysis of the immigration policies of the others countries.

These policies are also schematised in the tables in Appendix.

#### **3.1 Immigration Policies**

A number of EU countries have taken a proactive role, from enacting legislation to facilitate foreign researcher entry.

##### **Examples:**

Concerning entry regulations for researchers, France has a particular scientific visa procedure for third country researchers and holders of scientific visa are exempt from work permits. Furthermore, a work permit is automatically issued for spouses. Germany has alleviated rules for work permits for third country researchers funded within EU programmes. Finland has flexible administrative arrangements for researchers participating in research exchange programmes. The UK has alleviated rules for researchers and research students wishing to remain in the UK. Furthermore, the UK permit system has responded successfully to bring in health and medical services workers.

There are countries that introduce special measures to facilitate the entry of skilled workers in current demand.

**Examples:**

In Germany there is the 'IT-specialists Temporary Relief Programme' with a quota of 10000 work permits to third country nationals. The UK has a proven record of drawing on foreign talent to meet labour market demands and also sending many qualified scientists and engineers overseas.<sup>7</sup> Ireland's work permit system and the changing social and political environment in Europe has brought about some significant shifts in Ireland's option to turn to foreign workers to meet domestic need. Furthermore, the Irish government is providing fast tracking of skilled workers in designated sectors (a 5-year programme to attract IT and biotech persons to Ireland); it has reduced the administrative burden of intra-company transfers. It also has an initiative to attract Irish researchers home for tenure positions. Denmark introduced fast tracking of IT skilled persons as part of 'job-card' initiative in July 2002.

At the same time, there are countries that still have restrictions and challenges.

**Examples:**

The Netherlands, Greece and Belgium continue with restrictive employment policy, although there are special considerations for highly skilled workers that are in demand (e.g. IT). Procedures for R&D workers and IT specialists are accelerated. although it does allow for a large share of permits going to highly skilled workers. As well, while all meet the same conditions, the procedure for R&D workers has been accelerated. IT specialists have also been fast tracked. Yet others like Spain and Italy are producing highly skilled personnel that leave to pursue research abroad because of lack of research opportunities at home and more generally, a mismatch of supply and demand.

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<sup>7</sup> In fact, in receptor countries like the US and Canada, the largest contingent from Europe is from the UK. For almost all of 1980s and the 1990s, the UK enjoyed net gain in EU flows.

### 3.2 Incentives to the researchers and their family

Language courses

#### **Examples:**

Some countries provide easier access to fast-track language courses and, like Greece, provide language courses to the family. In Germany, the Alexander von Humboldt Foundation and the German Academic Exchange Service provide support for language courses before the start of the fellowships they finance. Likewise, in some countries, e.g. Luxembourg and Finland, special language and cultural support is offered to accompanying children both in the foreign and mother tongues

Incentives and facilitations to the Researcher's family

#### **Examples:**

In some countries, e.g. Finland, the researcher's family is taken into account when granting funding for stays abroad. Foreign researchers can benefit from reduced fees, subsidised accommodation and guesthouses mostly for short stays. In the new Greek programme for temporary employment of foreign researchers, moving costs for the family are also covered. In Finland and Sweden, all children have the right by law to day-care.

Incentives and facilitations to the Researchers

#### **Examples:**

In some countries, for instance in Belgium, replacement costs for researchers on sabbaticals are covered. A method, used in a Greek research institute, to integrate foreign scientists into the local research environment is to encourage their participation in the decision making of the host institution. In certain countries, foreign researchers recruited to a university may have transition periods, during which they may teach in a foreign language, before being obliged to teach in the local language. A new initiative has been taken by the Dutch research council (NWO) to stimulate the development of research careers. This includes measures for mid-career researchers to establish their own research groups. Finally, in France, the Kastler Foundation provides personalised assistance to researchers from abroad.

### 3.3 Grants and Scholarships

At the Community level and in the Member States, there are prolific numbers of transnational mobility schemes, grants and scholarship.

#### Examples:

Since the 1990s, Portugal has had a policy of advancing training of human resources and supports granting of scholarships to support postdoctoral research by foreigners in Portugal. Furthermore, Portugal has increased the number of mobility fellowships for incoming foreign researchers by 50% from 1994 to 1999. Finland, as an example, has bilateral research exchange schemes with many of the candidate countries. Almost 50% of Luxembourg's national research grants are allocated to non-nationals. Germany provides scholarships to foreign scientists who establish research groups in Germany, for the purpose of preventing the loss of German postdoctoral scientists. Furthermore, the Kosmos Award, a prize of DM 750,000 is given to establish a group of young researchers in Germany. The UK spends £ 62 million on foreign students compared to £254 million on home students, which is a ratio of nearly 1:4.

However, most university studies are free of tuition fees so the need for financing is limited to the living costs in Finland. CIMO and the Academy of Finland can provide funding for the foreign researchers. Finally also France, Netherlands and Denmark have research grants and fellowships for increase the presence of non national researchers.

### 3.4 Tax and salaries

Differences in the social security systems and levels of taxation in different Member States may make it unattractive to move from countries with a high level of social security benefits (for instance, a long maternity leave) or to countries with high taxation and social security contributions.<sup>8</sup> Salaries constitute one of the most visible issues of career recognition.<sup>9</sup>

#### Examples:

There are several examples of countries that providing tax reductions specifically for researcher and knowledge workers: Denmark, Sweden, Netherlands and France. In particular, Denmark and Sweden

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<sup>8</sup> [High Level Expert Group on Improving Mobility of Researchers - Final Report (4 April 2001)]

<sup>9</sup> [Communication From The Commission To The Council And The European Parliament Researchers In The European Research Area: One Profession, Multiple Careers (Brussels, July 2003 COM(2003) 436 final )]

outstanding researcher tax reduction for up 3 years from 40% to 25%, furthermore, in Netherlands, speciality workers compensated with a rebate of 30% of total earned during stay.

Other countries providing different policies for highly skilled specialist: Austria is moving towards a system where researchers in the public sector are no longer civil servants and are therefore not part of the specific civil service pension system.

Britain attempts to retain teachers educated in country by writing off student loans of graduates who enter the teaching profession.

A recent a study carried out for the French Senate tells of a

*“discouraging landscape of administrative convolution, heavy taxes and inflexible labour legislation.”*

### **3.5 Investment in Research**

*“Researchers want centres of scientific excellence and access to the best and latest scientific equipment. They want increased research funding and better salaries”.* Increase the investment in Research is a good policy to making a country attractive to researchers from the rest of the world.

We report as exemplum the strategies of Irish, Germany, UK and France.

#### **Examples:**

The Irish government has put a new emphasis on science, especially the kind that can benefit the rest of the economy. The 2004 government budget includes new tax relief for companies that invest in R & D. It also boosts funding for the state-backed Science Foundation Ireland (SFI) by 62%, in a move meant to speed construction of a solid scientific-knowledge base and make Ireland more attractive to firms in high-value sectors like biotechnology. SFI will plow €400 million into research over the next three years, including millions for fields such as mathematics and earth science, which are often neglected in favour of more obviously commercial sectors.

William Harris, SFI's director general, says:

*We want to make Ireland a place that's not only friendly to scientists, but science-friendly, the focus — and the funds — are paying off.*

The Volkswagen Foundation recently announced an initiative to reverse the Brain Drain from Germany. The new initiative will enable higher education institutes in Germany to attract young

scientists by establishing professorships in innovative research areas. The programme, which has been named after the mathematician Georg Christoph Lichtenberg, is aimed at three target groups, i.e. young postdoctoral researchers working in Germany, German Postdoctoral scientists willing to return from a research stay abroad, and internationally renowned scientists from abroad. The Volkswagen Foundation will fund the establishment of ten to twelve Lichtenberg professorships per year. Universities are required to co-fund the professorships and to ensure their longer term funding. The Volkswagen Foundation is a non-profit organisation, which promotes excellence in higher education and research.<sup>10</sup>

The UK is already in a strong position in terms of attracting international students/researchers. The strength of the science system, along with the presence of both reputable universities and centres of excellence has meant a steady inflow of researchers into the system. Policies to attract international researchers consist mainly of efforts to ease rules of immigration and obtaining work permits. However, there is a rather large budget allocated to the funding of foreign researchers in the UK, which improves the opportunity and in turn the numbers of researchers that gain positions within the UK research area. Adding up the amounts spent on foreign students, (roughly £57 million per year (or 89 MEUR) plus £5m (7.8 MEUR) pounds over three years for the international marketing campaign), we can deduce that the UK spends £ 62 million on foreign students compared to £254 million on home students, which is a ratio of nearly 1:4. This means that despite having universities with a world class reputation, and its attractiveness to researchers from many nationalities, Britain is prepared to put a serious financial effort in supporting foreign graduates.

France has recently developed a package of measures to make the research system more open and attractive for foreign researchers. Two issues are behind these measures: a need for a more open scientific landscape and the fear of Brain Drain. Two recommendations have been proposed by a high-level working group, On the one hand, incentive-schemes offering researchers interesting contracts in France to reduce Brain Drain in the high-tech field. And on the other hand, measures promoting the reintegration of French researchers at home, In particular French post-docs abroad, who merit special attention in facilitating them to return home, for instance through subsidised employment contracts, limited to one year.

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<sup>10</sup> Research Policies – British Embassy Berlin - R&T Note No. 03.1004 Date: 16 January 2003 By Ursula Roos

Finally, there exists a fear that France is becoming less attractive as a country (again in favour of the US) for talented researchers, especially PhDs. As a result, the fraction of foreigners doing their doctoral theses in France decreased from a third in 1992 to less than a quarter of theses in 1997. The decrease in the number of foreign PhD students in France mainly occurs in mechanical science and chemistry.

### **3.6 Marketing and recruiting policies**

Some countries implement marketing and recruiting policies directly oriented to attract foreign researchers.

#### **Examples:**

In some countries, such as France, the Netherlands, Finland and the UK, there are nation-wide integrated Internet sites on opportunities and regulations. In France, the Kastler Foundation provides personalised assistance to researchers from abroad.

Though not always a requirement, it is common practise in many Member States to publish research vacancies internationally. In the United Kingdom, open recruitment is common practice with some schemes supporting the costs of recruiting outstanding researchers from industry or overseas.

In some research funding organisations in Member States (e.g. Portugal, Finland, Sweden), foreign participation in recruitment and/or evaluation committees is compulsory or facilitated by requiring applications to be written in a 'world' language.

The Department for Education and Employment launched the UK Education Brand which marked the beginning of a three-year programme to raise the profile overseas of UK education. The Brand, together with generic marketing materials, supports promotion activities overseas of UK higher education institutions. The budget put towards this initiative is 7.8 million EUR.

An example of policy studied for the return of migrants to their source country is the so called "Irish Christmas recruitment". The Irish Ministers of Enterprise Trade and Development are recruiting expatriates to return to build the software industry; targeting those returning home for Christmas.<sup>11</sup>

In France and Finland there is a unified body for the international marketing .

In Italy, the Government is trying to turn the Brain Drain into a gain. The so-called operation 'Brain Buster', launched by the MIUR aimed to attract back Italian scientists and/or foreign academics working in the research sector abroad.

Some of these policies of recruiting are specifically devoted to the former eastern bloc countries.

**Examples:**

Germany, Austria and France are actively recruiting undergraduate and post-graduate science students from Poland and other former eastern bloc countries. First indications suggest that Germany and Austria are now the top choice for many of the brightest foreign students, who are being offered incentives such as university courses in English and favourable funding schemes.

**3.7 Studies and analysis of the immigration policies of the others countries**

There are several studies that analyse the immigration policies of the other countries.

**Examples:**

First, there is the report of the European Commission: “High Level Expert Group on Improving Mobility of Researchers - Final Report (4 April 2001)”. In this report, there are “Good practice examples” of polices and initiatives of the Member States with the aim to give to the others members some suggestions and “Benchmarking Mechanisms and Strategies to attract Researchers”.

Second, there is the study of the ESRC (Economic & Social Research Council): the MOBEX project, which examines the factors that influence scientists to make international career moves. The MOBEX study, which was part of the ESRC Science in Society Programme, took an in-depth look at the science jobs context in Italy and the UK.

Third, there is a new study of the ESRS, an extension of the MOBEX project. This study is reported in “Science Brain Drain – How some European countries attract the top scientific talent”, ESRC Press Release, March 2004. In this study, the authors suggests that Britain could miss out to other EU countries in attracting scientists from the EU accession countries unless it adopts more proactive policies.

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<sup>11</sup> Belfast Telegraph, 1999. ‘New Moves to End Brain Drain,’ Belfast Telegraph, December 17

We report what Anthea M Lipsett write about this project in the article “We need to pursue new research brains“(The Guardian - Tuesday March 23, 2004)

*As most of us are by now aware, the European Union is on the cusp of swelling; some 10 new countries will become members of the EU on May 1. The repercussions of this enlargement on the UK abound and the research community is no exception. Unless the UK adopts more proactive policies to attract scientists from the soon-to-be EU members, it could miss out to the likes of Austria and Germany - or so says new research from the University of Leeds.*

*According to the research project, funded by the Economic and Social Research Council, whereas France and Germany are actively recruiting undergraduate and postgraduate science students from Poland and other eastern European countries, the UK tends to sit back and wait for the top scientific brains to come to it.*

*But judging by the findings of the new research, it will need to get to work or face failure, regardless of past performance. The indications suggest that Austria and Germany are now the top choice for many of the brightest foreign science students, who are being offered incentives such as university courses in English and favourable funding schemes. [.....] Professor Ackers also warns that the EU policy of supporting centres of excellence to foster skills development and knowledge-transfer could be at odds with the EU goal of creating balanced growth across Europe. The circulation of scientific talent does not in itself constitute brain drain, she says. But problems arise when rates of return are very low and the country or region fails to attract scientific talent from outside, which could reduce the ability of weaker regions to regenerate.*

Fourth, there is the a Irish study: “Benchmarking Mechanisms and Strategies to attract Researchers to Ireland. A study for the Expert Group on Future Skills Needs and Forfás” Feb 2001

In this study we found:

*The Irish scientific research system is currently experiencing an unprecedented growth, following an investment programme launched in 2000. In order to underpin this growth the country is seeking to attract more research graduates from outside the country.*

*In the context of internationalisation of R&D and the mobility of researchers, attracting good researchers has become a major policy issue in all industrialised countries. There is an overall European concern about the scarcity of researchers and lack of skilled personnel. Europe is lagging behind its major competitors US and Japan in terms of researchers as a proportion of the workforce. Since many European countries have started to address this issue, Ireland will face even more competition in attracting research talent.*

#### 4. Effects of these policies on the Brain Drain in Europe

It is not simple to analyse the impact of the policies and strategies above mentioned on the Brain Drain in Europe. Moreover, analysing the Brain Drain phenomenon, both in the World and in Europe, we can immediately note a correspondence among the most important receiving countries and the ones that implement the most proactive policies to attract foreign scientist.

The phenomenon, however, is very highly concentrated in few countries: only five countries, Australia, USA, France, Germany and United Kingdom, attract 8 out of 10 foreign students of Oecd area. United States are far long the most important receiving country, hosting 34% of all foreign students, followed by United Kingdom 16%, Germany 13%, France 11%, and Australia 8% .

In 1998 one million and 300,000 foreign students were enrolled in Oecd countries, 42% originating from member countries, 58% from other countries. The most represented nationalities in the first group were German, Turkish, French and Italian which are 25% of all foreign students and 50% of foreign students coming from an Oecd country.<sup>12</sup>

Let us now analyse the phenomenon in Europe. Data collected by SOPEMI (2000) show that the share of EU citizens in the total population of foreigners within EU countries is: 0.1 percent in Italy, 0.2 percent in Greece and Finland, 0.3 percent in Spain and Portugal and 0.8 percent in Denmark; 1.1 percent in Austria, 1.4 percent in the Netherlands and the UK, 2.0 percent in France and Ireland, 2.1 percent in Sweden and 2.3 percent in Germany. Only Belgium and Luxembourg have larger percentages (4.7 percent and 30 percent respectively), mainly because they are situated favourably within the EU.<sup>13</sup>

United Kingdom, Germany, France, Netherlands, Sweden and Austria are also the countries that implemented several and significant “Brain Drain policies”.

“Ireland”, report Luise Arkers ( ), “is a good example of a country traditionally characterised as an exporter of highly skilled labour that has transformed into a net import”.

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<sup>12</sup> [CONSORTIUM OF HIGHER EDUCATION RESEARCHERS CHER 15th ANNUAL CONFERENCE 5 – 7 September 2002 Vienna, Austria- International Mobility: Students Vagantes [Sveva Avveduto (CNR), Maria Carolina Brandi (CNR)]]

<sup>13</sup> ROSSETOS FAKIOLAS The Economic Effects of Migration

We now consider deeply the specific situation of France, Germany, Belgium Greece, Portugal and United Kingdom. These countries implemented with success these policies. Finally we consider the case of Italy and its “true state of emergency”.

### **Positive examples**

In France, as in other countries, doctorate and post doctorate university courses bring in (if even for a short term) foreign-born talent. In 1999/2000, there were some 129,000 foreign students in French universities; a rise of 6% in just one year and it meant that foreign students accounted for 9% (and lower than the 13% seen in the mid-1980s). At the same time the number of French students dropped by 1%.

Between 1992 and 1994, Eastern Europe lost a considerable amount in terms of human capital and seemingly some was to the benefit of Germany: estimates are that some 82,000 highly skilled Eastern Europeans arrived in Germany. However, not unlike other countries in Europe, Germany finds it difficult to attract foreign intellectual capital and despite such efforts such as the introduction of ‘green cards’ to foster recruitment of specialists to IT.

Total employment in Belgium numbered some 3.8 million in 1998. Occupations in management stood at 424,000 and among them, just under one in ten were non-nationals; almost all of them (88%) were from the EU and other developed countries.

Until 1998, in Greece, the number of work permits issued to foreigners had been restricted to between 25,000 and 34,000. During the 1980s and 1990s, the largest share went to scientists and professionals (some one third in the mid 1990s). Most of the permits went to persons from Europe of which most were from the EEC region.

In 1998, there were a total of 88,605 foreigners working in Portugal. Thirty percent of the professional, managerial and technical occupations were foreign; the remaining 70% were in medium and low skilled occupations. The contribution of the EU for highly skilled workers in Portugal is evident. In 1998, more than half (52%) of the foreign highly skilled workers were from the EU (people from Brazil were the second largest contingent). Among the foreigners arriving in Portugal in 1999 and 2000, the

most skilled group continued to be made up of Europeans. In 2000, 46% of the foreign labour force from the EU had higher education compared with only 23% of those from Brazil.

The UK has a proven record of drawing on foreign talent to meet labour market demands and also sending many qualified scientists and engineers overseas. In fact, in receptor countries like the US and Canada, the largest contingent from Europe is from the UK. For almost all of the 1980s and the 1990s, the UK enjoyed net gain in EU flows.

### **Negative exemplum: The Italy's case**

Italy is a country that supplies talent to Europe and the Americas: in the 1960s, Switzerland attracted a significant share of Italian professionals — in 1966 alone, some 2,000 engineers and 540 physicians obtained a Swiss passport; in the late 1960s they went to the Americas. At the end of the 1990s, Italy was suffering a 'drain' of its graduates – between 1996 and 1999, more than 2,300 graduates.

The presence of foreign students in Italy remains relatively low: a peak of 3% was reached in the 1980s and a decade later was at about the same level.<sup>14</sup>

The actual possibility of staying is over 50% for Italians, who already have a firm plan to stay. This indicator allows to measure the potential gain and losses of the country of origin and of the host country, the latter are for European countries most likely to occur in Italy, Greece, Spain and Germany. In Italy this process, just starting, may be stopped due to change in different set of general policies adopted. Actually, Italy seems still not particularly aware of the value and potential benefits coming from hosting foreign students, no specific policies have been adopted to develop this resource.

It is significant the fact that some countries analyse the Italian case as a important exemplum where the Government is enable to retain his researchers and attract foreign ones.

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<sup>14</sup> Symposium on Science Policy, Mobility and Brain Drain in the EU and Candidate Countries  
Centre for the Study of Law and Policy in Europe - University of Leeds, July 27-28th

No.7 S. Morano-Foadi and J.Foadi  
Italian Scientific Migration: From Brain Exchange to Brain Drain  
Will brain drain ever be turned back into a brain exchange?

For example, the MOBEX study, which was part of the ESRC Science in Society Programme, took an in-depth look at the science jobs context in Italy and the UK.

In a report of this study, the authors write

*"The brain drain of scientists from Italy is now on the national political agenda. It is a matter of concern that scientists need to leave Italy to advance their careers but they also face massive reintegration problems when they return," Louise Ackers explains. Her Italian colleague, Sonia Morano-Foadi, attributes this paradox partly to the influence of the so-called 'barone', the professors who are allegedly the 'deal-makers' in the university jobs market, often requiring scientists to work for them for up to two years without pay in order to progress. This may also explain why Italy attracts few international scientists, the researchers claim."*

The Italian Government is trying to turn the brain drain into a gain. The so-called operation 'brain buster', launched by the MIUR (with the law DM 26/01/2001) aimed to attract back Italian scientists and/or foreign academics working in the research sector abroad. 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.

In the MOBEX study, the authors report :

*"We have asked our respondents if they were aware of any policy of the Italian Government to attract brains back to Italy. In general, they express some doubts about the programme 'brain buster'. The main reasons they advocated were: short-term appointments and transparency of the system. Some of them were aware about this new programme, while others did not know about it or were sceptical and express their views in a critical fashion."*

Others authors are sceptic about the possibility to the Italian Authorities to stop and reverse the Brain Drain.

For exemplum, referring to the Italian context, Pelizon underlines that whilst international exchange constitutes the "lifeblood of research", the failure of Italian scientists to return has lead to a "true state of emergency" in Italian Science (2002).

Furthermore, Paterlini refers to the "broken promises and disappointed scientific hopes' of Italian returnees" (2002).

Finally, Morano – Foadi, reports the

*“General lack of a relationship between excellence or performance and progression in Italy with the result that stay-at-home Italians that had “served their time” in the academic system were often privileged over and above well published and experienced potential returnees” (2003 Morano – Foadi).*

## **5. Conclusions**

## APPENDIX

*Overview of mechanisms to attract foreign research graduates in Europe Tab 1/5*

MECHANISM	DESCRIPTION	COUNTRY
<i>Immigration policies</i>	Particular scientific visa procedure for third country researchers and a work permit is automatically issued for spouses	France, Germany
	Increase the speed of processing visa applications for student and researchers	Denmark, UK
	Flexible administrative arrangements for researchers	Finland
	<b>Special measures to facilitate the entry of skilled workers in current demand</b> Denmark introduced fast tracking of IT skilled persons as part of 'job-card' . German 'IT-specialists Temporary Relief Programme' – “green “ cards A 5-year programme to attract IT and biotech persons to Ireland The UK permit system has responded successfully to bring in health and medical services workers The Netherlands and Belgium continue with restrictive employment policy, although there are special considerations for highly skilled workers that are in demand (e.g. IT)	Belgium, Denmark, Germany, Greece, Ireland, Netherlands, Portugal, UK
	Provision of a continuous visa in place of having to renew permits every years	UK
	Allowing applications for researchers to be made in the French Embassy in their home country (eliminating the need to go through the International Immigration office) reduces time for applications and the possibility of rejection	France
	Providing the researcher with an agent (who will moderate administrative procedures once the Embassy has permitted the researcher to obtain the visa)	France

Overview of mechanisms to attract foreign research graduates in Europe Tab 2/5

MECHANISM	DESCRIPTION	COUNTRY
<i>Incentives to the researchers and their family</i>	All researchers' children have the right by law to day-care	Finland, Sweden
	Replacement costs for researchers on sabbaticals are covered	Belgium
	<b>Some countries provide easier access to fast-track language courses</b> Greece provides language courses to the family In Germany, the Alexander von Humboldt Foundation and the German Academic Exchange Service provide support for language courses before the start of the fellowships they finance In Luxembourg and Finland, special language and cultural support is offered to accompanying children both in the foreign and mother tongues	Germany, Greece, Luxembourg, Finland, Belgium
	The researcher's family is taken into account when granting funding for stays abroad	Finland
	A work permit is automatically issued for spouses of the researchers	France, Germany
	Foreign researchers can benefit from reduced fees, subsidised accommodation and guesthouses mostly for short stays.	Finland
	The Kastler Foundation provides personalised assistance to researchers from abroad.	France
	Free accommodation and travel payment for visiting professors for up to 1 year	Finland
	In the new Greek programme for temporary employment of foreign researchers, moving costs for the family are also covered	Greece
<i>Grants and scholarships</i>	the UK spends £ 62 million on foreign students compared to £254 million on home students, which is a ratio of nearly 1:4.	UK
	<b>There are prolific numbers of transnational mobility schemes</b> Portugal has increased the number of mobility fellowships for incoming foreign researchers by 50% from 1994 to 1999 Finland has bilateral research exchange schemes with many of the candidate countries Almost 50% of Luxembourg's national research grants are allocated to non-nationals Scholarships to foreign scientists who establish research groups in Germany	Germany, Portugal Luxembourg, Finland
	The Kosmos Award, a prize of DM 750,000 is given to establish a group of young researchers in Germany	Germany
	For short term study visits for research students	Finland , Netherlands
	Research Grants / Fellowship	UK, France, Denmark, UK

*Overview of mechanisms to attract foreign research graduates in Europe Tab 3/5*

MECHANISM	DESCRIPTION	COUNTRY
<i>Tax and salaries</i>	The UK governments plans to increase the salaries of post-doctorates by 25% and increase funding for hiring of university professors.	UK
	Austria is moving towards a system where researchers in the public sector are no longer civil servants and are therefore not part of the specific civil service pension system.	Austria
	<b>Providing tax reductions specifically for researchers and knowledge workers</b> Outstanding researcher tax reduction for up 3 years from 40% to 25% (Denmark, Sweden) Speciality workers compensated with a rebate of 30% of total earned during stay (Netherlands)	Denmark, Sweden, Netherlands, France
	Attempts to retain teachers educated in country by writing off student loans of graduates who enter the teaching profession	UK
<i>Investment in research</i>	The 2004 government budget includes new tax relief for companies that invest in R & D.	Ireland
	Science Foundation Ireland (SFI) will plow €400 million into research over the next three years	Ireland
	The Volkswagen Foundation will fund the establishment of ten to twelve Lichtenberg professorships per year. The new initiative will enable higher education institutes in Germany to attract young scientists by establishing professorships in innovative research	Germany
	Some 7000 teaching researcher posts have been created since 1997 to retain talent and encourage the return of post-doctorates working abroad.	France
	In 2000 the British government and the Wolfson Foundation, a research charity, launched a five-year research award. The £20 million scheme aims to attract the return of Britain's leading expatriate scientist and the migration of top young researchers to the UK	UK

*Overview of mechanisms to attract foreign research graduates in Europe Tab 4/5*

<b>MECHANISM</b>	<b>DESCRIPTION</b>	<b>COUNTRY</b>
<i>Marketing and recruiting policies</i>	Nation-wide integrated Internet sites on opportunities and regulations	France, Netherlands, Finland, UK
	The Kastler Foundation provides personalised assistance to researchers from abroad.	France
	International data base for vacancies	Netherlands
	In the UK, open recruitment is common practice with some schemes supporting the costs of recruiting outstanding researchers from industry or overseas.	UK
	Germany Austria and France are actively recruiting undergraduate and post-graduate science students from Poland and other former eastern bloc countries. Germany and Austria offer incentives such as university courses in English and favourable funding schemes	France, Austria, Germany
	The Irish Ministers of Enterprise Trade and Development are recruiting expatriates to return to build the software industry; targeting those returning home for Christmas - Irish Christmas recruitment	Ireland
	The Department for Education and Employment launched the UK Education Brand which marked the beginning of a three-year programme to raise the profile overseas of UK education. The Brand, together with generic marketing materials, supports promotion activities overseas of UK higher education institutions. The budget put towards this initiative is 7.8 million EUR	UK
	Unified body for international marketing	France, Finland
	Pursuing agreements with international associations	Denmark
	Funding of International education-research networks	France
In some research funding organisations in Member States, foreign participation in recruitment and/or evaluation committees is compulsory or facilitated by requiring applications to be written in a 'world' language	Portugal, Finland, Sweden	

*Overview of mechanisms to attract foreign research graduates in Europe Tab 5/5*

MECHANISM	DESCRIPTION	COUNTRY
<i>Studies and analysis of the immigration policies of the others countries</i>	ESRC (Economic & Social Research Council): <b>“Science Brain Drain – How some European countries attract the top scientific talent”</b> suggests how to compete with Austria, Germany and France that are actively recruiting undergraduate and post-graduate science students from Poland and other former eastern bloc countries	UK
	ESRC : <b>“MOBEX project”</b> , which examines the factors that influence scientists to make international career moves (with an analysis of the causes why Italy attracts few international scientists)	UK
	<b>“Benchmarking Mechanisms and Strategies to attract Researchers to Ireland”</b> . A study for the Expert Group on Future Skills Needs. How the Ireland will face even more competition in attracting research talent	Ireland
	<b>“High Level Expert Group on Improving Mobility of Researchers - Final Report”</b> (4 April 2001) “Good practice examples” of the policies and strategies of the Member States to attract researchers	EU