

International mobility of PhDs
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Introduction

The interest in the international dimension of education and in the international co-operation has always been an essential pre-requisite for the development and implementation of any R&D work.

The mobility of students and scholars is deeply rooted in the very beginning of University in the Middle Age and educating the Global research Village today requires a constantly increasing international dimension.

The Oecd has launched a transnational series of studies on 'Education in a New International Setting' which cover a number of items concerning the financial side such as cost-benefit analysis of the internationalisation of higher education, the financing and effects of the internationalised teaching and learning and the curricula development side (Oecd 1996) and has carried out an international comparative investigation of curricula development for the internationalisation of higher education (M. van Der Wende 1996). Most of these studies are based on the assumption that giving the students an international experience, both direct (whenever possible through a real mobility) or indirect (through a virtual mobility given by the international elements of the curricula) is nowadays essential in all disciplines, both at undergraduate and graduate level. Most of the reasons lay in the need of acquiring an international perspective, 'working in a co-operative context with people from different cultural and national background'. The teaching staff and faculty being involved in the process will take advantage from a constant redefinition of their own preparation (Kogan et al. 1994).

For the research training level the imperative of internationalising the study and research activities is of the utmost importance.

The new environment for internationalisation is characterised, according to Oecd, by six main aspects:

“- internationalisation is becoming more global and more knowledge-based, especially in linking new knowledge to productivity:

- the rapid economic and population growth in some countries, especially outside the Oecd, is creating demand for higher education greater than these countries can provide for themselves;

- the fastest growing area of trade is in exchange of services and this poses questions of acceptability of standards and qualifications across national boundaries;
- new technology will play a role in future internationalisation efforts as software transfers may complement or substitute for student mobility;
- the promotion of life-long learning will produce both a new clientele for internationalisation and a competing demand for resources in higher education;
- fiscal problems in many countries may cause the traditional sources of support for internationalisation to stagnate or even decline.

This new environment for higher education, and for its international activities, will require that higher education institutions and systems develop more dynamic and multi-based strategies” (Oecd 1996).

The higher education sector has been recently under scrutiny by the Oecd (Oecd, 1998) and the main factors that in the medium and long term will presumably influence mostly the development of universities have been identified and grouped in three main blocks:

- *Financial problems* due to the declining government R&D funding and to its changing nature (increasingly mission oriented or contract based) that lead university to seek new sources of support (mostly private and industrial) and to orient research activities to short term market oriented topics. and the connected demand for economic relevance of research activities and results.
- *Systemic problems* linked to globalisation and internationalisation stemming partly from developments and advances in information and communication technologies that contribute to the change in research climate and organisation.
- *Human resources problems* in a range that goes from the initial and continuing education activities to the concerns for the availability of high qualified work force for R&D, from the ageing of the scientific workforce to the declining interest of youth for scientific disciplines and hence for scientific careers.

In this framework the expectations put on university output outcome are very high and the diversity of national systems that for a long time has been considered a strong barrier to mobility is being rapidly overcome, trans national co-operation, at least on a one-to-one basis, may in some conditions make it

easier to co-operate with a foreign partner rather than with a national one. International co-operation may in many cases work better if it is backed by a mutual trust rather than by detailed formal rules (Teichler 1996). The invisible college, in other words works for facilitating international exchanges, even in some cases in absence of written rules.

One of the main points when discussing internationalisation of education is linked to the curriculum content. The international commission for education in the XXI century, set up by J. Delors, that analysed the entire education sector, from pre-primary to higher education, underlined as one of the relevant guidelines the implementation of international dimension of education through changes in curricula. (Delors, J. 1996). On the other side, considering the employment aspects, mobility of human resources and particularly of researchers in the European dimension, has also been one of the relevant policy indications given by the "Busquin report" on EU research policy (CEE, 2000)

The cited study carried out by Oecd, presents a deep analysis of the education policy priorities concerning the topic. The central propositions for the study derive from five main notions on the process of internationalisation derived from the relevant educational theory:

“ • Internationalisation of the curriculum is a process of educational change aimed at improving the quality of education.

• Internationalising the curriculum, together with student mobility and staff mobility constitute the three central and interrelated elements in the implementation phase of the process of internationalisation.

• Effects and outcomes of internationalising the curriculum can be distinguished between short term effects on students staff and educational content and long term effects on profile of graduates, labour market positions and the quality of education.

• Internationalised curricula can be developed both in a single national context or in collaboration with foreign partner institutions (joint curriculum development), and can be aimed at either professional training or social and inter cultural integration.

- Content of curricula can be defined on the basis of an analysis of (the international aspects of) the subject area itself, (the international aspects of) the future job, or the learner or target group” (van der Wende, 1996).

International mobility of PhDs: opportunity or illusion?

The analysis of the international dimension of training activities has been often focused on science and education policy sides, in order to find out the possible best practices to adopt to foster mobility.

The survey carried out by the Italian National Research Council on this topic (Avveduto, Cipollone, 1998) chose a bottom up approach focusing on opinions and experiences of those who have got the opportunity to spend part of their PhD abroad. The analysis followed the guidelines set by a EU research team established by Stuart Blume on Postgraduate education focusing attention on aspects of international mobility such as its desirability and utility in stimulating, inter alia, a sense of belonging to the international scientific community (Blume, 1995). The idea was to highlight the problems and obstacles which prevent international mobility from actually materialising, basing the policy recommendation on the relevant national experience, concluding by drawing up a list of requests to submit to European institutions. We participated to this work carrying out the analysis of the Italian experience.

Four main topics have been chose as leading tracks of the CNR survey:

1. The desirability and feasibility of international research training;
2. Objectives and benefits of international mobility;
3. Barriers to further internationalisation;
4. Impact on the labour market.

1. Structure and methodology of the survey

We carried out a full scale survey on six selected universities - Ancona, Chieti, L’Aquila, Genoa, Florence and Rome chosen by location and dimension criteria

according to the European study; the first 3 are peripheral universities of small size, the 3 others are big metropolitan ones.

The survey allowed us to contact all the doctoral students and co-ordinators from the last three course cycles (1995-97).

1,935 mail questionnaires were mailed to doctoral students, and about 600 to professors acting as course co-ordinators. 26.7% of doctoral students replied: there were no variations between males and females with a response of about 26% for each category. 14,5% of co-ordinators replied, a fact which might be considered an initial indicator of the generally low level of sensitivity towards the subject in question.

The 40 questions of the semistructured questionnaire for PhD students and the 20 questions in the questionnaire for lecturers were built on the basis of the interviews conducted in the participating EU countries in order to produce comparable results.

The questions were designed to gradually lead respondents to address the topic of international mobility.

In the case of doctoral students, both those who had the chance to spend a period of study and research abroad and those who had not were asked to express their opinions. Questions tended to focus on problems related to teaching activity during the doctorate course in Italy, and sought, right from the outset, to gauge the interest of doctoral students for a possible experience abroad. By exploring the difficulties encountered and benefits gained from the experience we attempted to identify the impact the experience may have on future careers.

The first part of the lecturers' questionnaire asked lecturers to fill in basic information about the university structure where the topic of international exchanges was addressed. Semistructured questions asked them whether, in the department they co-ordinate, there were international exchanges in progress at the moment of the survey and, if so, at what level.

The second part of the questionnaire contained questions was designed to find out more about the financial or organisational aspects of foreign training activities, and lecturers were asked to express their own personal views about the phenomenon of mobility.

The lecturers' suggestions on how to improve this particular aspect of doctoral training are presented in the final section.

Concerning the PhD students, almost 50% of replies came from science side: engineering, mathematics, physics and natural sciences accounted for the largest response to the survey. Overcrowded faculties such as law and humanities had a lower incidence on replies.

The average age of respondents was 29 (Table 1).

Table 1- The CNR survey sample

Professors	600
PhD students	1935
Average age	29
Male 51,7	Female 48,3
Disciplinary Breakdown %	
Agriculture	2,8
Architecture	10,8
Economics	2,4
Pharmacy	1,6
Law	5,0
Engineering	22,0
Mat, Phys, Nat. Sciences	22,4
Humanities	16,8
Medicine	12,2
Political Sc.	2,9
Statistics	1,0

Source: Avveduto, Cipollone, 1998.

2. The organisation and structure of exchange: motivations and procedures

A wide variety of different procedures undergoes the choice to go abroad and the organisation of a study period in a foreign university. It is not a single decision-making process which leads the student to a chosen destination, under a unitary typology. The case histories we recorded differ widely, and are occasionally the exact opposite of one another.

In some cases we faced an extremely well organised process that makes doctoral students well aware from the very beginning of their course of the opportunity to carry out part of their research abroad.

In other cases, only personal initiative of professors in advising and guiding students, or of students themselves, in making applications and independent arrangements, prevailed.

The opportunity of having an experience abroad has been considered in almost all cases both by students and professors as highly desirable, and it has often been quoted as a value *per se*. Actually only 26% of students had the opportunity of spending a study period abroad though 95,7% of those that could not benefit from this possibility would have liked to.

Although organisational models differ greatly, analysis revealed that the motivations and procedures for choosing which country to study in, and the best period to go there, tended to converge.

Asked which stage of their training they regarded as the best time to go abroad, 40.9% of the respondents opted for the second year of their PhD, although 37.4% say that the experience should be staggered over more than one stage (tab 2). Most respondents feel that it is important to spend the first year at the alma mater to develop acquired knowledge, to gain familiarity with the subject of study and environment, to prepare research properly, to draw up a suitable study programme and to start work on it under the supervision of a tutor. During the first year, many universities also organise *ad hoc* courses and seminars for doctoral students, and their attendance is often compulsory.

During the third and final year of the doctoral course students conclude their research work, write their theses and should therefore be at their home university. Conversely, the second year of doctoral course is regarded as the one in which, having consolidated their knowledge, students can benefit from coming to terms with an international context. At this stage students have already laid the bases for their research work at their alma mater, but are not yet under pressure to submit their final theses and the new environment can offer new stimuli. Nonetheless, 40.3% of students who have actually been abroad went in their first year (table 2).

The opportunity of visiting a foreign university more than once during PhD has been indicated by 37,4% as the preferable one, but no student due to the present organisation of study leaves, had this possibility under a specific scheme.

Table 2- Better timing for a study visit abroad

	favourite timing %	real timing %
First year	6,6	40,3
Second year	40,9	37,3
Third year	12,2	17,9
more than once	37,4	x
n.a.	2,9	4,5

Source: Avveduto, Cipollone, 1998.

The choice of overseas destination is made largely on the basis of two fixed parameters: the first depends on the type of research being carried out, the second on the web of personal relations which a student has already established. The two parameters often intersect.

Whenever the choice is said to be made mainly in relation to the type of research being performed, foreign universities are considered primarily in terms of their fame and reputation. What students seek, in other words, is a university more reliable than any other from the point of view of academic excellence and expertise. In many cases, there is not always a pre-existing relationship with the foreign university, and the student does not necessarily use the professor as an

intermediary. On the contrary, he often organises contacts and arrangements by himself (table 3).

In most cases, though, students tend to follow the beaten track in their choice of overseas destination. If they choose a university which has a tradition of joint research with their alma mater, this simplifies arrangements and eliminates many difficulties.

Table 3- Criteria for the choice of the foreign destination (%)

Prestige of the university	35,1
Previous relationships of professors	32,8
Previous relationships of students	27,6
Accommodation facilities	4,5
Total	100,0

Source: Avveduto, Cipollone, 1998.

The most desirable destination indicated by PhD students has been the USA. But summing up only 3 EU member countries, United Kingdom, Germany and France only, claim over 50% of replies, whereas the USA accounted for just 33.5%.

In any subject area, there is always a component of students who would like to go to the United States, the preferred destination of engineers in particular. It is worth pointing out, though, that some lecturers stressed a sort of drop in desirability for the United States, due to a decline in the North American influence particularly in the social sciences, and new, greater expectations on Europe. Although over the last few years the phenomenon of international mobility has continued to see the USA as the most desirable country of all, Europe is gaining quickly in terms of good reputation and quality of training.

A high concentration of students of architecture express a desire to go to France and Great Britain, while Germany is a much sought after destination for engineers and for students at arts faculties, such as letters or philosophy.

Table 4 shows the difference between the favourite destinations indicated by the entire sample of students and the real destinations reached by those who actually left.

Table 4- Favourite destinations of PhD students abroad and real destinations actually reached (%)

Countries	Favourite destinations	Real destinations
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Source: Avveduto, Cipollone, 1998.

Moving on to the optimal duration of the study period abroad, a variety of different opinions were expressed.

In general, respondents agree that a period of six months is ideal, since it allows for an initial period of acclimatisation, while leaving a reasonable amount of time to draw academic benefit from the experience. For the most disparate reasons, however, others suggested a drastically shorter period (no more than three months). Others still argued that if it is to be truly beneficial, the period should be a good deal longer.

The average period of the stay abroad varies from 3 to 6 months for scientific and arts subjects. Only medical doctors showed a higher percentage of stays of more than one year. Engineers are the category which most frequently stays abroad for at least three months.

Analysing the reasons used to justify the different points of view, it is possible to note that in the first case (typical mainly of the opinions of professors in the exact and natural sciences), the study period abroad is seen as a sort of consolidation (if not a conclusion) of an established piece of research work, which is at an advanced stage and in which previous contacts and, in some cases, exchanges have already played a part. In other words, a stay at a foreign university is considered almost as the climax of an activity already completed, even though it may be only partially relevant to the final preparation of the doctoral thesis.

In the second case, instead, the period abroad is seen more as part of an ongoing study and research activity, arguably more learning-oriented but nonetheless significant for the research *in itinere*. It is felt that an experience abroad may help to further shape or re-orient the activity itself. It needs to be pointed out, however, that, whereas professors are more aware of the problem, albeit concerned mainly with theoretical optimisation of planning and scheduling, many of the students' decisions to prolong or shorten the period abroad (and often whether to go abroad or not) were strongly influenced by factors of an entirely different nature. Irrespective of the theoretical possibility of opting for the best solutions possible and of the great seriousness and determination shown by the students, practical problems often prove decisive. This is especially true in cases in which universities fail to provide sufficient support and guidance.

3. Objectives and benefits of international mobility

The value that students set on international mobility depends greatly on the value students set on their home research training. The most frequently mentioned objectives are linked to the personal cultural and scientific growth that students find higher if exposed to a different scientific and training milieu, and to the research programme they are carrying on which may request a visit to a foreign university to collect data or do experimenting in structures not available home.

Most respondents believe that a study period abroad is a positive experience. The reasons they suggest for this may be arranged into two main groups. The first encompasses exposure to new scientific and cultural contexts, meaning broader professional and human experience and consequently improved competence; capacity to integrate in new job situations, acquisition of greater flexibility and tolerance towards others and willingness to accept mobility.

The second group is concerned with more strictly training-related aspects, which implies the learning of new research methodologies, and the possibility of benefiting from avant-garde techniques and instruments, hence specialist training in the various disciplinary fields.

4. Problems and obstacles

The problems involved may be objective - i.e., mainly of an economic, bureaucratic and logistic nature - or subjective - i.e., knowledge of languages, adapting to the new environment, interaction with different subjects and styles of study.

72% of respondents had never moved from Italy for a study period during their PhD. They explained the reasons which, in their opinion, had prevented them from going abroad by indicating in 34.4% of cases a lack of sufficient funding, and in 20.9% family ties or voluntary work commitments (table 5)

Lack of time and lack of information are the two most relevant reasons preventing international mobility to occur. Getting the right information seems to be still a major problem; 16.9% complain about a total lack of information, 12.7% on lack of specific information on scientific opportunities abroad.

Table 5 - Obstacles to mobility met by PhDs that did not go abroad

Not enough funds	34,4
Personal commitments (family/work)	20,9
No information	16,9
No time	15,1
Inadequate knowledge of the scientific opportunities abroad	12,7

Source: Avveduto, Cipollone, 1998.

In most cases, objective aspects prevail. Here a good deal of stubbornness and problem-solving ability are required on the part of the student and often of the professor too. Wherever such problems are not so daunting as to actually discourage the student from undertaking the initiative itself (once, the necessary funds have been gathered), the greatest difficulties subsequently centre round matters of a practical and bureaucratic nature. Following the clearing of all the minor but time-consuming formalities involved, finding accommodation is the prime concern.

25% of lecturers say that there are no difficulties involved in arranging a study trip abroad. The rest speak of the problems involved in establishing contacts with foreign universities and bureaucratic hitches. Respondents suggest that these difficulties might be ironed out by streamlining bureaucratic procedures through *ad hoc* bureau, making stays abroad compulsory and disseminating more information on the subject.

A large percentage of students that spent a study period abroad stated they had not met any problem (37.3%). Most students appear to be quite good in adapting to a new cultural environment and to different teaching methods. Language is still unfortunately a barrier to overcome in 25.4% of cases (table 6);

Table 6 - Main problems met abroad

Different teaching methods	9,0
Cultural differences	10,4
Language	25,4
Accommodation	9,0
No problem	37,3
n. a.	9,0
Total	100,0

Source: Avveduto, Cipollone, 1998.

Financial support for research doctorates comes exclusively out of public funds, grants being provided mainly by the Ministry of Scientific and Technological

Research and Universities. Some research agencies, such as the CNR (National Research Council), which covers all disciplines, the INFN (National Institute of Nuclear Physics) and ENEA (National Committee for Alternative Energies), may fund individual research doctorates. On the whole, though, this tends to be more an exception than the rule, following no fixed pattern from year to year in terms of the number and magnitude of investments made. To finance his study period abroad, the research student has to rely on his study grant. For a PhD course, the standard study grant at an Italian university amounts to approximately 800 US dollars per month. According to existing regulations, the doctoral grant increases by 50% during the period which the student spends abroad.

In most cases this increase has hardly ever sufficed to cover the expenses the student has to afford during his stay abroad. Travel and living expenses may prove prohibitive.

It is not easy to find additional funds through collaborations or scholarships this means that a considerable part of selection is based on parameters that are not strictly linked to merit and ability but may rely solely on the basis of economic factors, so that an exclusively socially-based selection takes place among doctoral students who potentially might benefit from this type of experience.

For 63.4% of PhD students of our sample, the cost of their staying abroad exceeded the finances made available, and for most of them their families were the main source of financial support (61.2%) (table 7).

Table 7 - Sources of additional funding

Family of origin	61,2%
Friends	5,9%
Self-financing	21,2%
Other institutions	5,9%
Hosting institutions	5,9%
Total	100,0

Source: Avveduto, Cipollone, 1998.

5. Impact on the labour market

One of the open questions which obtained most answers, many of which multiple, asked PhD students whether, in their opinion, people who have spent a training period abroad enjoy better job opportunities.

Different reasons were put forward to stress the importance of an experience abroad for the future developments of one's training and professional career.

All lecturers argue that students with experience abroad have better job opportunities than students without. The opinions of doctoral students (table 8), who have to grapple with the precariousness of postgraduate study directly, are instead discordant. Actually 54,8% of PhDs believes that having spent part of their training abroad really gives more possibilities to find a job as it opens a wider labour market, both in content and geographical terms, as students are involved in an international framework that opens more opportunities also outside their home countries. The negative replies (33.7%) are backed by a strong disillusion on real direct connection between experience acquired abroad and employers' interests; on the university side students fear that being away for such a long time may become a danger as it may mean losing opportunities home that can be grasped by those who remained in daily contact.

9.7% of answers concentrate on the relative wealth of job opportunities abroad. This, according to respondents, is the result of contacts established with foreign scientific circles and teams of specialists. Moving on to the possible professional outlets following the period abroad, some respondents see an advantage only for students who remain in the academy and not for those who look for a research job in other sectors.

Although they are fewer, the negative replies are backed by extremely significant arguments. The tie with the problems of the professional world is strongly felt. As many as 39% of replies, albeit many-faceted, reveal disenchantment with the labour market. There is a widespread idea that in Italy it is the system which fails to provide a link between training and the labour market. It is felt that institutional and structural deficiencies prevent training from helping students to find jobs. Some respondents stress that other factors count in achieving this much sought after goal, among which political or patronage-related reasons. Some, indeed, declare that knowledge and

qualifications do not guarantee jobs or, at all events, have not enough influence in searching a job.

Another point has been raised by many respondents: moving away from the academic environment in which one has 'grown up' may mean losing favourable job opportunities. Only students who stay behind can maintain professional and social relations with the surrounding environment. In other words, those who remain are advantaged, since those who leave have to gradually re integrate when they return. Underpinning these discordant opinions is the widespread assertion of a certain lack of sensitivity towards the idea of training abroad.

Tab. 8- Job opportunities after the experience abroad (%)

Better job opportunities	54,8
No better job opportunities	33,7
n. a.	11,4
Total	100,0

Source: Avveduto, Cipollone, 1998.

Conclusions

1. The value of an international mobility experience during PhD is highly considered both by students and professors.

This positive value though should be considered in the framework of the general aim of doctorate course. If PhD is pursued as part of the personal scientific and cultural growth and as the first step in an academic career, the international experience has a crucial value. If on the other end PhD students are regarded as not totally integrated into the research activity of a department or used to carry on not proper research activities but mostly some sort of 'service' for the department, international mobility may be regarded and become a negative factor. Many students stressed that a series of difficulties, such as differences in method and approach encountered abroad, subsequently changed into benefits on their return home. Most respondents declared that the main advantages resulting from the period of study abroad were of high scientific and educational nature .

2. The difficulties in organising a study period abroad are rather strong. Both personal and objective problems must be overcome by PhD students; first of all the financing problems. Most students cannot afford all the expenses relying only on their study grant and very often the personal or familiar money are used. An unfair selection based more on census than on capability is therefore applied to the legitimate desire to spend part of the PhD abroad.

A major barrier is still to be found in information diffusion many PhD students still complain on difficulties in finding the relevant information at the right moment.

3. Lecturers suggest that to make a study experience abroad effective, it is necessary to create international doctorates in which courses take place over several co-ordinated venues, to set up international consortia and to set doctoral programmes in a frame along the lines of Erasmus or Socrates Programmes. A question on the effective impact of internationalisation in research training envisaged multiple answers. The majority of respondents placed the onus on the need to set up Summer Schools and staff exchanges with common training modules. Most professors called for the EU to introduce supplementary funding, while others demanded the introduction of supranational legislation to allow EU interventions in the field of international training to effectively meet the present demand.

EU intervention in the future is viewed favourably, provided it manages to become more 'lightweight'. Respondents feel that this would make bilateral mobility easier and more extensive not only among students but also among professors. At present, the exchanges which take place on a direct bilateral basis involve either just two professors or a handful of students; there is no real 'liaison' between doctoral courses as such. Many respondents think it would be a good idea to organise international doctorates with courses at venues throughout Europe.

One solution might be to split courses proportionally among three different nations and universities, say, thus allowing students from each one to achieve the same qualification following the same syllabus.

4. The European Union has been often called up only to make a straightforward normative intervention, establishing a few simple rules with which countries, otherwise autonomous, would be required to comply. A supranational intervention would appear to be the most suitable means of simplifying international relations and overcoming differences in local legislation.

The European Union would only need to play this 'lightweight' normative role, acting as a catalyst and leaving universities free to organise exchanges.

Of course, in view of the financial difficulties that are the real obstacle to the international mobility of doctoral students today, it would be a great help if the European Union were to provide economic support for the whole process.

5. There are not single indications on the direct connection between better job opportunities and international mobility. Some students and professors believe that acquiring an international experience has given PhD students better job opportunities or at least has been an advantage in searching for a job as has opened a wider labour market, outside national boundaries. Many other students and professors though believe that international mobility doesn't attract at all potential employers' and that leading the students away from the department' daily life can exclude them from job possibilities that may occur.

The role of university can be very important in fostering international mobility; helping students to cover the expenses and disseminating information widely, are the first relevant objectives to be met.

The value of an international experience is to be considered highly relevant in a proper research training, and so universities and research institutions must be more committed in ensuring that an opportunity, that should be open to everybody, will not turn in an illusion for the large majority of PhD students.

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