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ACADEMIC FINNS ABROAD – CHALLENGES OF INTERNATIONAL MOBILITY AND THE RESEARCH CAREER



Jussi Kulonpalo



ACADEMY OF FINLAND
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ACADEMIC FINNS ABROAD
– CHALLENGES OF
INTERNATIONAL MOBILITY
AND THE RESEARCH CAREER

Jussi Kulonpalo

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DESCRIPTION

Publisher	Academy of Finland	6 June 2007
Author(s)	Jussi Kulonpalo	
Title	Academic Finns Abroad - Challenges of International Mobility and the Research Career	
Abstract	<p>The report presents a survey on the motivating and discouraging factors of Finnish researchers' international mobility and recent general trends of researcher mobility in Finland. Special attention is paid to young researchers as well as to researchers with a family and the specific challenges they face in relation to international mobility and pursuing a research career in Finland.</p> <p>The statistical analysis of the survey data reveals that Finnish researchers are a highly heterogeneous group, and no significant researcher mobility patterns is visible as such from the data. The lack of general-level statistical data prevents making broad comparisons to find out whether researcher mobility in fact has been decreasing over time, as some statistics suggest. The Finnish research sector and researchers' career trajectories are growing increasingly diverse, which calls for more flexible and responsive funding instruments and services that recognise researchers' individual needs. Accordingly, from the individual researcher's point of view, the available research funding instruments for international mobility do not always meet the researcher's needs.</p> <p>The study shows that the main challenges to Finnish researchers' international mobility are largely family- and funding-related. Spouse employment, having children and financial matters were seen as the main obstacles to mobility by the respondents and these issues had also caused most problems to those respondents who had been internationally mobile.</p> <p>On a general level, the international mobility patterns of Finnish young researchers tend to follow those of previous generations. The United States and western European countries are still the most popular choices of destination for mobile Finnish researchers.</p>	
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Julkaisun nimi	Academic Finns Abroad - Challenges of International Mobility and the Research Career	
Tiivistelmä	<p>Raportti esittelee suomalaisten akateemisten tutkijoiden kansainvälistä liikkuvuutta tarkastelevan selvityksen tuloksia. Selvitys kartoittaa tutkijaliikkuvuuden muotoja yleensä sekä keskittyy tutkijoiden kokemuksiin tai kohtaamiin liikkuvuuden esteisiin. Selvityksessä kiinnitetään erityistä huomiota nuoriin tutkijoihin, jatko-opiskelijoihin ja perheellisiin tutkijoihin sekä heidän erityistarpeisiinsa suhteessa kansainväliseen liikkuvuuteen ja akateemiseen tutkijanuraan.</p> <p>Kyselyn tulosten valossa näyttää siltä, että tutkijat eivät usein koe olemassa olevien kansainvälisen liikkuvuuden rahoitusmuotojen vastaavan tutkijoiden henkilökohtaisia tarpeita. Erityisesti nuoret ja perheelliset tutkijat kokevat kansainvälisen liikkuvuuden ongelmalliseksi muun muassa rahoituksen niukkuuden ja lyhyiden määräaikaisten työsuhteiden takia.</p> <p>Selvitys osoittaa, ettei selkeää ja tyypillistä tutkijanuraa ole olemassa. Vastaajien urapolut ja työtilanteet olivat hyvin monimuotoisia ja toisistaan poikkeavia. Tämän vuoksi tarvittaisiin vastaavasti aiempaa monipuolisempia ja joustavampia liikkuvuusrahoituksen muotoja. Vastaajien kokemat todelliset ja toisaalta oletamat kansainvälisen liikkuvuuden esteet liittyivät useimmiten tutkijoiden yleiseen rahoitustilanteeseen ja rahoituksen riittävyyteen. Toisaalta perheellisten tutkijoiden erityisongelmat nousivat voimaakkaasti esiin. Perheen kanssa ulkomaille muuttaneet tutkijat olivat hyvin harvoin onnistuneet saamaan korotettua liikkuvuusrahoitusta muutosta johtuvien kulujen kattamiseksi tai perheen toimeentulon turvaamiseksi ulkomailla.</p> <p>Yleisellä tasolla tarkasteltuna pääosa suomalaisten tutkijoiden ulkomaanvierailuista kohdistuu edelleen Yhdysvaltoihin sekä Länsi-Euroopan maihin ja valtaosa vierailuista on kestoltaan lyhyitä.</p>	
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EXECUTIVE SUMMARY

Main findings and conclusions

Finnish researchers, their working methods and approaches as well as their career trajectories are growing increasingly diverse, which calls for more flexible and responsive funding instruments and services that recognise researchers' individual needs. Findings of this study show that, from an individual researcher's point of view, the research funding instruments available for international mobility do not always meet researchers' needs.

Results of the study show that the main challenges to Finnish researchers' international mobility are family- and funding-related. Spouse employment, having children and financial matters were seen by the respondents as the main obstacles to mobility, and these issues had also caused most problems to those respondents who had been internationally mobile. Mobile researchers with a family very seldom manage to secure much necessary funding to cover their family's higher living costs. It also appears that Finnish funding organisations, with the exception of the Academy of Finland, do not provide a larger amount of mobility funding for mobile researchers with family members following them abroad. A majority of the respondents were doctoral students, who in Finland are generally older than in many other countries and hence often tend to have formed a family, which is clearly reflected in the results of this study.

The respondents' troubles with funding were more generally linked to young researchers' position in the Finnish academic sector. The increasingly intensive competition for research funding, the low number of opening faculty posts, the non-existent tenured academic career path, the general lack of resources, the precarious work situation and the lack of academic career prospects are making the research career less attractive. These factors are reflected in the whole academic sector, and the lack of interest in international researcher mobility should be seen as only one facet of a more complex problem.

International mobility patterns of Finnish young researchers tend to follow those of previous generations. The United States and Western Europe are still the most popular choices of destination for mobile Finnish researchers. This appears to be even more so in the natural, technical and medical sciences, where postdoctoral periods spent in the US still continue to be a tradition. In the social sciences and humanities, researcher mobility patterns and destinations are more diverse, but even here the US and Western Europe remain the most popular destinations.

Because of the diverse nature of the academic sector, making broad generalisations based on the results of this study is difficult. The statistical analysis of the survey data reveals above all that Finnish researchers are currently a highly heterogeneous group, and no significant specific mobility patterns can be seen as such from the data. Since there are no general-level statistical data available, it is impossible to make broad comparisons to find out whether researcher mobility has in fact been decreasing over time. Reliable, coherent and up-to-date statistical data on the international mobility of Finnish researchers are currently not available.

Steering Group recommendations in brief

- 1 Funding instruments for international researcher mobility should be developed towards more flexibility in order to accommodate researchers' increasingly diverse career positions.
- 2 Besides funding longer (more than 3 months) working periods abroad there should also be funding instruments allowing for shorter and repeated working periods abroad.
- 3 The specific needs of researchers with a family should be better taken into account. Funding for mobile researchers with a family should be increased and, on the other hand, allow for short-term international mobility.
- 4 The level of mobility funding should be higher so that it better corresponds to the real costs of international mobility.
- 5 Active measures towards promoting international researcher mobility should be aimed at young researchers in particular.

Keywords:

Academic mobility, brain drain, professional migration, research career, research and development, research funding

CHALLENGES OF INTERNATIONAL MOBILITY AND THE RESEARCH CAREER

Introduction

This report presents survey findings on motivating and discouraging factors in Finnish researchers' international mobility and discusses recent general trends of researcher mobility in Finland. Special attention is paid to young researchers such as doctoral students and postdoctoral researchers as well as researchers with a family and the specific challenges they face in relation to international mobility and pursuing a research career in the university sector.

The survey was conducted as part of the European Commission-funded project CONNECT Finland, which was coordinated by the Academy of Finland. The Finnish Ministry of Education participated in the funding of the study. The report is based on a web survey and a small number of complementary interviews with Finnish researchers who have personal experiences of long-term academic mobility. The aim of the study was to identify and analyse current trends and to address the various needs Finnish researchers have in their international academic mobility. The Steering Group of CONNECT Finland formulated recommendations for the development of academic mobility, based on the survey results.

Many science policy officers and people in Finnish university administration who work with issues dealing with international researcher mobility and research funding have expressed their concern about the declining interest in researcher mobility. According to the Ministry of Education KOTA mobility database, the number of researcher exchanges has not increased as was expected in the late 1990s (Minedu 2001). Similarly, taking into consideration the broad arsenal of instruments the Academy of Finland has to actively promote international researcher mobility, the Academy's own databases also reveal a decreasing trend in the number of applications in recent years (Kärkkäinen 2006). When this development is contrasted to the strong general internationalisation trend in academic research in Finland, exemplified by the rapid growth in the number of Finnish publications in international scientific journals from the early 1990s onwards (Lehvo and Nuutinen, 2006) as well as in the number of international networks and research projects in which Finnish researchers have participated, the declining interest in international researcher mobility appears a rather alarming feature of the Finnish academic sector.

This study is a follow-up to Kaisa Puustinen-Hopper's report *Mobile Minds – Survey of Foreign PhD Students and Researchers in Finland* (2005), which focused on foreign researchers working in Finland and their specific information and service needs.

Academic mobility

According to UNESCO's definition:

"Academic mobility implies a period of study, teaching and/or research in a country other than a student's or academic staff member's country of residence (the home

country'). This period is of limited duration, and it is envisaged that the student or staff member return to his or her home country upon completion of the designated period." (www.unesco.org/education/studyingabroad/what_is/mobility.shtml)

The most commonly used definition of long-term mobility, when discussing academic mobility, is that any period spent working outside of your country of permanent residence exceeding three months qualifies as long-term mobility. These general definitions are fitting for the purposes of this study, although the exact term used instead of 'academic mobility' in this study is 'international researcher mobility'.

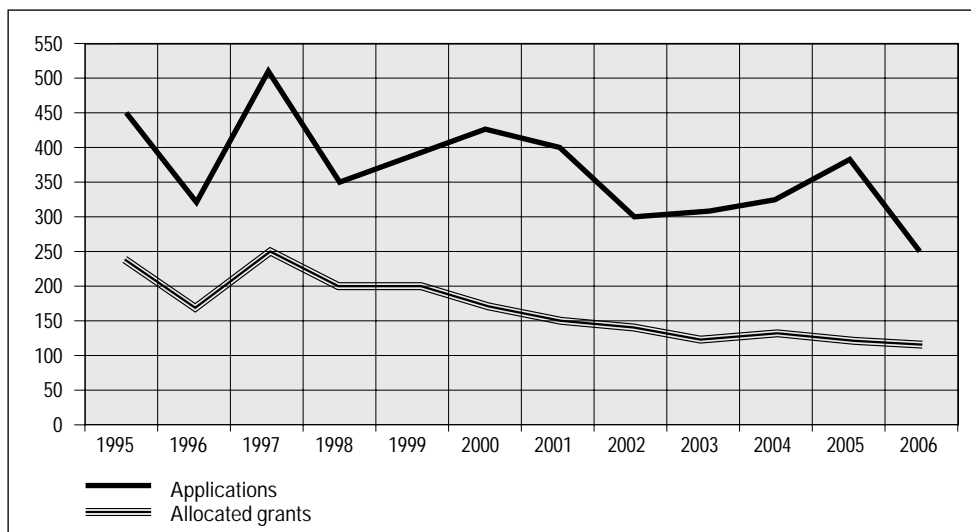
Like many international statistical organisations, CIMO, the Finnish Centre for International Mobility, uses this definition in the statistics they collect and in the KOTA databank, which is currently the most coherent and reliable data available on Finnish researcher mobility. According to several European studies, most academic mobility longer than three months takes place during the researcher's postdoctoral phase after gaining the doctoral degree. This is also apparent from the results of the study, although there are clear differences between different scientific disciplines. The reason is that the study focuses mainly on researchers, specifically on postgraduates with a Master's, licentiate or doctoral degree. The convention of how doctoral students are categorised differs between countries; in the Finnish context all doctoral students, whether employed by a university or a research institute or working independently without institutional support, who work on an academic research project related to their doctoral studies and thesis are considered researchers.

Statistics on Finnish researcher mobility

In trying to measure the general level of Finnish international researcher mobility in statistical terms, with the aim of drawing a conclusive general picture of the phenomenon, two obstacles quickly become evident. The main problem is the lack of empirical statistical data, but the attempt to handle and study all Finnish researchers as one cohesive group poses serious problems. There are large and obvious differences between scientific disciplines and their working methods, researchers' institutional positions and structural differences between their employing organisations, individual career trajectories and prospects. Finnish universities and research institutes have some statistical information on the international mobility of their own employees, and to a lesser extent of their associated researchers such as docents working elsewhere and doctoral students who do not have a workspace at university departments. However, it seems that sometimes the university central administration does not have this information, even if it is collected at the faculty level and at individual departments. On the national level, collecting data on researcher mobility faces the same problems as any other form of labour mobility. Finnish people moving abroad are not required to officially report the reason of their moving abroad.

The only statistical database containing some information on Finnish researcher mobility is the KOTA database, an online service (<http://kotaplus.csc.fi:7777/online>) maintained by the Ministry of Education, which offers statistical data on universities and fields of education from 1981 onwards. However, the shortfall of the KOTA database is that the indicators it is based on are arguably not clear and precise enough. In the database, researchers are categorised with other university personnel including

Table B. *Number of applications for Academy of Finland's international mobility grants and number of allocated mobility grants in 1995–2006.*



sector spending and, on the other hand, Finland joining the European Union, made working abroad appear an attractive option to many researchers at the time. While general economic trends have undoubtedly had an effect on researcher mobility through labour market and other structural changes, they do not completely explain the decreasing academic mobility. When the described development is contrasted to the strong general internationalisation trend in Finnish academic research, exemplified by the rapid growth in the number of Finnish publications in international scientific journals from the early 1990s onwards, which has not declined (Lehvo and Nuutinen 2006), the diminishing international researcher mobility appears an alarming feature of the Finnish academic sector.

When trying to look for an explanation for individual Finnish researchers' declining interest in international mobility, a study by Forsander et al (2004) on foreign ICT professionals who migrated to Finland can be used to construct a different approach to the problem. It can be presumed that, on a general level, more or less the same obstacles and challenges affect Finnish researchers' willingness to be internationally mobile as those experienced by foreign highly educated ICT professionals who migrated to Finland. The study indicated clearly that the persons migrating to Finland with a family experienced more problems than others. Despite the fact that the salary level of ICT professionals was relatively high in most cases, moving to Finland clearly reduced the standard of living for many families. The main reason was that in many cases the spouse, although often highly educated, faced extreme difficulties in finding a job in Finland and was often forced to stay at home. Combined with the Finnish taxation model based on two working parents and the generally high level of taxes and the fact that the non-Finnish spouse did not have social security rights in Finland, the situation became very difficult for many families, even up to a point where some of them decided to leave Finland. On the other hand, single ICT professionals arriving alone in Finland did not face such problems.

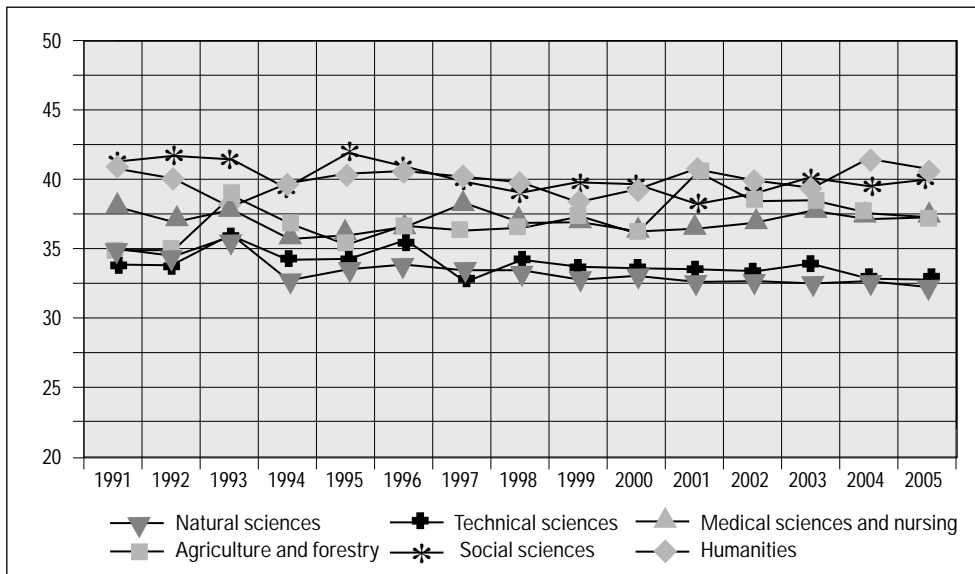
Young researchers in the Finnish higher education system

Doctoral students and postdoctoral researchers are obviously the two most important groups of academic researchers that should be concentrated on when trying to increase international researcher mobility and make it a more attractive option in general. According to several international studies, most long-term international mobility takes place during researchers' postdoctoral periods during the two to four years after gaining the doctoral degree. These two groups are important also because they make up the future reserve of researchers in any given country. There are also clear indications that personal international networks created early on during the research career are the ones most likely to be relied on later in the career. Such networks are also often very likely to direct the researcher's interest and focus to research subjects with an international context.

One very significant general feature of young Finnish researchers is the relatively high average age of receiving a doctoral degree. According to a study conducted by the Academy of Finland, *PhDs in Finland: Employment, Placement and Demand* (2003), the mean age of persons receiving a PhD in 2001 was approximately 36 years. For 70 per cent of all doctoral students it took more than five years to complete the doctoral degree.



Table C. Median age of receiving a doctoral degree in Finland 1991–2005.



(Statistics Finland 2007)

The main reason for the prolongation of the time spent on doctoral studies is that currently few young Finnish doctoral students are able to secure funding for the whole duration of their doctoral studies, and continuous applying for funding from different sources as well as breaks in funding tend to be almost a norm, particularly in the humanities and social sciences.

Doctoral studies and related tuition are free of charge at Finnish universities, once the candidate's research plan has been accepted and he/she has been granted doctoral

student status at a given university department. In most cases, applying for funding for doctoral studies is the candidate's own responsibility. There are at present a number of different mechanisms for funding doctoral studies in Finland (Högskoleverket 2006). Usually, doctoral students gather funding from several sources during the three to six years it takes to complete a doctoral degree; this time could include a university research institute post as a salaried researcher, project funding from the Academy of Finland or a university foundation, any paid work outside of academia, or a salaried doctoral student post at a graduate school.

Current developments in the Finnish higher education system seem to be increasingly leading towards a model where doctoral students ideally win a competition-based place at a graduate school with a salaried post and tuition for three to five years, during which time they should complete their doctoral studies. Presently, there are posts for approximately 1,450 doctoral students a year.

According to the agreement between the Ministry of Education and Finnish universities, the annual number of new PhD degrees to be produced during the period 2004–2006 was set to 1,450, and in the spring of 2006, the goal for the next three-year period was increased to 1,594. While the record number of new PhDs, 1,422 doctoral degrees, was achieved in 2005, the number decreased slightly in 2006 to 1,403. However, the expected annual number of graduating PhDs during the next five years is between 1,200 and 1,600. In some estimates, however, the number reaches 2,000.

Table D. *Number of new doctoral degrees in Finland 1991–2005.*

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Doctoral degrees per year	542	546	675	729	786	840	930	981	1,151	1,142	1,187	1,200	1,237	1,366	1,422

(Statistics Finland 2007)

Appointments to 3–5-year doctoral student posts at a graduate school have proven to be the most secure and also the most successful way to fund doctoral studies. In this case students are formally employed by a university and covered by the same social insurance benefits as other employees in higher education institutions. The monthly gross salary at a graduate school is usually 1,600–1,900 euros, and the competition for these salaried doctoral student posts is intense. On average, doctoral students with posts at a graduate school also receive their doctoral degree younger than other doctoral students.

While graduate schools should normally provide students with salaried posts for 3–5 years, in reality many schools have in the past divided the funding into much shorter periods, in some cases limited to only some months per student. Another question altogether is how many of the students admitted to graduate schools manage to finish their doctoral studies during the time spent at the graduate school, as the average time spent on full-time doctoral studies in Finland is often longer than the expected 3–5 years. According to the study *PhDs in Finland: Employment, Placement and Demand*, only 12 per cent of doctoral students managed to complete their degree in four years, while for 17 per cent it took less than five years and for the remaining 70 per cent of the doctoral students completing the degree more than five years.

There is also a large number of doctoral students who are not admitted to graduate schools due to intensive competition, because there are no open posts available at a particular time, or sometimes because there is no graduate school where their research subject would fit in. These students usually finance their studies with grants from private or university foundations, or by working full- or part-time while pursuing their doctoral studies. Private foundations represent a significant source of funding in Finland with their grants and scholarships for individual researchers. Completing your doctoral studies and research project while working in a private company is also an option, although this rarely seems to happen. Another special aspect of working on a grant from a private foundation is that those doctoral students or postdoctoral researchers who have received such a scholarship or grant fall completely outside of the social security system, and they are often denied unemployment benefits if they run out of funding during their studies. The Finnish labour administration interprets the law so that researchers funded by tax-free grants are categorised as self-employed, equal to private entrepreneurs, and cannot be officially unemployed and entitled to public social security benefits. Hence, the post of a researcher funded by a foundation is more precarious than those with other kinds of temporary or limited-term funding. Even despite this, the competition for private foundation grants is fierce.

Postdoctoral researchers' mobility

After receiving a doctoral degree, postdoctoral researchers continuing in the university sector are expected to position themselves in 3–4-year research projects financed mainly by the Academy of Finland. There are currently two kinds of research projects available to postdoctoral researchers: either general research projects led by a senior researcher, for example a professor, or projects consisting of individual funding for a postdoctoral researcher for up to three years. Competition for funding of these kinds of projects, which are open for application once a year, is intense. Currently, the percentage of applications that passes the strict reviewing procedures and secures funding is on average 8–24 per cent, depending on the funding instrument and slight annual changes in the budget the Government allocates to research funding, and depending on the number of applications. In the Finnish academic sector, there is at present no permanent tenured career track of any type between receiving a doctoral degree and being awarded a professorship. In addition to the competition-based, limited-term research posts funded by the Academy and the research grants from private foundations, the only formal postdoctoral posts are those of university lecturer. In this situation, long-term international mobility should appear, at least in theory, as an attractive option to young postdoctoral researchers, and as a possibility to specialise further and develop skills and networks.

One problem concerning postdoctoral researchers' positions in the academic sector in particular is directly linked to wider structural changes in Finnish society. Along with society, the university sector has undergone major transformations since the 1990s, while part of the research funding instruments including mobility funding is still based on the older model of the academic career path, which no longer exists as such. In what could be considered the traditional academic career path in Finland, young researchers would work abroad some time – from a couple of months to

several years – after receiving the doctoral degree, but by that time they would have often already received at least a semi-permanent faculty post at their home university to which to return. The post at a Finnish university would also in many cases have earned them up to 70 per cent of their salary (incl. pension earnings) during the time spent abroad. However, this specific practice allowing such paid leave for an employee was discarded during the economic depression in the early 1990s, along with the general cuts that the Finnish university sector funding went through during the same period. Some senior survey respondents also brought up this when referring to their own experiences of international mobility during their postdoctoral period. Accordingly, in a study conducted by the Academy of Finland's Research Council for Health (SA–TT 2006), the negative experiences of international mobility most often mentioned by postdoctoral researchers were the economic difficulties during the stay abroad.

In some scientific disciplines in Finland (e.g. natural, medical and technical sciences), the postdoctoral period spent abroad was until quite recently often considered a prerequisite for future academic career development. Many senior scientists had worked abroad during their postdoctoral period and greatly benefited from that, and for the same reason they have often encouraged their students to follow the same career pattern as they did during the 1960s, 1970s and 1980s. The study conducted by the Academy of Finland's Research Council for Health (SA–TT 2006) shows that researchers funded by the Council, who had been internationally mobile in 1995–2005, had been very successful in their later career in terms of receiving research funding as well as acquiring faculty posts and private sector jobs. While no clear conclusions can be drawn from these limited findings, they raise the question whether the most talented and ambitious researchers are more inclined to be internationally mobile than other researchers. However, one negative aspect related to postdoctoral researcher mobility seems to be that the postdoctoral period spent abroad is often not considered important, but rather a kind of sabbatical year, during which young researchers have some time to decide what direction to take in their career. And even if the postdoctoral period abroad does not yield concrete results, it is sometimes considered a necessity as regards later career advancement. In this way of thinking, the place where the postdoctoral period is spent and with whom, is often more important than what actually is achieved during the time.

THE SURVEY

This chapter presents the survey on the motivating and discouraging factors of Finnish researchers' international mobility and its results. Special attention was paid to young researchers and researchers with a family and the specific challenges they face in relation to international mobility and pursuing a research career in the university sector. The focus of the study was on four different groups of subjects who are all considered researchers in the context of the study: doctoral students at the researcher training stage; postdoctoral researchers (untenued researchers on temporary contracts and different types of project funding); established and senior researchers at universities (with a tenured post or members of the staff at their

employing institutions, such as university lecturer, senior researcher or professor); and researchers working in public research organisations and institutes. All groups were approached with the same web-based questionnaire, but in the final analysis special attention was paid to the differentiation between the groups. In the analysis, the focus was on different career stages. Some special points that were considered in the study were the role of gender and marital status in researchers' motivation, and the main obstacles to international mobility as well as the existing mechanisms and instruments of Finnish funding organisations supporting international mobility.

The survey was carried out in May and June 2006 as a web-based questionnaire with multiple choices and open questions. The survey questionnaire translated into English is included in the Annexes of the report (Annex 2).

Data collecting

In order to carry out the survey, a total of 23,906 names and email addresses of Finnish researchers were collected, 23,550 of whom were from universities and 356 from public sector research institutes. All Finnish universities and selected research institutes were asked to provide names of persons employed in research work as well as of registered doctoral students present during the spring 2006 term. Fifteen out of the 21 universities and nine research institutes provided names of their researchers.

An invitation to participate in the survey was sent to 5,637 researchers by email, based on a randomly selected, approximately 22 per cent of the names from each organisation that had provided names of their researchers. The invitation was sent to 5,282 researchers working at universities and 355 researchers working in public sector research institutes. Each invitee was given his/her own user name and password, which were needed in order to log into the survey website. In all 1,011 individuals logged in and answered the survey questions. The response rate was 17.93 per cent.

In addition to the web-based survey, six researchers were interviewed on the theme of mobility. The interviewees were chosen on the basis that they had been internationally mobile and worked abroad at least once during their career for longer than six months. The interviewees were also selected to represent different scientific disciplines and demographic groups as well as different professional backgrounds.

Data processing and analysis

The numerical survey data was processed with SPSS 14.0 for Microsoft Windows. The results presented in this report were achieved by looking into numerous frequencies and means as well as cross-tabulations from the data. The text data from open questions was treated manually in Microsoft Excel. In addition, an applicable part of the numerical survey data was also analysed with an experimental mathematical method in form of a self-organising map with Mat Lab, a numerical computing environment and programming language. The mathematical data processing and analysis was conducted by Researcher Teemu Murtola from Helsinki University of Technology with supervision by Professor Ilpo Vattulainen, also from Helsinki University of Technology. The results achieved by this method are included in the following chapters with the results and analyses of the survey data.

KEY FINDINGS

This chapter presents the answers and the data collected with the survey questionnaire form (see Annex 2). However, not every individual question is presented here in detail.

Background information of the respondents

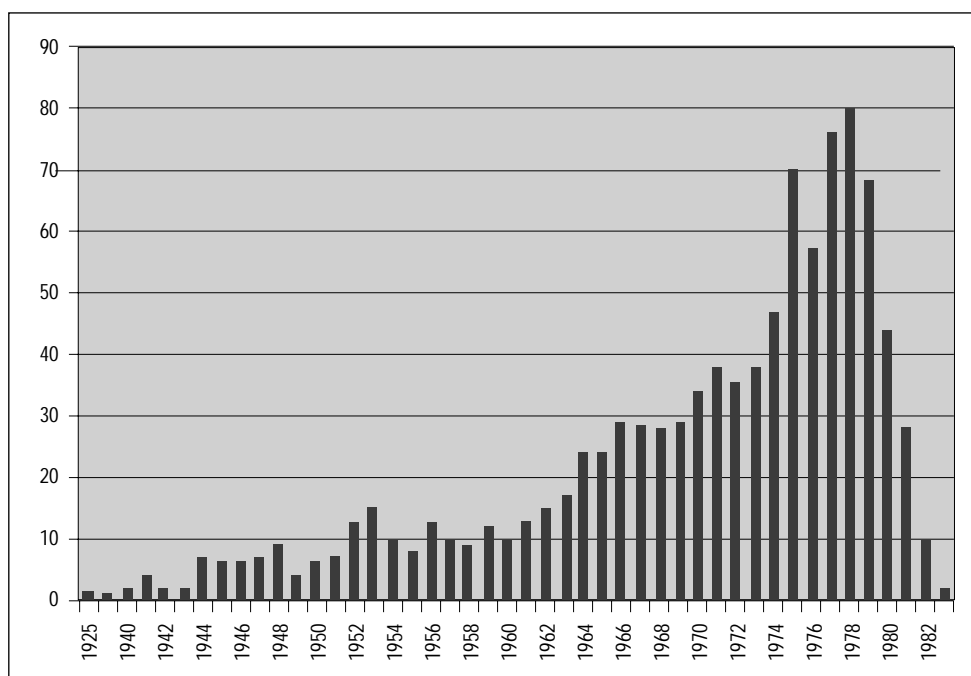
The gender distribution between the respondents was fairly even, with 51 per cent women and 48.7 per cent men.

Table 1.

1.1 Gender		
	No.	%
Female	516	51.0
Male	492	48.7
Total	1,008	99.7
Missing	3	0.3
Total	1,011	100

Most respondents were born between 1967 and 1982, while the full range of the respondents' year of birth was from 1925 to 1983.

Table 2.



Question 1.3 about the respondents' family status revealed that while 24.8 per cent were single, 49.1 per cent were married or living with a spouse or partner, including 2.4 per cent living in civil partnership. A quarter of the respondents had one or more children living in the same household, but only 1.2 per cent of the respondents were single parents.

Table 3.

1.3 Family status		
	No.	%
Single	251	24.8
Living with a partner	218	21.6
Married	254	25.1
Civil partnership	24	2.4
Living with a partner and a child/children	242	23.9
Single parent	12	1.2
Total	1,001	99.0
Missing	10	1.0
Total	1,011	100

Degree, career stage and current workplace

A majority of the respondents (71.2%) had a Master's degree, a Master-level degree in engineering or equivalent. Roughly a quarter (25.4%) of the respondents had a doctoral degree and approximately one-tenth (10.5%) had a Licentiate.

Table 4.

2.1 Highest academic degree achieved		
	No.	%
PhD	257	25.4
Licentiate	106	10.5
Master's degree	452	44.7
Master of Science in Technology	162	16.0
Bachelor's degree	8	0.8
None of the above	14	1.4
Total	999	98.8
Missing	12	1.2
Total	1,011	100

A vast majority (69.1%) of the respondents were currently working at a university, 12 per cent were working in a research institute, 4.4 per cent in a private enterprise or in industry, 5.2 per cent in 'other organisation' and 4.6 per cent were not

working at all. The low percentage of respondents working in private enterprises is explained mainly by that the respondents' names and email addresses were collected only from university databases. The respondents working in private enterprises who did participate in the survey were in most cases also active doctoral students at a university.

Table 5.

2.3 Where are you currently working?		
	No.	%
University	699	69.1
Research institute	121	12.0
Other organisation	53	5.2
I'm not working	47	4.6
Private enterprise	44	4.4
Total	964	95.4
Missing	47	4.6
Total	1,011	100

Similarly, 54.6 per cent were currently doctoral students, 12.3 per cent were working as researchers in a research institute, 9.5 per cent were professors or in a similar leading post, 7.4 per cent were postdoctoral researchers and 3.7 per cent were university lecturers or in a similar teaching post. The remaining 9.6 per cent were working in a wide range of other positions, from having a full-time day job outside of the research sector, to being unemployed or currently without research funding, on maternity or parental leave or otherwise at home with children, on a pension etc.

Table 6.

2.4 What is your career stage?		
	No.	%
Researcher (doctoral student)	552	54.6
Researcher in a research institute or an enterprise	124	12.3
Other	97	9.6
Professor, research manager or similar senior post	96	9.5
Postdoctoral researcher at a university (incl. university research institutes)	75	7.4
Assistant professor, university lecturer or similar teaching post	37	3.7
Total	981	97.0
Missing	30	3.0
Total	1,011	100

Doctoral students were asked about their future plans and whether they plan to continue their academic career after receiving the doctoral degree. Of these, 27.6 per

cent were planning to continue their career in the academic sector, while 10.8 per cent were not. However, almost one-third (31.9%) had not yet decided.

Table 7.

2.6 If you are a doctoral student, are you planning to continue an academic career after you have received a doctoral degree?		
	No.	%
Yes	279	27.6
No	109	10.8
I haven't decided yet	323	31.9
Total	432	42.7
Missing	579	57.3
Total	1,011	100

However, out of the respondents who were planning to continue their academic career after finishing their doctoral studies, the relative share of women was 59.5 per cent and 40.5 per cent for men, while approximately the same relative number of women and men were not going to continue their academic careers. On the other hand, women appeared to be slightly more undecided about their future career plans, as 56.6 per cent of women, against 43.4 per cent of men, had not yet decided.

In Question 2.5 respondents who had a doctoral degree were also asked where they had done their doctoral studies and received their degree. Most of the PhDs (20.1%) had received their degrees from Finnish universities, while only 2.1 per cent had received their degree from a foreign university.

Table 8.

2.5 If you have a doctoral degree, where did you study for the degree?		
	No.	%
I don't have a doctoral degree	604	59.7
At a Finnish university	203	20.1
At a foreign university	21	2.1
Total	828	81.9
Missing	183	18.1
Total	1,011	100

Respondents' research fields

The survey benefited from the research field categorisation used by the Academy of Finland and its Research Councils. The respondents were allowed to select their own research field from the drop-down menu including a full list of research fields.

Table 9.

2.2 To which research field does your research work belong?		
	No.	%
Biochemistry, molecular biology, microbiology, genetics and biotechnology	93	9.
Information processing sciences	71	7.0
Physics	63	6.2
Sociology, social psychology, social work	45	4.5
Business and management studies, economic geography	44	4.4
Electrical engineering and electronics	44	4.4
Linguistics and philology	42	4.2
Chemistry	38	3.8
History of art, literature, musicology	38	3.8
History and archaeology	34	3.4
Forest sciences	27	2.7
Ecology, evolution and systematics	26	2.6
Mathematics	25	2.5
Anthropology, ethnology, folkloristics, comparative religion	24	2.4
Education	22	2.2
Cell and developmental biology, physiology and ecophysiology	20	2.0
Media and information studies	19	1.9
Mechanical engineering and manufacturing technology	18	1.8
Psychology	18	1.8
Process and materials technology	17	1.7
Geosciences	16	1.6
Political science and administration	16	1.6
Clinical medicine	15	1.5
Pharmacy	14	1.4
Law	13	1.3
Theology	13	1.3
Environmental technology	13	1.3
Agriculture and food sciences	13	1.3
Other research into the environment and natural resources	13	1.3
Public health research	11	1.1
Economics	11	1.1
Construction and municipal technology	10	1.0
Environmental policy, environmental economics and environmental law	10	1.0
Space research and astronomy	9	0.9
Ecotoxicology, state of the environment and environmental effects	9	0.9
Geography	9	0.9
Architecture and industrial design	9	0.9
Philosophy	8	0.8
Nursing research	6	0.6
Nutrition research	4	0.4
Veterinary medicine	4	0.4
Sport sciences	3	0.3
Dentistry	2	0.2
Statistics	1	0.1
Total	960	95.0
Missing	51	5.1
Total	1,011	100

A full list was grouped into the following three general categories in order to help the analysis, as presented in Table 10.

Table 10.

2.2 General research field categories	
	%
Social sciences, humanities, behavioural sciences, law, economics and business	37.2
Technical, mathematical and natural sciences	34
Bio-, life and medical sciences	28.8
Total	100

Latest visits abroad

In open Question 3.1 the respondents were asked to describe their most recent research-related visit abroad. They were asked to specify the goal destination and the duration, how it was realised in practice and how long the visit took.

The answers were categorised into the following thematic categories. As some of the answers were rather ambivalent and difficult to categorise unambiguously, a certain degree of analytical freedom was taken in the analysis. Nevertheless, it should also be noted that all thematic categories presented in Table 10 are not exclusive of each other. Some respondents had listed several visits abroad in their answers, but only one visit per respondent was accounted.

Table 11.

3.1 Types of most recent visits abroad		
	No.	%
Conference visits	202	32.7
Visiting researcher (unspecified research visits)	94	15.2
Meetings of international networks, research projects or similar	54	8.8
Laboratory work or a similar short visit	44	7.2
Seminars, summer schools and similar courses	43	7
Fieldwork (data or sample collecting, excavations, interviews etc.)	39	6.3
Giving lectures or teaching courses, visiting professor and similar	30	4.9
Research work abroad related directly to own doctoral thesis	23	3.7
Postdoctoral period abroad	21	3.4
Short working period in an archive or library (data collecting)	18	2.9
Studying for a full degree abroad or a student exchange programme	12	1.9
Internships and related practice periods abroad	12	1.9
Working in an enterprise, consultancy jobs	11	1.8
Longer period spent or permanent living and working abroad	8	1.3
Combined conference and short-term research visits	5	0.8
Administrative staff exchange programme	1	0.2
Total	617	100

Almost two-thirds (61%) of the respondents had travelled abroad for reasons related to their work as researchers. Conference visits were the most cited reason for travelling abroad and while these visits cannot be categorised strictly as a form of international researcher mobility, they are included here as a form of international activity related to the respondents' research work. Many respondents stated that they had only attended a scientific conference abroad or international project meetings or given lectures at a foreign university. Many younger researchers also stated that they had not been abroad yet, but they clearly had the intention of being internationally mobile at a later, unspecified stage of their career.

The calculated average length of the respondents' latest research-related stay abroad was 1.1 months. While the longest time spent abroad was ten years, only approximately 7 per cent of the respondents had been abroad for longer than twelve months.

The destination countries of the respondents' most recent visit were collected and calculated from the answers to Question 3.1. Countries to which there had been less than three visits have been omitted from the list.

Table 12.

3.1 Destination countries of the most recent visit abroad	
	No.
United States	98
Germany	50
Sweden	43
United Kingdom	36
Denmark	23
Italy	21
Canada	18
Russia	18
Estonia	18
The Netherlands	17
Spain	16
Norway	16
France	16
Austria	12
Belgium	11
Australia	9
Japan	9
Iceland	7
Ireland	6
Greece	6
Switzerland	6
China	5
Poland	5
Slovenia	5
Hungary	5
Brazil	4
Portugal	4
New Zealand	4
Lithuania	3
Total	491

The respondents' research fields are presented based on the classification in Table 9.

Table 13.

Research visits longer than six months, by research field	
	No.
Biosciences	29
Computer sciences	18
History of art, literature, musicology	16
Physics	12
Chemistry	12
Linguistics and philology	10
History and archaeology	9
Anthropology, ethnology, folkloristics, comparative religion	9
Business and management studies, economic geography	9
Social sciences	9
Communications	9
Mathematics	8
Forest sciences	8
Political sciences	8
Geography	7
Cell and developmental biology	7
Space research and astronomy	6
Ecology	6
Ecotoxicology	6
Economics	6
Clinical medicine	6
Pharmacy	4
Geosciences	4
Agriculture and food sciences	4
Law	4
Psychology	4
Environmental policy	4
Philosophy	3
Public health research	3
Mechanical engineering	3
Electrical engineering	3
Theology	3
Environmental technology	3
Architecture and industrial design	2
Other research into the environment and natural resources	2
Process and materials technology	2
Veterinary medicine	1
Education	1
Construction and municipal technology	1
Nutrition research	1
Statistics	1
Total	265

Visits abroad longer than six months

In open Question 3.2 the respondents were asked whether they had worked as a researcher or done doctoral studies abroad for a longer period than six months, and if they had, in which country they stayed and in which organisation they worked or studied.

Nearly a quarter (23.8%) of all respondents had spent six months or longer at a time abroad working in a research-related job at some point of their career.

These results, combined with the responses to Question 3.1, could be interpreted so that there exists an internationally mobile group representing slightly less than one-third of Finnish researchers. On the other hand, there is another group of one-third of Finnish researchers who are not mobile at all. However, it should be underlined here that this result is to be approached with some caution and used only as indicative of the real situation. As discussed earlier, the lack of reliable statistics and large-scale, up-to-date datasets on researcher mobility makes it very difficult to make such broad generalisations.

Table 14.

3.2 Have you worked as a researcher or studied abroad for a longer period than six months?		
	No.	%
Yes	241	23.8
No	694	68.6
Total	935	92.5
Missing	76	7.5
Total	1,011	100

There was no marked difference between the distribution of the research fields of the respondents in Questions 3.1 and 3.2. In general, researchers in the same fields had and had not been equally mobile internationally in both cases.

The list of the respondents' destination countries of long-term mobility followed the pattern of all visits presented above in Question 3.1 (see Table 12). The list of countries with only one visit has been omitted from Table 16 below. The destination countries are picked from the respondents' answers to the open question and the total number of countries was calculated.

Since some respondents had worked longer than six months at a time in several periods in one country or in several countries, the total number of destination countries is higher than the number of respondents to Question 3.2.

Table 15.

Number of visits abroad longer than six months, by research field	
	No.
Biosciences	28
Computer sciences	17
Art and humanities	14
Physics	12
Chemistry	12
Languages	9
Cultural studies	9
Economics and business	9
Social sciences	9
Communications	9
History	8
Forest sciences	8
Political science	8
Geography	7
Mathematics	7
Total	166

Table 16.

Destination countries of visits abroad longer than six months	
	No.
United States	77
Germany	31
United Kingdom	33
France	21
Sweden	19
Canada	11
Denmark	7
Italy	6
The Netherlands	5
Ireland	5
Austria	5
Japan	5
Belgium	3
Norway	3
Hungary	3
Russia	3
Australia	3
China	2
Greece	2
Switzerland	2
New Zealand	2
Estonia	2

There was a slight difference in the relative percentages of women and men who had been working abroad longer than six months at a time, as illustrated in Table 17. More men than women had been abroad for longer periods than six months at a time. Altogether 28.8 per cent of all men and 23 per cent of all women who answered Question 3.2 had worked abroad longer than six months at a time.

Table 17.

Visits abroad longer than six months, by gender						
	Women		Men		All	
	No.	%	No.	%	No.	%
Yes	112	23	129	28.8	241	25.8
No	374	77	319	71.2	694	74.2
Total	486	100	448	100	935	100

Sources of mobility funding

In Question 4.1 the respondents were asked how their work or study period abroad had been funded. Since Question 4.1 allowed more than one answer option to be chosen, the results are presented by each option, showing the number and percentage of positive answers to each option, indicating the share of the respondents who had received mobility funding from each given option.

Table 18.

4.1 Sources of international mobility funding		
	No.	%
Project funding from Finnish funding organisation	124	14.0
Total	887	
Additional mobility grant or similar	103	11.3
Total	908	
Monthly salary from Finnish employer	100	11.0
Total	911	
Funding from other sources	80	8.6
Total	931	
Monthly salary from foreign organisation	58	6.1
Total	953	
Project funding from foreign funding organisation	56	5.6
Total	995	
As part of doctoral studies funding	47	4.9
Total	964	
Funding from the EU or other foreign sources	47	4.9
Total	964	
Funding from graduate school	23	2.3
Total	988	

Table 19 shows the same information as Table 4.1, including, however, only those respondents who had worked abroad for longer periods than six months at a time, according to their answers to Question 3.2.

Table 19.

Sources of funding for long-term international mobility (longer than six months)		
	No.	%
Project funding from Finnish funding organisation	71	41.8
Total	170	
Additional mobility grant or similar	61	33.9
Total	180	
Funding from other sources	61	33.9
Total	180	
Monthly salary from foreign organisation	51	26.8
Total	190	
Monthly salary from Finnish employer	49	25.5
Total	192	
Project funding from foreign funding organisation	48	24.9
Total	193	
Funding from the EU or other foreign sources	25	11.6
Total	216	
Funding from the EU or other foreign sources	25	11.6
Total	216	
Funding from graduate school	13	5.7
Total	228	

A wide range of funding sources were mentioned in the category 'Funding from other sources': grants and scholarships from private foundations and university foundations; university travel grants for fieldwork and data collecting; grants from Nordic funding organisations and programmes; student allowances and student loans; Erasmus programme funding and other similar exchange programmes; loan from a bank; spouse's salary; partial salary from Finnish employer etc.

The percentage (2.3%) of those doctoral students who had received mobility funding from a graduate school was remarkably low as indicated by both tables, especially when you consider that internationalisation and international networking are important elements of the graduate school system, as stated by the Ministry of Education. However, while doctoral students who had a post in a graduate school

receive a monthly salary, the schools do not always have an additional budget allocated for international mobility. On the other hand, graduate school students can work abroad while being paid their monthly salary. Consequently, it is highly likely that some of the graduate school students who might have been mobile, did not consider their monthly salary as mobility funding as such.

Statistical analysis also showed that the source of funding correlates with the length of the stay abroad, in that those researchers who had funding from a source outside of Finland had stayed abroad longer than those who had funding from Finnish sources.

Researchers working abroad with family

Question 3.3 about whether the respondents' family members, either spouse or partner, spouse or partner and a child or children, followed the respondents abroad was originally intended as a follow-up to Question 3.2 and aimed only at those who had actually worked abroad for longer than six months at a time. Despite this, many respondents had answered the question. This also indicated that there exist certain inconsistencies because of how the respondents filled out the questionnaire.

Nevertheless, 46.5 per cent of all respondents had gone abroad alone, while 6 per cent had their spouse or partner following them, and 7 per cent had their child or children as well as their spouse or partner with them. In all 13 per cent of the respondents had a family member or members with them abroad.

Table 20.

3.3 Did your family or family members follow you abroad?		
	No.	%
Spouse or partner	61	6.0
Spouse or partner and a child or children	71	7.0
No	470	46.5
Total	602	59.5
Missing	409	40.5
Total	1,011	100

Statistical analysis of the data also revealed that those who had worked abroad for longer than six months at a time had their family or family members with them more often than those who had stayed abroad for shorter periods.

When only the answers of those respondents who had given a positive answer to Question 3.2 about having worked abroad for longer periods than six months are considered, the results look slightly different. In this case, as many as 46.1 per cent of the respondents had had their spouse or partner and a child or children abroad with them.

Table 21.

Did your family or family members follow you abroad?		
	No.	%
Spouse or partner	51	21.2
Spouse or partner and a child or children	60	24.9
No	124	51.5
Total	235	97.5
Missing	6	2.5
Total	241	100

Of those respondents who had been abroad with a family or family members, only 20 per cent had received at least some additional mobility funding or a higher salary to cover costs of moving or living abroad with their family, while 80 per cent had not received any family benefits. Some funding organisations such as the Academy of Finland, Tekes, the Finnish Funding Agency for Technology and Innovation, and the Alexander von Humboldt Foundation had provided researchers with a family somewhat higher funding for working abroad. As examples of family benefits, a monthly grant increased by 20 per cent, a monthly salary increased by 30 per cent and a personal allowance of 500 euros for the non-working spouse were mentioned. Other family benefits mentioned had been in the form of an increased housing allowance or extra funding to cover higher housing expenses and some paid trips between the researcher's working country and home country.

Table 22.

4.5 If your family or family members moved abroad with you, did you get increased salary, grant/fellowship or other family benefits?		
	No.	%
Yes	33	20.0
No	132	80.0
Total	165	100

However, both the actual amount of additional funding and the percentage as well as the total number of researchers who had moved abroad for longer periods than six months with a family or family members and who had received any form of family compensation remained very low.

Positive and negative experiences abroad

In open Questions 3.7 and 3.8 the respondents were asked to describe both their positive and negative experiences and the outcomes of their working periods abroad exceeding six months. Table 23 lists some of the most mentioned positive and negative issues according to thematic categories.

Table 23.

3.7 Main positive experiences and outcomes of international mobility
– Better 'research culture' and environment abroad
– Better availability and quality of data, material and equipment than in Finland
– High quality of tutoring and research abroad, able to find new perspectives and ideas
– Generally better possibilities and freedom to try new ideas in your own work
– Personal development and growth as a researcher and an individual, building self-confidence and perceiving your own role as part of the international scientific community
– Experience of working and living abroad generally broadens your view of the world and of yourself, in both your personal and working life
– New contacts, colleagues and peers and developing networks
– Able to develop language and communication skills as well as cultural skills
– Possibility to concentrate intensively on your own research work, free from other duties and administrative work (applied mostly to senior and established researchers)

The positive experiences were mostly related to issues dealing with scientific work, infrastructure and resources, the working environment and freedom to concentrate only on your own research work. It should be noted that, in some cases, considerable time had passed since the visit abroad, when a senior researcher, for instance, was referring to his/her postdoctoral period.

From a more subjective viewpoint many respondents had experienced their working period abroad very positively as a time of personal growth and development. The opportunity to establish international networks and personal relationships with foreign researchers was one of the most often mentioned concrete outcomes of the period spent working abroad. Freedom from administrative and other formal work duties appeared particularly typical among established scientists. The same issue, however, came out negatively in a sense that some respondents complained that they were expected to manage their work duties in Finland at the same time while abroad. This issue also came up in Question 3.8 as well as later in Question 5.5, where some senior researchers complained that international mobility is in practice impossible because of their responsibilities and work duties at their home university.

Table 24.

3.8 Main negative experiences and outcomes of international mobility
– Lack of funding, difficulties in 'making ends meet' while abroad and related negative experiences
– Being separated from family/friends/relatives, other specific problems related to family
– 'Paper war' i.e. bureaucracy both abroad and in Finland and related problems, lack of guidance and information
– Losing rights to Finnish social security benefits because of living abroad (for longer than 12 months), difficulties in gaining them back and related problems
– Established researchers' difficulties in trying to break-off from duties and work in Finland as obstacles to mobility in general and during the period spent abroad

The most problematic issues had been those related to family and research funding, mostly referring to the lack of funding, and researchers' insecure working positions, but also to the insufficiency of funding while abroad. On the other hand, it

is interesting to note that not a single respondent mentioned or complained about the intensive competition for research funding in Finland. The particular problem of losing the right to Finnish social security after having lived abroad for longer than twelve months was also mentioned. While this problem could have been categorised with other general problems related to the general bureaucracy of moving and working abroad, it is probably also justified to state that, given the general lack of security of funding and prevalent temporary work contracts, this problem could potentially affect internationally mobile researchers more than many other professions.

While all these issues were not directly related to international mobility, many respondents expressed the feeling that their professional situation was generally insecure and that this accordingly diminishes their interest in international mobility in very practical terms.

International mobility funding

In Questions 5.1 and 5.2 the respondents were asked whether they had applied for and had received or had not received mobility funding individually, or as part of a research team or a project during the last three years.

Table 25.

5.1 Have you applied for international mobility funding during the last three years?		
	No.	%
Yes, I have and I've been granted funding for research work or studying abroad	134	13.3
Yes, I have but I haven't been granted funding	55	5.4
I haven't	637	63.0
Total	826	81.7
Missing	185	18.3
Total	1,011	100

In Question 5.1, in all 63 per cent of the respondents had not applied for mobility funding individually. Altogether 13.3 per cent had applied for and received funding, while 5.4 per cent had not received mobility funding, when they had applied for it.

In Question 5.2, concerning applying for mobility funding as part of a research team or project, 65.9 per cent of the respondents had not applied for mobility funding, while 7.4 per cent had applied for and received funding, and 5.9 per cent had not received funding, when they had applied for it.

These results appear to indicate that receiving mobility funding is easier as an individual researcher than as part of a research team or research project funding. However, since no general data on the relative percentages of accepted research funding applications exist, these results cannot be taken as a direct indication of the difference in the difficulty of receiving mobility funding.

Table 26.

5.2 Have you applied for international mobility funding as part of a research team or project during the last three years?		
	No.	%
Yes, we have and we've been granted funding for research work or studying abroad	75	7.1
Yes, we have but we haven't been granted funding	60	5.9
We haven't	666	65.9
Total	801	79.0
Missing	201	20.8
Total	1,011	100

Income and living during stay abroad

In Question 4.2 the respondents were asked about the monthly amount of money they had for living abroad. Not many respondents answered this question, but a very approximate average sum calculated from the answers was 1,917 euros a month, within the range of 0 to 6,000 euros a month after taxes (when applicable). This average level of monthly income is, for example, slightly higher than that of a doctoral student at a graduate school in Finland and considerably higher than the income of a doctoral student with a grant from a private foundation. On the other hand, for postdoctoral researchers or senior researchers this monthly income would be lower than their expected average monthly income.

In Question 4.3 the respondents were asked whether they had felt that their monthly income while abroad was enough to provide a satisfactory-level subsistence. For the majority, or 65.8 per cent, the level of income had been satisfactory, but a quarter (25.9%) of the respondents felt that their income abroad had not been high enough.

Table 27.

4.3 Was your salary or funding enough to provide a satisfactory standard of living while working abroad?		
	No.	%
Yes	246	65.8
No	97	25.9
No opinion	31	8.3
Total	374	100.0

When asked about the relative level of monthly income while abroad in Question 4.4, for 28.8 per cent of the respondents the monthly amount of money for living was higher than in Finland, whereas for 50.8 per cent it was approximately the same, and for 20.3 per cent it was considerably lower than their monthly income in Finland at the same time. However, in open Questions 3.1 and 3.8, many researchers complained about financial hardships while working abroad and having been forced to rely on

financial support from the family, as well as on using their own savings or even a bank loan as a means to cope while abroad.

Table 28.

4.4 In comparison to your salary or funding in Finland, your monthly income abroad was:		
	No.	%
Higher	102	28.8
Approximately the same	180	50.8
Lower	72	20.3
Total	354	1.00

In addition, a statistical analysis of the data revealed that women had had slightly more often than men less money for living abroad than in Finland. This is apparent in the question where the respondents were asked whether they felt that the money they had for living while abroad was sufficient to cover an acceptable standard of living.

Needs for services and information

Questions 3.4, 3.5 and 3.6 concerned the respondents' needs for services and information and whether or not they had received these services while moving and working abroad.

Table 29.

3.4 If you have worked abroad as a researcher or studied abroad, did your host institution help you with the following (if applicable)?		
	No.	%
Finding accommodation	203	30.3
Organising other practicalities	193	28.8
Work and residence permits, tax issues, banking etc.	153	22.9
None of the above	120	17.9
Total	669	100

Table 30 presents the same question as Table 29, but concerning the spouse or partner. It presents only the answers of those respondents who had worked abroad and had their spouse or partner or their spouse or partner and a child or children move abroad with them.

Question 3.6 concerned researchers' information needs about the country they were moving to and the related practicalities about working in another country; 46.3 per cent answered that they had searched for information while 53.7 per cent had not.

This list of different information sources given in the open question was extensive, but the most common source mentioned was the Internet. The ubiquitous 'authorities' was also a relatively common answer to this question. The length of the stay abroad also correlated with the question whether the respondents had sought information about their destination country in advance.

Table 30.

3.5 If you have worked abroad as a researcher or studied abroad, did your host institution help you with the following (if applicable)?				
	Spouse/ partner		Spouse/ partner and child/ children	
	No.	%	No.	%
Spouse's work and residence permits etc.	12	19.7	15	21.1
Finding family accommodation	14	23	34	47.9
Finding daycare and/or schooling facilities for your child/children	1	1.6	14	19.7
Help with other practicalities	18	29.5	27	38
None of the above	32	52.5	27	38
Total	61	100	71	100

Table 31.

3.6 Before leaving abroad, did you seek information concerning working in your host country, local taxation and other practicalities?		
	No.	%
Yes	180	46.3
No	209	53.7
Total	389	100

Interest in applying for jobs abroad

In Questions 5.3 and 5.4 the respondents were asked whether they had applied for a research-related job or post abroad during the last three years and, if they were interested in such a job or post, what their preferences regarding working abroad would be.

As Table 32 indicates, only 7.5 per cent of all respondents had applied for a job or post in a foreign enterprise, research institute or international research organisation during the last three years.

As indicated in Table 33, there were no major differences in the popularity of the preferred option among the given choices, except for that short-term work posts abroad seemed to be generally preferred over longer and permanent ones.

In Table 34 the answers to Question 5.4 were compared to each respondent's career position with some interesting results. For example, professors and other senior researchers or holders of managerial research positions were relatively most interested in a post at a foreign university. Not even postdoctoral researchers were as interested in working abroad as more senior researchers. While postdoctoral researchers appeared to be relatively interested in a post at a foreign university, working abroad for three months or longer seemed to be the least appealing choice between the given options.

Doctoral students were the only group who would choose three months or longer working periods at a foreign university as their first choice.

Table 32.

5.3 Have you applied for a job or post in a foreign enterprise, research institute or international research organisation during the last three years?		
	No.	%
Yes	76	7.5
No	753	74.5
Total	829	82.0
Missing	182	18.0
Total	1,011	100

Table 33.

5.4 If you have been looking for a faculty post, job opening or possibility to study abroad, which of the following options would you prefer?		
	No.	%
Short repeated working visits abroad	136	13.5
Visiting researcher at a foreign university for three months or shorter	131	13.0
Visiting researcher at a foreign university for three months or longer	124	12.3
Job or post at foreign enterprise, research institute or research organisation	113	11.2
Faculty post at a foreign university or university research institute	100	9.9
Other	17	1.7
Total	621	61.4
Missing	390	38.6
Total	1,011	100

The answers also revealed that researchers working at a university seem to have a certain reluctance towards the idea of working in a foreign research institute or an enterprise, while researchers working in a research institute or an enterprise in Finland seem to have an equal disinterest in working at a foreign university.

A statistical analysis also indicated that individual researchers' career stage correlated with their willingness to work abroad, indicating that younger researchers seem to be more interested in going abroad for longer periods than senior or established researchers.

Table 34.

Professor	Lecturer	Researcher in a research institute	Postdoc	Researcher (doctoral student)	
	%	%	%	%	%
Faculty post at foreign university	25	10.8	4.8	17.3	8.2
Job in foreign enterprise or research institute	5.2	5.4	16.1	10.7	12
Visiting researcher at foreign university for 3 months or longer	5.2	10.8	7.3	9.3	16.7
Visiting researcher at foreign university for 3 months or shorter	17.7	8.1	12.1	10.7	13.0
Short repeated work periods abroad	16.7	18.9	18.5	12.0	11.8

Researchers not interested in international mobility

In open Question 5.5 the respondents were asked to describe in their own words if they were not interested in working abroad, and give the reason for this. The answers are presented in the form of quotes from the respondents in Table 35, based on the categorisation of themes picked from the answers in a similar manner as in Questions 3.7 and 3.8. As in the previous questions, the thematic categories are not exclusive of each other.

Table 35.

5.5 If you are not at all interested in the possibilities of working or studying abroad, why is that?
"Family and spouse's/partner's job prevents mobility"
"Current job or funding situation in Finland"
"Maybe at a later time/stage"
"Not economically possible"
"Not interested, working abroad is not an attractive option"
"Not currently possible or viable"
"My research subject in strictly Finnish / working abroad would have no relevance to my research"
"Not possible in my current personal situation"
"I'm too old"
"Too much trouble, no real added value"
"Finland is a good country", "Life in Finland is good"
"I've already been internationally mobile, no need any more"
"My work/funding situation in Finland is too precarious"
"I don't accept the internationalisation liturgy"
"Finland is on the cutting edge in my research subject"
"I'll not continue on an academic career after receiving my doctoral degree"
"I wasn't granted mobility funding", "I wasn't accepted into a foreign university"
"General lack of resources (funding, language skills, information)"
"I don't know why but no"
"Not being present at the university will damage my future career prospects"
"My university does not support international mobility in any way"
"International mobility is an option only if I don't find a job after finishing my doctoral studies"

A wide array of reasons and issues were given in the answers, but unsurprisingly by far the most quoted main obstacles to international mobility were related to family issues. The most important and most quoted of these was the spouse or partner being unable to leave his or her job in Finland or his or her potential difficulties in finding a job abroad. Having young children in general, children's school and childcare issues, issues such as possible difficulties in finding family housing, renting out the family's home in Finland during the stay abroad and other similar practicalities were also quoted repeatedly. Many respondents also mentioned other family-related reasons such as an unwillingness to be far away from the family in general, and from elder family members in particular.

The importance of the spouse's or partner's job and career was often highlighted, in the sense that in many researchers' families the spouse, often male in these cases, appeared to be the family's main breadwinner. In this sense, the spouse not working was seen as an impossible situation. This is apparent in the case of doctoral students in general, but appeared to be the situation in the families of some established researchers as well. While the role of the man as the main breadwinner in a family where the woman is building a career as an academic researcher could be related to the existence of a traditional family model, a more credible explanation to this is offered by the fact that researchers' salaries in Finland tend to be very low compared to any other professionals with an equally high level of education.

The second most common issue that was considered an obstacle to international mobility was the respondents' current work situation in Finland, in both the positive and negative sense. Many researchers declared that they were not interested in being or able to be internationally mobile, because they currently had an interesting job. It can also be noted that some respondents who had a satisfactory job situation apparently felt that, on the other hand, the job required them to hold on to their post and make sure their work advances and that they keep up with their career development. This issue has also been reported by other mobility studies; especially postdoctoral researchers often feel that if they leave their home university department and/or research team or professor for longer periods, they will be cut out of their academic career path, and other competing young researchers take their place. This phenomenon has been labelled as 'the dark side of international mobility' in a Swedish study (Melin 2005), which focused on Swedish postdoctoral researchers who went abroad for their postdoctoral period. However, this phenomenon probably applies much more to disciplines where research is conducted in tight-knit research teams in which the leader of the team takes the main responsibility for finding funding and selects young researchers to the team. In disciplines where research work is carried out by individual researchers who are also responsible for finding their own funding, the role of a certain professor or senior researcher or team leader in young researchers' careers is probably much less important in this sense.

Many researchers also pointed out that they were not interested in working abroad because of their difficult or otherwise unsatisfactory work situation in Finland. Some respondents pointed out that they would prefer to first have a steady job position in Finland to return to, before they would even consider working abroad. Some respondents also pointed out very directly that considering working abroad did not make any sense to them, if they could not secure a job even in Finland. The general precariousness of the careers of researchers was a recurring theme

throughout the survey and it works as a major obstacle to international mobility as well. In an insecure work and financial situation in Finland, international mobility seemed to appear to many as something that would only make life more difficult than what it already is.

There were also some examples where international mobility had been the only option for a young researcher, when he/she had received mobility funding while not having any other form of research funding in Finland at the same time. In such cases, if the mobility funding is large enough to cover the completing of the current research project at a foreign university or research institute, the situation is not necessarily problematic as such, but returning to Finland and integrating back into Finnish academia can be.

The results also appear to follow some general, internationally recognised patterns. According to a study of Italian doctoral students' international mobility (Avveduto 1998: 13), the first obstacle to doctoral students' international mobility was the lack of funding (34.4%), followed by personal commitments (family/work, 20.9%), a lack of information (16.9%), a lack of time (15.1%), and finally, inadequate knowledge of opportunities available abroad (12.7%).

Practical problems of mobile researchers

A wide array of practical problems related to moving abroad were mentioned in the answers to Questions 3.1 through to 3.8. While some of these problems could appear relatively trivial when taken out of context, the issues are sometimes very concrete obstacles for individuals trying to manage the practicalities of moving abroad for a longer period, and arguably can have a negative effect on the general attractiveness of international mobility. Many different types of troubles and issues related to accommodation were mentioned in the answers to open Question 3.8 concerning the negative experiences while working abroad and upon returning to Finland. The issues ranged from difficulties in finding suitable accommodation in a foreign country to the question of how to manage and maintain the upkeep of the home in Finland while working abroad. Finding an apartment abroad as well as the question of what to do with your home in Finland during the stay abroad appeared as the main challenges to many researchers, both to those who had worked abroad and to those who were only considering the possibility of international mobility.

Issues such as these seemed to have been more difficult than practicalities related to work permits or tax questions. As it turned out, a concrete thing such as whether or not the researcher manages to rent out his/her apartment in Finland during the stay abroad can sometimes turn into a major obstacle to international mobility. These issues did not apply only to young researchers with more limited funding, since some senior researchers also pointed out the same thing. The question of what to do with your home in Finland and how to manage mortgage payments during the visit abroad were also brought up repeatedly. Many did not consider renting out the family home during the visit abroad an ideal solution. However, at the same time, some respondents had managed to do this successfully and were happy with the arrangement. This seemed to be a problem mainly for researchers with a family, but some single researchers also mentioned the great difficulty of returning to Finland

after staying abroad for longer periods and not having a place to stay in Finland upon their return.

Researchers with children had very often found the question of finding accommodation abroad particularly problematic. Universities and other host organisations seldom seem to have pre-arranged family housing available to visiting researchers, while many universities do have accommodation options available to visiting researchers for shorter stays. However, the accommodation options offered by universities tend to be geared towards a single person's temporary short stays, but while they are often well equipped and furnished, they are often also more expensive options than renting an apartment from the free market.

It also became obvious in the case of invited senior researchers such as visiting professors and people with more substantial funding or salary that accommodation often seems to be arranged by the inviting institution. In many cases, the foreign host university or organisation had arranged all practicalities for the researcher and this involved researchers with family members coming along with them. This is and was obviously much more common among invited senior researchers and professors, invited lecturers and other established scientists. At the same time, younger researchers who had been mobile outside of established exchange programmes or whose mobility was not based on any type of personal networks or prior cooperation, had had the most troubles. However, the problems related to accommodation have one thing in common: they could have all been solved with money. If the researcher had received enough funding, there were often no problems with finding a satisfactory dwelling.

The situation seemed very similar with resources and infrastructures such as work space, equipment, databanks and library services that had been available to researchers. The majority of the respondents had had no problems with these, and those who had were always young researchers. Doctoral students, but also some postdoctoral researchers, had experienced problems with the availability or quality of research infrastructures. In relation to services offered to visiting researchers by host institutions, especially doctoral students had experienced problems when they were regarded as students instead of 'real' researchers and/or employees. This is because undergraduate student services might not have been available to them, and their funding is often considerably lower than postdoctoral or senior researchers' funding. The role of researchers' background institutions, at both the sending and receiving end, is essential in managing and guaranteeing that all practicalities go smoothly.

Furthermore, the respondents' very diverse personal life situations had caused a wide variety of practical problems. In some cases it had, nevertheless, made leaving Finland easy because, as someone recounted, international mobility had offered a welcome breakout from the 'old life' after a difficult divorce, for example. It should also be noted that some respondents, both men and women, mentioned that they experienced a divorce or a break-up with their partner during a working period abroad or as a direct or indirect consequence of international mobility. This would indicate that in some cases also the social and personal costs of international mobility could be high.

It also became apparent that the funding instruments currently available do not seem to always fulfil the needs and expectations of researchers. Besides the feeling of often not having enough money, the slow processing of applications and actually

getting the money were some problematic issues expressed. Another group of respondents who were critical about the issue were those who had not received mobility funding at all despite their attempts, or who had received less money or funding for a shorter period than they applied for. Apparently, part of this criticism was aimed at the Academy of Finland. In the accompanying letter to the invitation to participate in the survey, the role of the Academy was clearly indicated, and some respondents used the possibility to complain about not receiving mobility or other research funding from the Academy.

Differences between men and women

While there were no major differences between the male and female respondents of the survey, comparing men's and women's answers to selected questions did bring up some interesting, yet minor differences.

As Table 36 indicates, in Question 5.3, with the relative number of both male and female respondents accounted for, more men than women had applied for a job abroad during the last three years.

Table 36.

5.3 Have you applied for a job or post in a foreign enterprise, research institute or an international research organisation during the last three years?				
	PhD	Licentiate	Master's	All
	%	%	%	%
Women	11.0	9.2	4.4	6.2
Men	12.2	7.3	7.3	8.4

The answers to Questions 3.2 and 5.5 also indicated that, at least to a certain degree, male researchers had generally been slightly more internationally mobile than female researchers. Even if this result was not clearly measurable, in Question 5.5 there appeared to be more female researchers who felt that they were not able to be internationally mobile, mostly because of family-related issues. However, according to the answers to Question 5.1, exactly the same amount of male and female respondents had applied for funding for international mobility during the last three years, and almost an equal number had also received mobility funding. Similarly, an equal number of men and women had applied for but had not received mobility funding, and the same also applied to those who had not applied for mobility funding.

In Question 4.3 on whether the funding while abroad was seen as sufficient, the strict statistical analysis of the data revealed that women had had slightly more often than men less money for living abroad than in Finland. This became apparent when the respondents were asked whether they felt that the money they had for living abroad was sufficient to cover an acceptable standard of living. Women had also been more active in searching for information about the practicalities of their destination country in advance.

CONCLUSIONS

Finnish researchers, their working methods and approaches as well as their career trajectories are becoming increasingly diverse, which calls for more flexible funding instruments and services that also recognise the needs arising from this situation. From the individual researcher's point of view, the international mobility funding instruments currently available do not always seem to meet the researchers' needs. Based on the findings of this study, it seems that international outward mobility patterns of Finnish academic researchers are slightly different from how this phenomenon is often perceived, while some elements of the mobility follow very familiar patterns. Especially the destination countries of the majority of mobile researchers remain relatively predictable. Generally, it seems that the mobility patterns of Finnish young researchers tend to follow those of previous generations. The United States and Western Europe with their established and high-ranking universities are the most popular choices of destination for Finnish researchers. This appears to be the case even more so in the natural, technical and medical sciences, where a postdoctoral period spent in the US has a strong tradition. In the social sciences and humanities, researcher mobility patterns are slightly more diverse, but even here the US and Western European countries remain the most popular destinations.

The results of the survey indicate that there exists an internationally mobile group of roughly one-third of Finnish researchers, while another third of Finnish researchers do not appear to be at all mobile. However, this conclusion should be approached with certain caution and used only as indicative of the real situation or an existing trend. Of all respondents of the study, 26.4 per cent had spent six months or longer periods at a time abroad working in a research-related job at some point of their career, in comparison to an approximate 60 per cent with at least one visit abroad related to their research work.

The most important findings of this study suggest that there are two major challenges to Finnish researchers' international mobility. Increasingly intensive competition for research funding, the low number of available faculty posts and the general lack of resources and academic career prospects make the research career appear less and less attractive for young people. This general trend is reflected in the whole academic sector, and decreasing researcher mobility is only one facet of the complex problem. The intensive competition for scarce funding resources appears to limit many young researchers' interest in international mobility, with the exception of those relatively few postdoctoral researchers who are interested in looking for job opportunities abroad. It also seems that unless the international element is strictly built into the young researcher's own research work and project, international mobility for longer periods in particular, seems to pose, in many cases, too many risks. This appears to be even more true for those young researchers who already have a family to support or steady partners in working life.

A large number of Finnish researchers are doctoral students. The second important group, although much smaller in number, is postdoctoral researchers. These groups form the main set of young researchers most likely to be internationally mobile because of their career stage. However, as the average age of receiving a doctoral degree in Finland is relatively high by international standards, approximately 36 years in 2001 (Academy of Finland 2003), both doctoral students and postdoctoral

researchers tend to have steady partners, a family and children and they could have taken large mortgages. According to the findings of this study, all these issues, especially when cumulated, act strongly as obstacles hindering Finnish researchers' international mobility both in practice and in terms of interest and future intentions and plans. Spouse employment, having children and worries about being able to support the family are very practical challenges and often appear as concrete obstacles to the international mobility of young researchers. It is also obvious from the survey that, for several respondents, the economic burden of sustenance of the family was heavily dependent on the income of the spouse or partner with a more secure work position and presumably a higher income.

At present, very few Finnish research funding organisations, with the exception of the Academy of Finland and Tekes, recognise the economic realities of researchers with a family in their funding instruments and funding decisions. Researchers moving abroad with their family or family members very seldom manage to secure any extra funding or benefits to cover the higher costs of the family. Some research institutes and private enterprises do provide such family benefits, but the number of mobile researchers they finance remains extremely low. However, usually the additional funding for a researcher with a family or family members is not enough to cover the livelihood of more than one person in a foreign environment. In cases where the researcher's spouse or partner moved abroad along with the researcher, they had often faced great difficulties in finding a suitable job.

The general view, of which there exists proof in international research literature, that mobility would be an investment for the future, based on the expectation that it could yield high returns at a later stage during the career, was not shared by the respondents of this study. It could be argued that either this does not seem to be the case any longer from young researchers' point of view, or the generally experienced precariousness of working in the academic sector makes it appear too improbable to have any effect on young researchers' preferences. It should be noted that approximately 26 per cent of doctoral students who participated in the study were planning to continue working in the academic sector after receiving their doctorate, while 32 per cent had not made up their minds. However, there is a large variation in the mobility patterns between different disciplines, as the method of working is sometimes quite different, so making broad generalisations should be avoided. It is very difficult to say whether there have been major changes in the mobility patterns of Finnish researchers. The main reason for this is the lack of comparable data on Finnish researchers' international mobility as such, since reliable, coherent and up-to-date statistics on international mobility are not available. Because of the lack of statistical data, it is impossible to make comparisons to find out whether researcher mobility has in fact been decreasing or increasing.

On a more general level, the difficulties in securing even basic research funding, because of the intense competition for funding, if the researcher wants to work abroad, effectively counteract the national policy goal of increasing Finnish researchers' mobility. When the fact that there, at the moment, exists no clear career path between completing a PhD and receiving a professorship for researchers in Finland is reflected against what could be considered a traditional and ideal academic career path, it is perhaps not surprising that the mobility of Finnish researchers is not increasing.

RECOMMENDATIONS

The recommendations of the CONNECT Finland Steering Group were formulated on the basis of the results of the study and the Steering Group's work during the course of the project.

- 1 International researcher mobility funding instruments should be developed towards more flexibility in order to accommodate researchers' increasingly diverse career positions.
- 2 Besides funding longer working periods abroad (longer than 3 months) there should also be funding instruments allowing for shorter and repeated working periods abroad.
- 3 Specific needs of researchers with a family should be better taken into consideration. Funding for researchers who are mobile with their family should be increased and short-term international mobility should also be supported.
- 4 The level of mobility funding should be higher to better correspond to the real costs of researchers' international mobility.
- 5 Active measures towards promoting international researcher mobility should be aimed at young researchers in particular.

REFERENCES

An International Strategy for Higher Education. 2001. Helsinki: Ministry of Education.

Forsander, Annika, et al. 2004. *Sykettä ja suvaitsevaisuutta: Globaalin osaamisen kansalliset rajat*. Helsinki: Edita.

Husso, Kai. 2005. *Tohtorit, tiedepolitiikka ja työmarkkinat*. Tutkijankoulutus Suomessa 1950-luvulta tutkijakoulujen aikaan. Publications of the Ministry of Education 2005:21. Helsinki: Ministry of Education.

International Postgraduate Students Mirror: Catalonia, Finland, Ireland and Sweden. Högskoleverkets rapportserie 2006:29 R. Stockholm: Swedish National Agency for Higher Education.

Kärkkäinen, Svante. 2006. *Work Placement Report: The Academy of Finland. Report*, Helsinki Business Polytechnic, Helsinki (Unpublished).

Lehvo, Annamajja & Anu Nuutinen. 2006. *Finnish Science in International Comparison*. Publications of the Academy of Finland 15/06. Helsinki: Academy of Finland.

Melin, Göran. 2005. "The dark side of mobility: negative experiences of doing a postdoc period abroad". *Research Evaluation*, Vol. 14, No. 3, 1 December 2005: 229–237(9).

PhDs in Finland: Employment, Placement and Demand. Publications of the Academy of Finland 5/2003. Helsinki: Academy of Finland.

Puustinen-Hopper, Kaisa. 2005. *Mobile Minds – Survey of Foreign PhD Students and Researchers in Finland*. Publications of the Academy of Finland 1/05. Helsinki: Academy of Finland.

Strategisella rahoituksella vaikuttavampaa tutkimusta? Kolme esimerkkiä vaikutusten ja vaikuttavuuden arvioinnista terveyden tutkimuksen alalta. Publications of the Academy of Finland 8/2006. Helsinki: Academy of Finland.

Tilastokeskus (2007): *Tutkimus- ja kehittämistoiminta 2005. Tiede, teknologia ja tutkimus*, Helsinki: Statistics Finland.

ELECTRONIC SOURCES

Avveduto, Sveva. 1998. "International mobility of PhDs". National Research Council, Italy. <http://www.oecd.org/dataoecd/33/49/2096794.pdf>.

KOTA Online. Ministry of Education. <http://kotaplus.csc.fi/7777/online/Etusivu.do?lng=en>.

"What is Mobility?". 2001. UNESCO – Studying Abroad. UNESCO. http://www.unesco.org/education/studyingabroad/what_is/mobility.shtml.

ANNEX 1.

MEMBERS OF THE STEERING GROUP

The Steering Group of the ERA-MORE CONNECT Finland project consisted of the following persons:

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ANNEX 2.

WEB SURVEY QUESTIONNAIRE

CONNECT Finland – Finnish Researcher’s International Mobility Survey
(Translated into English from original Finnish-language web survey form)

1.1 Gender

- Female
- Male

1.2 Year of Birth

1.3 Family Status

- Single
- Living with a partner
- Married
- Civil partnership
- Living with partner and child or children
- Married and living with child or children
- Single parent

1.4 Living in (city or region)

2.1 The highest academic degree achieved

- PhD
- Licentiate
- Master’s Degree
- Master of Science in Technology
- Bachelor’s degree
- None of the above, specify

2.2 To which research field does your research work belong?

(According to the Academy of Finland’s research field classification)

2.3 Where are you currently working?

- University. Specify
- Research institute. Specify
- Private enterprise. Specify
- Other organisation. Specify
- I’m not working at the moment, I’m:

2.4 What is your career stage?

- Professor, research manager or similar senior managerial post
- Assistant, university lecturer or similar teaching post
- Researcher in a research institute or an enterprise

- Postdoctoral researcher at a university (incl. university research institutes)
 - Researcher (doctoral student)
 - None of the above, specify
- 2.5 If you have a doctoral degree, where did you study for the degree?
- Finnish university. Specify (List of Finnish universities)
 - Foreign university. Specify
 - I don't have a doctoral degree
- 2.6 If you are a doctoral student, are you planning to continue an academic career after you achieve a doctoral degree?
- Yes
 - No
 - I haven't decided yet
- 3.1 Describe your last visit abroad linked to your research work. (What was the goal of the visit, what was the destination and duration, how was the visit realised in practice?)
- How long did the visit abroad last?
- 3.2 Have you worked as a researcher or studied abroad for a longer period than six months?
- Yes. In what country did you stay and what organisation did you work/study?
 - No, I haven't
- 3.3 Did your family or family members follow you abroad?
- Wife/husband/partner
 - Wife/husband/partner and a child or children
 - No
- 3.4 If you have worked abroad as a researcher or studied abroad, did your foreign host institution help you with (if applicable):
- Residence and work permits, taxation, banking and other administrative practicalities
 - Finding accommodation
 - Organising other practicalities
 - No
- 3.5 If your spouse, partner and/or other family members moved abroad with you, did the foreign host institution help you with (if applicable):
- Residence and work permits, taxation, banking and other administrative practicalities
 - Finding family accommodation
 - Finding a daycare or schooling facilities for your children
 - Organising other practicalities
 - No

- 3.6 Before leaving abroad, did you seek information concerning working in your destination country, local taxation or other practicalities?
- Yes. From where?
 - No
- 3.7 If you have worked abroad as a researcher or studied abroad, what were the main positive experiences and outcomes of the period spent abroad?
- 3.8 If you have worked abroad as a researcher or studied abroad, what were the main negative experiences and outcomes of the period spent abroad?
- 4.1 How did you finance your working or studying period abroad?
- Research project funding from Finnish funding organisation
 - Research project funding from foreign funding organisation
 - Salary from Finnish employer
 - Salary from foreign employer/host institution
 - As part of my postgraduate school funding
 - As part of the funding of my doctoral studies
 - Supplementary grant or fellowship
 - Funding from the European Union or from other international organisation
 - Other funding. Specify
- 4.2 What was the amount (€) of your monthly salary, grant or other funding (after taxes etc.) while you were working or studying abroad?
- 4.3 Was your salary or funding enough to provide a satisfactory level of subsistence in relation to local costs of living while working or studying abroad?
- Yes
 - No
 - I don't know
- 4.4 In comparison to your salary or funding in Finland, was your monthly income abroad:
- Higher
 - Approximately the same
 - Lower
- 4.5 If your family or family members moved abroad with you, did that earn you a higher salary or grant/fellowship or other family benefits?
- Yes. What or which?
 - No
- 5.1 Have you applied for funding in order to conduct research work or study abroad during the last three years?
- Yes, I have and I have been granted funding for research work or studying abroad
 - Yes, I have, but I haven't been granted funding
 - I haven't applied

- 5.2 Have you applied for funding as part of a research team or project in order to conduct research work or study abroad during the last three years?
- Yes, we have and our team or project has been granted funding for working abroad
 - Yes, we have, but our team or project hasn't been granted funding
 - No, we haven't applied
- 5.3 Have you applied for a job or post in a foreign enterprise, research institute or international research organisation during the last three years?
- Yes
 - No
- 5.4 If you have been looking for a faculty post, job opening or possibility to study abroad, which of the following options you would consider as the best for you?
- Faculty post at a foreign university or university research institute
 - Job in a foreign enterprise, research institute or international research organisation
 - A study and/or specialisation period lasting longer than three months
 - Visit lasting less than three months
 - Several short repeated work visits to foreign institution
 - Other, what?
- 5.5 If you are not at all interested in working or studying abroad, why is that?

The report "Academic Finns Abroad - Challenges of International Mobility and the Research Career" presents a survey of Finnish researchers' international mobility and recent general trends of researcher mobility in Finland. The report reveals that Finnish researchers are a highly heterogeneous group. The Finnish research sector and researchers' career trajectories are growing increasingly diverse, which calls for more flexible and responsive funding instruments and services that recognise researchers' individual needs.

The report shows that the main challenges to Finnish researchers' international mobility are largely family- and funding-related. The international mobility patterns of young researchers tend to follow those of previous generations.



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