ISBN 978-92-64-04774-7
The Global Competition for Talent
Mobility of the Highly Skilled

Chapter 5

Looking Ahead: Mobility Policy

Chapter 5 discusses the role of government policy in the area of international mobility of human resources for science and technology. It considers future policy options by examining the underlying rationale for government intervention, exploring the potential scope, objectives and approaches of future mobility policies and discussing the importance of the coherence between mobility policy and other government policies.

The key messages emerging from the preceding chapters are: that mobility is not a zero sum game – both sending and receiving countries at all levels of development can benefit from the international mobility of human resources for science and technology (HRST); that mobility is increasing; that the positive impacts of this mobility are appearing in the data; and that the geographic spread of R&D and scientific activity is creating the impetus for moving to more and more countries worldwide. Chapter 4 pointed to the range of policies already in place to encourage mobility and highlighted the differences in the "intensity" of countries' approach to mobility. Given this background, what should governments' mobility policy entail?

Establishing the rationale for government intervention

When contemplating government intervention in a particular area, it is necessary first to define the "problem" and its significance.[1] The problem should be specified in terms of the loss, harm or other adverse consequences that will result if action is not taken, and ideally highlight who or what would suffer. It is also important to estimate, at least in a preliminary way, the size of the impact of the problem – if the impact is low, then no action may be warranted, particularly considering the costs involved with government action and potential unforeseen side-effects. Identifying the consequences of "doing nothing", and assessing the likelihood of "self-correction", can help to put the problem into perspective. Clearly specifying the problem at an early stage helps guard against unnecessary or inappropriate actions, and improves the chances of the problem being successfully tackled.

What sort of problems might be identified? In general, market failure, relating to the presence of externalities, public goods, or lack of information, is often cited as the justification for government action (see Box 16). Market failures move the economy away from an efficient allocation of resources, and create the possibility that government action may improve on market-derived outcomes and welfare levels. Risk mitigation or social/equity issues may also feature in the problem definition stage.

The rationale for mobility policies

The literature review in Chapter 2 suggested that mobility is associated with the creation and diffusion of knowledge, which is vital for innovation processes. In creating codified knowledge and spreading tacit knowledge, not

Box 5.1. **Market failure**

Market failure refers to situations in which markets do not produce economically efficient outcomes, that is, resources are not being allocated to their most valued uses. The classic types of market failure include:

Asymmetric information

Markets may not allocate resources efficiently if one party in a transaction has significantly more information about a good or service than another. One party may have an incentive to conceal information, to gain a better price or more favourable conditions. Over time, markets can develop responses to issues of imperfect information – for example, third parties may collect and publish information and buyers may share their experiences.

Externalities

A positive externality (or positive spillover) occurs when one party enjoys benefits from the actions of another, which are not paid for through market prices. A negative externality (or negative spillover) occurs when the party imposes on others costs that are not compensated through market prices. Many activities generate some sort of externality – the question is whether the size and nature of the externality, and the likelihood that government intervention will be successful in addressing it, justifies government action.

Abuse of market power

Problems with market power can arise when market structures are not competitive – when markets have few producers, there are no or few close substitutes for their output, and the producers are able to restrict output and maintain prices at higher than competitive levels. However, not all markets with few producers are characterised by market power, as the threat of new competitors in the market may serve to keep prices and services competitive. Generally, a barrier to entry (such as regulation, or a patent for a product) is required to prevent other businesses from entering the market when an existing firm attempts to raise prices over competitive levels. Identifying this barrier to entry is a key element in defining government intervention in response to market power.

Public goods

Public goods are goods or services that are non-excludable and non-rival, that is, once they are provided, anyone can simultaneously have access and their use by one person does not reduce the availability to others. Free markets may provide fewer public goods and services than the community as a whole would be willing to pay for, since as long as people think others desire the good or service and will pay for its provision, they will be unwilling

Box 5.1. **Market failure** *(cont.)*

to contribute voluntarily to its provision. Goods and services that are non-rival (for example, lighthouses) or non-excludable but rivalrous (known as common property resources, such as a public beach), may also justify government intervention.

Source: Australian Government (2007), pp. 60-62.

only do researchers, scientists and engineers share their know-how with colleagues, they also spark knowledge spillovers – positive externalities that allow many more individuals, firms and organisations to benefit from the knowledge carried by the mobile person. Sending countries can also tap into benefits associated with mobility and knowledge flows, through "brain gain" effects, brain circulation and engagement with the diaspora.

This raises the possibility that government intervention in mobility may be justified by market failure arguments, particularly those associated with externalities and information asymmetries. If HRST make mobility decisions based on private returns that differ significantly from social returns, or if information about mobility opportunities is lacking or difficult to obtain, the amount of mobility may be less than would be socially optimal. Governments may see scope to act to internalise some of the social costs and benefits of mobility or to improve information provision.

That said, different countries have different mobility patterns, economic and social contexts, and overall goals, so that the rationale and impetus for government intervention and the ultimate shape it takes will differ as well. Chapter 5 showed that even within the OECD area, patterns and contexts vary widely: some countries have net gains of skilled HRST while others have net losses; in some countries the mobility rate of their highly skilled population is low while in others it is high. This makes it unlikely that a "one size fits all" approach will emerge.

Policy makers' perception of the obstacles to mobility gives insight into the rationale behind current policies. In general, these tend not to address market failure but the immediate problems faced by mobile HRST. For example, in work related to the establishment of the European Research Area, the European Commission (2001) pointed to several groups of obstacles facing mobile researchers:

- First, "legal and administrative" obstacles, including immigration (particularly for third-country researchers), social security and taxation issues. For example, mobile persons may have to contribute towards benefits they cannot enjoy or receive compensation for, or they may not be

able to recover their pension contributions at the end of their stay. However, as the Commission noted, these obstacles are not specific to researchers but are faced by all mobile workers.

- Second, "social, cultural and practical" obstacles, such as: access to information about rules and regulations and about funding; knowledge of the local language; finding job opportunities for partners, schools for children and suitable family accommodation; and dealing with obligations in the home country, such as mortgage payments or elderly parents. These problems differ depending on the researcher, the length of stay and career stage and again are not necessarily specific to researchers.
- Third, the "obstacles to a European dimension in research careers" include difficulties for obtaining positions upon return to the home country (and a fear of being "left out of the system" if they go abroad), lack of recognition of the value of mobility for career advancement, inadequate funding, age limits in mobility schemes (particularly problematic for female researchers), and lack of recognition of diplomas.

The Commission found that obstacles to researcher mobility depend significantly on the duration of the stay and the researcher's career stage, with a concentration of obstacles appearing for mid-career researchers in medium-term stays (two to five years) (EC, 2001).

Academic research provides further insight into obstacles to mobility, *i.e.* the "problem" potentially to be addressed by government intervention. For example, a survey of Italian PhD students found that 72% had never left Italy for a study period while preparing their PhD (Avveduto, 2001). The survey results suggested that the biggest obstacle to international mobility was insufficient funds (34%), followed by personal commitments related to family or work (21%). Lack of information, lack of time and inadequate knowledge of scientific opportunities abroad were also cited. Finnish research also highlighted family issues – in particular, spouse employment, children, and personal financial matters:

> "… 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." (Kulonpalo, 2007, p. 41)

The factors or conditions that can motivate HRST to move may also point to potential obstacles to mobility. Various drivers of mobility, including opportunities for increased pay and research funding, career advancement, higher quality research facilities and infrastructure, working with "stars" or in a prestigious institution, and freedom to debate, were identified earlier. Identifying why these conditions are not met may reveal some barriers or obstacles to mobility.

However, the crucial question is which of the potential obstacles discussed above stem from a valid market failure, a social/equity issue or other issue to which government attention should be turned? There is a line to be drawn between what constitutes a potential government responsibility and what should remain personal responsibilities and choices. Identification of an obstacle to mobility does not necessarily constitute a rationale for government intervention, particularly if the impact is small compared to the costs that would ensue.

There is certainly no universal agreement, even within individual countries, about the nature of the obstacles to mobility. For example, a report on the United Kingdom's Research Councils suggested that the bulk of international engagement and collaboration is usually undertaken by researchers directly, often without reference to the government or the Research Councils (House of Commons, 2007, p. 12). This "bottom up" approach, in which scientific need and assessment of the mutual benefits of working together drive interactions, has led some Research Councils to focus activities on addressing barriers to collaboration such as funding or bureaucracy. However, some participants in the inquiry felt no need for the Research Councils to stimulate international mobility of researchers, while others argued that it was unclear that such activities had any impact on mobility (2007, p. 29).

In considering the rationale for intervention, policy makers may also wish to consider how potential obstacles to mobility might change in the future, both in response to current policy efforts and as a reaction to changes in the environment. For example, Chapter 3 pointed to the increasing internationalisation of R&D; will it lead to greater short-term and circular mobility, as researchers find interesting work and collaboration opportunities in an increasing number of locations which outweigh issues such as family or spouse employment? Other considerations include the extent to which the observed obstacles to mobility are specific to HRST and warrant specific intervention. In some cases, a wider group of mobile individuals may be concerned, so that broader issues should be considered before deciding on intervention. Finally, in addition to estimating the scale of the related administrative costs, it is also important to consider potential side effects. For example, Kulonpalo (2007) found that some mobile researchers experienced a

divorce or break-up with their partner during a working period abroad or as a direct or indirect consequence of international mobility.

What role for mobility policy?

If a valid rationale for intervention is identified, and if the potential benefits are estimated to outweigh the costs, the question is whether government intervention can have an impact. Governments only have influence over some of the obstacles cited above. For example, as noted by Nerdrum and Sarpebakken (2006), it is difficult to use policy instruments to influence the behaviour of people who immigrate for personal or emotional reasons. In their survey, one-third of foreign researchers moving to Norway "followed their hearts" and travelled to Norway with a spouse or to join someone they were emotionally attached to. Similarly, it is difficult to see what governments can do to address personal obstacles to mobility, such as unwillingness to leave family.

However, for researchers, scientists and engineers that move primarily for non-personal reasons, there may be more scope for effective government action. Factors such as increased pay, career advancement, and higher-quality research or educational facilities can induce mobility and are certainly amenable to policy. Administrative obstacles, such as those relating to immigration or pension portability, may also be candidates for improved policy approaches. Language is another area amenable to (longer-term) policy. A study of outward student mobility from the United Kingdom found that non-movers typically cited financial constraints and lack of foreign language skills as a key factor in their decision not to study abroad (Sussex Centre *et al.*, 2004, pp. 37-39). When asked to suggest areas of action to increase student mobility, many interviewees (both movers and non-movers) emphasised the need to enhance the teaching of foreign languages at school.

Once the rationale and potential for action are established, it is necessary to set clear objectives and define the contours of government action (in particular, to avoid overlaps, duplication or crowding out of existing public or private activity). This allows policy makers to identify a range of options. It is important not to confuse objectives with the means of obtaining results (encouraging HRST mobility to stimulate innovation is an objective, offering travel grants is one of many means of achieving it). Objectives should also be formulated in a way that will allow policy makers to evaluate the extent to which the objectives have been met.

While the formulation of mobility policy objectives will differ according to countries' context and preferences, all should aim for clarity and objectives that will facilitate later policy evaluation. Achieving clarity may require trade-offs between certain goals. For example, the United Kingdom's House of

Commons report on Research Councils raised a fundamental question about support for international activities: should Research Councils fund proposals because they involve collaboration with countries identified as strategically important or should they only fund the best science? Participants in the inquiry called for clarity, saying while there is clearly a scientific reason for supporting international collaboration, there may also be strategic or economic reasons (for example, funding a collaborative proposal with a country that may be a leading world player in five to ten years) (House of Commons, 2007, pp. 24-25). Achieving clarity might also require better knowledge of the local context. For instance, Kulonpalo (2007) notes that declining interest in international mobility among Finnish researchers occurred against a backdrop of rapid growth in the number of Finnish publications in international scientific journals and in the number of international networks and research projects in which Finnish researchers have participated. This raises the question of what sort of mobility is involved in these activities and what additional mobility would add to innovation and scientific endeavour, over and above what is added by international papers and projects with less mobility.

Formulating objectives for mobility policies raises the issue of mobility strategies. As noted in Chapter 4, while many countries support HRST mobility, most do not have an explicit mobility strategy. A mobility strategy does not guarantee that support for mobility will be more successful, and some may view it as "over-engineering" a specific policy area. Nevertheless, thinking about a mobility strategy may help to clarify what governments are hoping to achieve, thus leading to improved policy design and coherence.

Policies

Countries already have various policy initiatives to encourage and facilitate inward and outward mobility of skilled researchers, scientists and engineers (see Chapter 4). In the main, these initiatives involve funding for individuals but also include information provision and some facilitated administrative procedures, especially for immigration.

In contrast to the policies themselves, there is little information available on their effectiveness. The OECD Questionnaire on the International Mobility of Researchers collected some material on the evaluation of mobility policies (see Box 5.2), but the sample is too small to draw conclusions about best practice. Evaluation is not costless, and the approach must balance the advantages of greater precision and information about efficiency and effectiveness with the additional administrative and compliance costs. Nevertheless, countries would likely benefit from putting additional resources into evaluation of selected mobility schemes to assist in policy design and help increase returns on government investments in this area.

Box 5.2. **Evaluation of current mobility policies**

Policy evaluation has become a central part of the management and governance of public support for science and innovation. It has been driven by factors such as greater recognition of the importance of science and innovation for economic growth and welfare and a desire to make effective investments in this area, a broader trend towards learning from past policy successes and failures, and a general push for clear accountability and transparency on the part of government and minimisation of distortions arising from government policies. For mobility policies, evaluation offers the chance to better understand the policy choices made by countries and whether they are efficient and effective, and potentially to point towards some best practices.

As part of the OECD Questionnaire on the International Mobility of Researchers, information was received on the results of five policy evaluations (OECD 2008). The small number of evaluations can partly be explained by the relative novelty of many mobility policies, although in-depth evaluation seems to have been infrequent overall. Two of the evaluated policies focused on inward mobility (the Lise Meitner programme in Austria and the Canada Research Chairs Program), two focused on outward mobility (the Erwin Schrödinger programme in Austria and the EU Marie Curie fellowships), while the fifth supported mobility via recognition of qualifications (EU Network of National Academic Recognition Centres – NARIC). Overall, the evaluations concluded that the mobility funding programmes were broadly successful. However, the evaluation of NARIC identified a number of areas for improvement.

The small sample size precludes drawing conclusions about best practices in mobility policies. However, some interesting insights did emerge. First, an appropriate level of grant funding at the individual level is crucial for attracting the target population. Second, the duration of grant funding is important – the objectives of the programme, in terms of the type of research supported (social science, biology, natural science, etc), may not be achieved if they are not matched by funding durations that are attractive to researchers in that area and allow them to reach concrete goals within the funded period. Third, the use of funds by recipients may need to be monitored to ensure that the allocations are broadly in line with policy intentions. A related issue is flexibility – a balance must be struck between prescription and flexibility, so as to keep the programme in line with its objectives but not stifle valid and useful differences among recipients in how the funds are spent. Fourth, uptake of funding is greatest when personal objectives match programme objectives; this raises the question of whether mobility has the desired long-term impacts if the objectives of funding recipients are not aligned with the goals of the programme. Fifth, clarity of programme goals is essential, as is policy coherence across government.

Box 5.2. **Evaluation of current mobility policies** *(cont.)*

All five evaluations took a similar methodological approach. All used a case study/survey combination, with information predominantly from interviews, surveys and administrative databases. Most assessed programme relevance, efficiency and effectiveness – the core issues for evaluations – and three presented their conclusions around these themes, making it easier for policy makers to identify important issues. The Marie Curie evaluation noted the utility of combining assessment of operational issues with broader impact issues, in terms of economies of scale in evaluation and avoidance of "questionnaire fatigue". The evaluations presented quite extensive statistical information about programmes and participants; however, there was often no control group with which to compare the information, making it difficult to determine the additional contribution of the programme. Overall, more data was presented on inputs to the programme than outputs; this makes it difficult to assess efficiency and effectiveness. Suggestions by the Marie Curie evaluation team highlighted the need for policy makers to consider the needs of evaluation ahead of time and to put in place appropriate systems for collecting relevant data and information.

While the evaluations provided a substantial amount of information about the programmes and their participants, the questions of whether government intervention is necessary and whether the support provided by the programmes corresponds to the government's goals for innovation, science and technology are left unanswered. Some issues raised in the evaluations suggest that it would be useful to ask these questions to learn if the original problems or barriers to mobility that inspired the policies still need to be addressed and if the policies are designed appropriately.

Given the differences among countries (and the lack of information on best practice), it is not possible to identify a "recipe" for what governments should do more of, what they should do less of, and what should stay the same. Chapter 4 showed that while countries may use similar types of policies, they have quite different "intensities" of approach to mobility, in relation to money spent, numbers targeted and number of policies. It is also clear that different countries face different challenges – for some, language may be the biggest barrier, while for others, research infrastructure may be an issue. It is nonetheless possible to suggest some policy ideas that governments may wish to consider.

Economic incentives and programme duration

One lesson that emerged from evaluations undertaken by governments was that funding levels and the duration of funding are crucial factors in the

success of mobility schemes. If the levels are too low, the policies may fail to attract the target population. For example, the evaluation of Austria's Lise Meitner scheme noted that grants were raised in 2001/02 when it appeared that the programme did not attract researchers with sufficient experience to have an effect on local research teams. The duration of funding must also match the programme's objectives. The evaluations of both Austria's Erwin Schrödinger programme and the European Union's Marie Curie scheme showed that the appropriate duration depends on the field of study, as some require more time to achieve concrete research outputs (particularly laboratory or experiment-based research). If the objective is to enhance research output, the funding duration must be adequate. For instance, the Marie Curie evaluation found that for the life sciences, the environment, geosciences and physics stays of more than two years were preferred, for chemistry, engineering, mathematics and IT, stays of one to two years were preferred, while for social sciences, the humanities and economics stays of 6-12 months were preferred.

Immigration

The data and evidence in Chapter 3 suggested that the mobility of highly skilled workers is increasingly temporary, with HRST engaging in circular and return migration in response to both opportunities and personal commitments. Shorter (and potentially repeated) working periods abroad may circumvent some of the obstacles that currently deter mobility. Removing barriers to short-term and circular mobility would support knowledge flows associated with brain circulation, enhance network building, and potentially stimulate better linkages with the diaspora. At a basic level, freer short-term mobility may also more effectively balance supply and demand for skilled researchers, scientists and engineers among countries.

Recognition of qualifications

A number of countries participating in the OECD survey indicated that they have an institution charged with assessing and providing information on foreign qualifications. This is a useful complement to recognition processes at the institutional-level (*e.g.* universities, companies) and a way for governments potentially to add value by reducing information asymmetry.

The diaspora

As noted in Chapter 4, very few countries have a strategy for maintaining contact with their skilled diaspora. Governments might explore ways to facilitate networks and contact between mobile researchers and home-based institutions and colleagues.

General

In formulating policy approaches, it is important to recognise the heterogeneity of researchers and the limits this imposes on any policy initiative. For example, Kulonpalo's (2007) study of Finnish academic mobility found that Finnish researchers are a highly heterogeneous group, with no significant mobility patterns and increasingly diverse career trajectories. Among Finnish researchers there are large and obvious differences in scientific disciplines and their working methods, researchers' institutional positions, and structural differences in employing organisations, individual career trajectories and prospects. The study suggested that this diversity warranted more flexible and responsive funding instruments and services that recognise researchers' individual needs. The discussion earlier also pointed out that researchers' motivations differ, with the evidence suggesting that some professions are more attracted by salary while others are more attracted by the nature of the work and the research environment.

At the same time, policy makers must be cautious to weigh flexibility against the risk of losing sight of the programme's original objectives. There is also the question of whether governments can ever have enough information to meet the individual needs of researchers efficiently and effectively. As more initiatives are offered, administrative costs and the potential for confusion in the target population rise. The right balance is a matter of judgement for each government.

Policy coherence

Successfully reaching policy goals requires some coherence across policy areas. For example, if a firm is to innovate successfully, the system in which it operates should facilitate innovation. It is the total of the interfaces with government agencies and policies that affects innovative capacity, and it is the net effect of diverse (and sometimes disparate) policy actions that constitutes a government's actual "innovation policy" (OECD, 2005a, p. 23). When government objectives and the impacts of policy actions on different areas of society are examined in terms of policy coherence, inconsistencies are revealed and governments are challenged to minimise them.

For mobility, the first task is to ensure the co-ordination and coherence of various mobility policies, for example by the formulation of a mobility strategy. But mobility policies should also fit within the broader policy environment for innovation. The evidence shows that additional funding is not the only attraction for mobile researchers (including those thinking of returning home), as a strong research environment and supportive infrastructure also affect mobility decisions. In addition, knowledge flows

and knowledge spillovers from mobile HRST are more likely to be absorbed if the environment is conducive., An educated, skilled populace, a labour market that allows people to use their skills to their maximum productivity, and a strong science base are an important part of this. Mobility policies should also consider some of the government's wider goals, such as development and aid. This section looks at the environment for innovation, the links between mobility and development and some of the challenges raised by coherence.

The environment for innovation

HRST mobility policies and the broader policy environment for innovation need to be complementary. Mobile researchers clearly often look for more than simply higher wages when they move across borders – they also want quality research infrastructure, a stimulating research environment and opportunities to explore new areas. In addition, when governments seek to improve innovation outcomes, it is not sufficient to increase the number of a country's skilled HRST. Skilled people must also operate in a system that enables them to use, create and disseminate knowledge. The OECD's 2006 *Going for Growth* highlighted a range of policy areas that influence innovation outcomes, broadly grouped under "framework policies" and "R&D-specific policies" (Box 5.3) which aim to address various market failures in innovation activity.

Box 5.3. **Encouraging innovation – policy levers**

Innovation effort and performance are influenced by a wide spectrum of policies. These can be broadly grouped into two categories: framework policies, those that may have been put in place for other reasons but have an important impact on innovation; and R&D-specific policies, those policies designed to strengthen innovation outcomes. Taken together, combinations of these policies can help or hinder a country's efforts to improve their innovation performance.

Framework policies include:

- **Education policies:** Education is fundamental for the conception and implementation of innovation. The ability to adapt to new technology begins with a compulsory school system that provides students with strong skills in core fields, including science and mathematics. An education system that performs effectively and is broadly accessible at the tertiary level is also important to facilitate the adoption and widespread diffusion of innovation.

Box 5.3. **Encouraging innovation – policy levers** *(cont.)*

- **Financial market policies:** A well-developed financial system helps foster investment by reducing the cost of finance from sources external to the firm. The ability for entrepreneurial individuals to turn new ideas into new products, often by setting up a new company, creates an important role for the market for high-risk capital (in particular, venture capital and less formal sources of finance such as business angels' funds). Policy determinants that influence the supply of and demand for venture capital include: taxation of capital income and capital gains; portfolio restrictions; regulations on cross-border mergers and acquisitions; and bankruptcy procedures.
- **Policies affecting product market competition and intellectual property rights:** The right policy environment for innovative activity is one that gives adequate rewards to innovation while ensuring competitive pressures that encourage firms to create, implement and diffuse innovations. The balance is sometimes difficult to strike – strong competition encourages companies to innovate to stay ahead of competitors, but market power over commercially interesting inventions may stimulate innovation activity by facilitating cost recovery of related expenses. Innovation processes and the role of intellectual property rights in protecting competitive advantage also vary considerably across industry sectors and types of invention. Overall, strict competition-restraining regulation significantly reduces business R&D intensity.
- **Openness and regulations on foreign direct investment:** Greater openness can lead to increased absorption of knowledge through many channels – the importation of goods and services, inward or outward direct investment, international mobility of workers, and collaborative research and innovation, all of which can be affected by policies.
- **Labour market regulation and institutions:** The influence of labour market regulation on the incentives to innovate varies according to the type of industry and wage bargaining systems in place. For most industries, not least in services, full exploitation of cost-reducing innovations will often require staff reduction or changes in the skill mix in the workplace. Stringent job protection raises the costs of such changes, reducing the profitability of new innovations.

Innovation-specific policies include:

- **Public research:** Basic scientific and engineering research is a major source of technical progress, and research undertaken by government and non-profit organisations may play an important role in preserving the "public good" nature of major scientific advances as well as in stimulating private-sector R&D. The effectiveness of public R&D in fostering private R&D and

Box 5.3. **Encouraging innovation – policy levers** *(cont.)*

overall innovation performance depends on a number of factors, including the strength of industry-science linkages and the governance of public research organisations. Strong links between industry and public research organisations are essential to improve the match between research conducted in the public sector and the needs of industry and to facilitate the transfer of knowledge and technology between them. In terms of governance, the tendency is to shift towards more decentralised systems with funding from various sources, often linked to specific projects.

- **Financial support to private R&D:** All OECD countries provide financial support to stimulate private-sector innovative activity via tax breaks for R&D spending or direct subsidies. Both forms of support involve potential deadweight losses (that is, the activity would have taken place even without public support), so that policies must be carefully designed. Different countries use different mixes of these policies, owing to their different perceptions of the types of failures to be addressed (financial, risk, etc.), as well as different industry and institutional structures.

Source: OECD (2006), Chapter 3.

Research has shown that framework and innovation conditions (that is, a country's capacity to absorb and exploit foreign knowledge, and broad financial and economic conditions) made the largest net contribution to the change in R&D intensity in OECD countries in the 1990s (OECD, 2006, p. 75). This reflects in particular the relatively strong influence of the capacity to absorb foreign knowledge, which largely depends on domestic innovation capabilities. Changes in product market regulations and/or the strength of intellectual property rights had a positive influence on R&D in all countries. The contribution of public R&D funding was generally smaller, in part because levels of public funding did not change in many countries over the period, as policy action focused more on the effectiveness of funding.

Development policies

Improving policy coherence between policies for the mobility of HRST and development policies implies considering the consequences of mobility for development in sending countries that are the target of development and aid policies. Linking policy design and implementation in these areas aims to better achieve the goals of both mobility and development and to contribute to more effective management of migration. It is a two-sided process, with

efforts also required by the developing country (for example, pursuing appropriate policies for stimulating economic and employment growth).

Ensuring the coherence of HRST migration and development co-operation policies and finding synergies and complementarities that will work nationally and to the benefit of migrants and their sending countries can help HRST mobility benefit all participating countries. Dayton-Johnson *et al.* (2007, p. 65) note that migration can have a number of positive effects on the development of sending countries, via reductions in unemployment, expansion of development through remittances, improvements in knowledge and skills, and introduction of new technology. At the same time, however, it can affect equality, family life and social relations, and provision of social services.

Some steps to manage better the flows of highly skilled migrants from developing countries and to limit negative impacts on these countries were proposed in the OECD's recent *Policy Coherence for Development* (2007). These include: closer monitoring of migration, with better collection of data, statistical capacity building and more effective harmonisation and data sharing across countries; general guidelines on the recruitment of workers such as health-care workers; and partnership arrangements that link recruitment with capacity building and replenishment in the countries of origin (p. 124). Similar ideas were also proposed by Dayton-Johnson *et al.* (2007) aimed particularly at the European Union (see Box 5.4).

In designing mobility policies that are effective for both developed and developing countries, Hart (2006) warns against making major and irreversible policy commitments, given the "error bars" (or uncertainty surrounding the

Box 5.4. **Migration and development – some policy proposals for Europe**

Dayton-Johnson *et al.* (2007) comment that joint consideration of migration and development co-operation policies can form the basis of genuine migration and development partnerships between sending and receiving countries (and transit countries, where appropriate). Aimed at EU member countries, the report recommends the following:

- Innovative "circular migration" schemes should manage migration flows more effectively without crippling social services in sending countries, for example if receiving countries commit to helping sending countries upgrade and modernise social service delivery systems (*e.g.* education and health). Measures that would help ensure appropriate training of personnel, staff deployment and replenishment for maintaining social service delivery at the desired level could also be included.

Box 5.4. **Migration and development – some policy proposals for Europe** *(cont.)*

- EU member states should continue to develop guidelines for the recruitment of highly skilled workers (*e.g.* health workers) from developing countries, with visibility and peer pressure created by non-binding guidelines helping to restrain movements or more flexibly link circular mobility to training resources.
- Lowering the costs of financial transfers through formal channels and expanding financial services to poor rural communities (where many migrants' families live).
- Encouraging sending countries, through partnership arrangements, to design human resource policies that take migration into consideration, for example, by investing in service delivery systems, personnel training, working conditions and transport and communication infrastructure.
- Establishing inter-ministerial initiatives to promote co-ordination of development and migration policies (one example is Sweden's 2003 Government Bill, which commits various ministries to greater policy coherence in measures that affect development, with annual reporting to Parliament).
- Crafting trade policy with attention to its impact on labour mobility, in particular, recognising that being able to export products that make intensive use of low-skilled labour is a critical strategy for accelerated growth in developing countries.
- Recognising the nature of insecurity and the relationship between insecurity and mobility, EU policies and programmes could explicitly aim to address the various sources of insecurity (*e.g.* inability to access strategic assets, access to food and water, failed institutional set-ups) that often cause people to emigrate and which hamper development.

Based on the positive impact of migrant organisations and networks on all facets of the migration experience – from helping to recruit qualified labour in home countries, to easing integration, to spurring economic growth in both home and host economies – the report also recommends that EU member states:

- Provide substantial funding to support migrant organisations and networks, using independent mechanisms for the dispersal of funds to ensure transparent and impartial allocation of funding.
- Incorporate migrant organisations into the policy-making process.
- Deepen co-development initiatives that work with migrant organisations to implement development co-operation policy, thereby tapping into migrants' superior information and knowledge about economic, social and other conditions in the home countries.

Source: Dayton-Johnson *et al.* (2007).

data) and the dynamic nature of migration and its associated knowledge spillovers. Nevertheless, Hart advocates seizing the opportunity to expand the mutual gains that might be made through highly skilled migration, first by abandoning zero-sum terminology for conceptualising highly skilled migration and then taking steps to strengthen the capacity of source countries to absorb knowledge and extract benefits from it and nurturing knowledge spillovers from receiving countries to sending countries. His policy recommendations include: stronger educational systems in source countries to assist absorptive capacity; helping source countries to capitalise on supply-chain relationships and foreign direct investment, rather than simply to supply unskilled cheap labour; removing barriers that inhibit communication and travel for expatriates; and subsidisation of the organisational infrastructure of highly skilled diasporas and incentives for them to create educational, scientific and commercial links with partners in the source countries.

Progress towards policy coherence for development is aided by stronger institutional capacities in OECD countries. While at a country level, OECD political systems and structures vary widely, some general principles can help to ensure better coherence:

- Ensuring high-level political commitment and leadership in promoting the development agenda and mobilising support for greater coherence.
- Building capacity in the policy-making process, so as to provide evidence-based, timely analysis on how particular policy choices (potentially) affect developing countries and populations, to promote ownership of the issues across government, and to effectively negotiate policy options.
- Identifying specific institutional challenges faced in different policy areas and making progress to achieve some concrete results (such as in trade, investment and agriculture).
- Building capacity to assess the results of policy coherence efforts to build the case for policy changes (OECD, 2005b, pp. 152-158).

Answers to the OECD Questionnaire on the International Mobility of Researchers showed that countries are making progress in pursuing coherence between mobility and development and aid policies. A number of countries have mobility policies especially designed with development goals in mind and target particular countries and subject areas that are relevant to development.

Challenges to coherence

Achieving policy coherence is not without difficulties. As noted by the OECD (2005a, p. 33), governments cannot be viewed as single (rational) actors that pursue clear objectives with full information and clear and consistent

preferences. There are in-built contradictions and tensions that challenge the quest for coherence, for example:

- Individual policy areas have their own rationales and imperatives, based on the policy community's preferences, ideologies, perspectives and educational backgrounds.
- Short-term outlooks, based on budgetary cycle requirements, can undermine efforts for more strategic, long-term policy making.
- As policy areas attempt to meet multiple goals, they may lose some effectiveness.
- The trend towards multiple agencies, decentralisation and devolution can hinder co-ordination.
- Competition for status and scarce resources, and personal ambitions on the part of policy makers, may lead to rivalry, turf wars and loss of coherence.
- External pressures and priorities may increase complexity and make coherence more difficult.

Working through these tensions requires governments to balance the imperatives of different policy areas, create and communicate a clear goal or vision, encourage networking and collaboration across ministries, develop and implement action plans with monitoring and reporting systems, and incorporate evaluation and learning into the policy making process (OECD, 2005a, pp. 68-69).

Summary

A key first step in policy design is to identify a rationale for intervention and to establish clear objectives. For mobility, the rationale may centre on potential positive externalities from knowledge spillovers and issues of information asymmetry. However, countries will differ depending on their economic and social context and overall goals. The obstacles to mobility that are cited by policy makers and academics include legal and administrative barriers, lack of funding, personal issues and language, among other things. The question is which of these obstacles stem from market failures that government is able to influence through policy.

Few policies have been evaluated, so it is difficult to point to any best practices. However, some lessons can be drawn from evaluation material, including the importance of setting appropriate funding levels and programme durations for the target population (according to desired skill level and field of work). Some interesting questions emerged regarding personal objectives versus programme objectives, in particular, whether the long-term goals of programmes will be achieved if personal objectives diverge from those of the programme. The evaluation material showed the importance of good

data collection, planned from the outset, to enable an assessment of a programme's efficiency and effectiveness.

Given the differences across countries, it is not possible to identify a "recipe" for what governments should do more of, what they should do less of, and what should stay the same. One avenue that may hold promise, however, is removing barriers to short-term and circular mobility. Shorter (but potentially repeated) periods abroad may circumvent some of the obstacles that currently hinder mobility, and would also support knowledge flows associated with brain circulation and the diaspora.

Finally, policy coherence is important – not only within mobility policies but also to ensure that the wider environment for innovation and scientific endeavour is sound and that domestic policies support the domestic supply of HRST and fit with other government policy priorities. Coherence holds challenges, but clear goals and a good understanding of policy impacts can help policy makers progress in this area.

Note

1. This discussion draws on Australian Government (2007).

References

Australian Government (2007), *Best Practice Regulation Handbook*, Canberra.

Avveduto, S. (2001), "International Mobility of PhDs", in OECD (2001), *Innovative People: Mobility of Skilled Personnel in National Innovation Systems*, OECD, Paris.

Dayton-Johnson, J., L. Katseli, G. Maniatis, R. Münz and D. Papademetriou (2007), *Gaining from Migration: Towards a new mobility system*, OECD Development Centre, Paris.

European Commission (2001), *High-Level Expert Group on Improving Mobility of Researchers: Final Report*, Directorate General Research, 4 April.

Hart, D. (2006), "From Brain Drain to Mutual Gain: Sharing the benefits of high-skill migration", *Issues in Science and Technology*, Fall.

House of Commons (2007), *International Policies and Activities of the Research Councils*, House of Commons Science and Technology Committee, Ninth Report of Session 2006-07, HC 472-I, United Kingdom.

Kulonpalo, J. (2007), *Academic Finns Abroad – Challenges of International Mobility and the Research Career*, Academy of Finland Publication 7/07, Helsinki.

Nerdrum, L. and B. Sarpebakken (2006), "Mobility of foreign researchers in Norway:, *Science and Public Policy*, Vol. 33(3), April, pp. 217-229.

OECD (2005a), *Governance of Innovation Systems: Volume 1: Synthesis Report*, OECD, Paris.

OECD (2005b), *Policy Coherence for Development: Promoting Institutional Good Practice*, OECD, Paris.

OECD (2006), *Economic Policy Reforms: Going for Growth 2006*, OECD, Paris.

OECD (2007), *Policy Coherence for Development: Migration and Developing Countries*, OECD, Paris.

OECD (2008), "International Mobility of Human Resources in Science and Technology: Policy Evaluation", OECD internal working document, 20 March, Paris.

Sussex Centre for Migration Research (University of Sussex) and Centre for Applied Population Research (University of Dundee) (2004), *International student mobility*, Issues paper July 2004/30, Report commissioned by the Higher Education Funding Council for England (HEFCE), Scottish Higher Education Funding Council (SHEFC), Higher Education Funding Council for Wales (HEFCW), Department for Employment and Learning Northern Ireland (DEL), Department for Education and Skills (DfES), UK Socrates Erasmus Council, Association of UK Higher Education European Officers (HEURO), British Universities Transatlantic Exchange Association (BUTEX) and the British Council, United Kingdom, *www.hefce.ac.uk/pubs/hefce/2004/04_30/*.

Table of Contents

List of Boxes

List of Tables

List of Figures