Skilled immigration and strategically important skills in the UK economy

Anitha George, Mumtaz Lalani, Geoff Mason,
Heather Rolfe and Chiara Rosazza Bondibene

National Institute of Economic and Social Research

Final report to the Migration Advisory Committee (MAC)

7 February 2012

Acknowledgements

Members of the Migration Advisory Committee (MAC) and its secretariat met and corresponded with the research team at the National Institute of Economic and Social Research in order to develop and steer this research project. However, the robustness of the analysis is the responsibility of the authors, and the findings and views presented in this report do not necessarily reflect those of the MAC.

We would like to thank the MAC and secretariat for their guidance and help at all stages of the research and, in particular, Daniel Pease who managed the project at MAC. We would also like to thank Jonathan Portes and other NIESR colleagues for their contribution to the research.

The research included interviews with 12 anonymous employers and with stakeholders, who are listed in Table 6.2. We are grateful to all the individuals involved for the time and effort they gave to the research. We would also like to thank staff members at the Virtual Microdata Laboratory (VML), Office of National Statistics, for assistance in using the Business Structure Database and Community Innovation Survey. Responsibility for any errors and for the interpretation of findings is ours alone.

Contents

Executive summary

1. In the UK, as in many other countries, skilled migrants often make positive contributions to innovation and productivity performance. Therefore, whenever restrictions on immigration are contemplated, it is important to assess the potential economic consequences of such restrictions. In this report we focus in particular on how UK employers meet their needs for 'strategically important' skills and the role of inward migration from outside the EEA in this process.

2. Following a survey of relevant statistics and theoretical and empirical literature, we present new evidence from qualitative research based on 12 employer case studies in the aerospace and financial services industries and interviews with stakeholder organisations such as the Confederation of British Industry (CBI), the British Chambers of Commerce (BCC) and UK Trade and Investment (UKTI).

3. The principal aims of the research were to identify skills that are of strategic importance to the UK economy; to determine how strategic skill needs can best be met, including through inward migration; and the implications of our findings for policy-makers who are considering placing new restrictions on immigration.

4. 'Strategically important' skills are defined here as skills that contribute disproportionately to key economic objectives of the government such as productivity growth; high levels of innovation (for example in low-carbon energy technologies); the expansion of industries where the UK has a competitive (or comparative) advantage; the diffusion and effective utilisation of 'enabling technologies' such as information and communication technologies which are central to economic growth in a wide range of sectors; and increased numbers of rapidly-growing firms.

5. Using productivity, innovation and firm growth criteria, we identify the following sectors as key users of strategically important skills: oil and gas extraction; chemicals and pharmaceuticals; telecommunications services;

computer services; aero**s**pace manufacturing; architectural and engineering services; and computer, electronic and optical engineering.

6. These sectors are conspicuous for employing above average shares of university graduates and people classified to professional occupations. Statistical analysis shows that non-EEA migrants entering employment in strategically important sectors in the UK contribute disproportionately to the already high levels of skilled employees in those sectors and that most such migrants are brought into the UK as internal transfers within multinational firms operating in these sectors.

7. In seeking to evaluate the economic contribution made by non-EEA migrants in sectors where strategically important skills are vital, a central question is whether skilled migrants and skilled resident workers within the UK are readily substitutable for each other or whether the skills of migrants tend to complement those of residents, with positive implications for productivity and innovation performance.

8. Our review of research evidence on the links between high-skilled migrants and measures of economic performance, the economic value of cultural diversity and the rationales for deployment of high-skilled migrants by multinational employers suggests that many high-skilled migrants do indeed have distinctively different skills from those of resident workers. For example, high-skilled migrants often possess language skills and knowledge of foreign markets and cultures which are rarely found among high-skilled residents and which both help to speed up cross-border knowledge flows and make effective use of that knowledge. Thus, rather than migrants substituting for home-grown talent, there is evidence of complementarities between skilled migrants and skilled resident workers.

9. That said, even at relatively high skill levels relevant to strategically important sectors, the skills and knowledge possessed by skilled migrants and skilled residents may sometimes be quite similar and the two groups may therefore be substitutable for each other to some degree. In these circumstances immigration may reduce the incentives for individual residents to invest in high-level skills and for employers to develop high-level skills among resident

workers. However, our case study interviews with employers in aerospace manufacturing and in financial services suggest that, so far as the development of strategically important skills is concerned, recruitment of skilled migrants does not preclude substantial investments in the recruitment and training of resident workers. Rather, many firms in these sectors combine heavy expenditure on training with reliance on skilled migrants for skills that are hard to find or develop in the UK.

10. While the concept of strategically important skills was understood by case study employers, the term was not one which they used to describe skills. The skills described by employers as those needed to meet business objectives included those of strategic importance to the organisation, but they felt the term applied best to staff who contribute most to revenues and profits and who enable expansion. These included employees with advanced knowledge and technical and niche skills. Employers in banking sometimes referred to employees with language skills, technical skills and cultural knowledge and understanding of markets as of strategic importance.

11. Employers acquired strategically important skills through a combination of training and development of existing staff and recruitment of individuals with specialist high level skills. Employers had experienced shortages of strategically important skills, principally because they are in short supply, rather than because of retention problems or because of poor strategic planning. A particular problem was identified in the shortage of high calibre graduates in the UK in technical subjects, for example, engineering and maths.

12. Consequences of skills shortages included reduced productivity, delays to contracts and the need to sub-contract work which could be carried out in-house. Companies were taking a number of measures to address skills shortages, including training of graduates, school-leavers and other entrants, up-skilling existing staff and working with schools and universities to improve the supply of skills in the future. However, at the same time they also sought migrants with strategically important skills which were not seen as readily available among UK resident workers.

13. Aerospace employers sometimes drew on non-EEA migrants to fill gaps in specialist or niche skill areas. The banks recruited more regularly from outside of the EEA, not just for those reasons, but also because banking is a global business and need to employ individuals with language skills and in-depth business and cultural understanding of operations in international locations. This was also a key reason for cross-border transfers of staff within multinational corporations.

14. Employers in both case study sectors recruited non-EEA graduates for their knowledge and skills in specialist areas, for example engineering or maths. This is in line with existing research evidence that skilled migrants are more likely than skilled resident workers to specialise in jobs requiring analytical and quantitative skills. Migrants of this kind were not substitutes for UK-resident workers but enabled organisations to build teams of experts with complementary skills. In addition, non-EEA recruitment and intra-company transfers were often used to help existing overseas businesses to set up within the UK, using knowledge and expertise from outside of the UK. This was seen to create jobs in the UK, develop skills and to boost economic activity and spending.

15. In addition, employers reported other benefits from non-EEA recruitment, principally in improving workforce diversity. Migrants brought different perspectives and experiences to the workplace, as well as different languages and areas of technical and cultural knowledge. These skills are essential for global business operations. Our review of research evidence suggests that the economic value of cultural diversity bestowed by migrants may be substantial.

16. Employers emphasised that recruiting from outside of the EEA was not an easy option. They referred to rules surrounding non-EEA recruitment, the length and complexity of application forms and costs involved. They accepted these costs and procedures because they considered they had little option than to recruit and transfer staff from outside of the EEA.

17. Although there may be scope to reduce levels of non-EEA recruitment through improvements to training and education, employers argued that this

is not necessarily a straightforward process and requires Government investment and support. Furthermore it requires long term and consistent investment in training. Employers already invested relatively heavily in training, as was confirmed by our analysis (based on Labour Force Survey data) of the incidence of training in sectors identified as key users of strategically important skills. Several case study firms also worked closely with schools and universities to stimulate interest in their sectors among young people. They felt that, to meet skills gaps, more public investment is required in training, particularly through funding of provision by regional colleges who feed skills into sectors such as engineering.

18. Improvements in Higher Education (HE) were seen as important to meeting shortages of strategically important skills. Suggested changes included closer tailoring of courses to strategic skill needs and incentives to students to take subjects in areas of strategic importance to the economy, for example, in engineering. This could help address shortages of graduates in those subject areas. Closer working between employers and education, particularly HE, to help meet skills shortages was also suggested. But these and other training-related measures were seen as taking some time to put in place and to produce skills at the advanced levels required by employers.

19. Even if current skill shortages were to be resolved, employers felt that some degree of immigration would still be necessary and beneficial because of the additional value that migrants bring with them. This includes their international experience, language skills and knowledge of business operations and culture in particular locations. Therefore, non-EEA migrants are valued not only for their technical skills but for their additions to the diverse mix of backgrounds and skills which organisations value. Some employers, particularly in the banking sector, wanted these employees among their graduate cohort and as part of their permanent workforce. Therefore, some degree of non-EEA recruitment was seen as inevitable and desirable.

20. Employers had a range of concerns about further restrictions on inward migration of skilled workers. These included possible further reductions in tier 2 allocations and limits on intra-company transfers, the closure of the Post-

Study Work Route and new restrictions on settlement which could inhibit recruitment and retention of key staff. In addition to hampering recruitment of high-quality graduates, such restrictions could also contribute to loss of contracts, reductions in knowledge and skills transfer and to relocation of some business activities outside the UK.

21. Stakeholder organisations had a number of concerns about current and future migration policy, including the effects on business of uncertainty over future allocations of visas, possible reciprocal action from other governments and the potential discouragement of businesses wishing to set up or expand in the UK.

Section 1. Introduction

There is a very significant tension at the heart of UK immigration policy. Basic economic intuition, as well as considerable empirical evidence, suggests that skilled immigrants will benefit the economy. For example, Huber et al (2010) find that immigrants - particularly highly-skilled immigrants - play a positive role in productivity developments in industries which are classified as 'skill intensive'. In many innovation-intensive sectors, cross-border flows of people - and hence of ideas and knowledge - make important contributions to innovation (Kerr and Lincoln, 2010; Hunt and Gauthier-Loiselle, 2010) and thereby contribute to growth in output and productivity. However, as previous reports commissioned by the Migration Advisory Committee (MAC) have shown, inward flows of skilled migrants may under certain conditions reduce the pressure on host-country employers to upgrade the skills of the resident workforce (MAC, 2010a).

In the light of these issues, the MAC commissioned new research by NIESR on the potential effects of new restrictions on skilled immigration on the UK's ability to meet 'strategically important' skill needs. In this report we first draw on relevant statistics and theoretical and empirical literature to survey existing evidence which sheds light on this topic. We then go on to present new evidence from qualitative research based on employer case studies and interviews with stakeholder organisations.

This report is ordered as follows. Section 2 discusses the criteria used to define 'strategically important' skills and sectors. Section 3 assesses statistics on, among other things, the qualifications held by immigrants from the EEA (European Economic Area) and from non-EEA countries and the different routes available to non-EEA immigrants to enter the UK. Section 4 surveys theoretical arguments and empirical evidence relating to the contributions made by skilled immigrants to economic performance in the UK and other advanced industrial countries. Section 5 examines available evidence on the potential trade-off between skilled immigration and upskilling of resident workers and compares the incidence of employer-provided training in sectors strategically important with that in other sectors. Sections 6-12 then present the findings of new qualitative research, based on interviews with 12 employers and six stakeholder organisations. Section 6 describes the organisations which took part in the research. Section 7 examines the business strategies and skill needs of the case study employers, including perceptions of the applicability of the term 'strategically important'. Sections 8-9 explore how strategically important skills needs are met and the extent to which shortages of such skills are experienced by case study firms. Section 10 focuses more directly on the role of migration in meeting these skill needs, including the role of work permits and intra-company transfers. Section 11

assesses case study evidence on the extent to which non-EEA migration served as a substitute for training of UK resident workers. Section 12 looks to the future, at employers' perspectives on future skill needs and recruitment. Section 13 focuses on employers' and stakeholders' perspectives on policy in relation to migration and skill needs. Section 14 summarises our main findings.

Section 2. Defining strategically important skills and sectors

2.1 Conceptual issues

In order to define strategically important skills, we need a conceptual framework for mapping specific skills onto economic outcomes, so as to identify which skills are 'strategic'. Since skills in general are hard to define, this is far from being a straightforward exercise. Adam Smith noted that 'capital' in a society included 'the acquired and useful abilities of all the inhabitants or members of the society'. [1] In the tradition deriving from Becker (1964), investment in the acquisition of skills is seen as generating 'human capital'. Common alternative definitions of skills focus on the particular tasks which skills (acquired through training or experience) enable individuals to perform.

In the general economic literature – both macroeconomic and microeconomic – skill or human capital is treated as a homogeneous concept or characteristic for the purpose of a production function or a wage equation. For example, growth models (building on the canonical Solow model) often have single indicators of human capital as a production input. Since skills are intangible assets, and thus difficult to measure, various proxy measures of skill are deployed, ranging from input measures (such as years of schooling) to output measures (such as certified qualifications). This is exemplified by wage equations which typically have education and experience as independent variables intended to reflect different aspects of human capital

Although output measures of skill such as educational attainments are conceptually preferable to input measures (which may signify little more than attendance in formal education classes), qualification-based measures cannot take account of uncertified skills gained through work experience and 'learning-by-doing'. Thus, it is increasingly common to combine data on formal qualifications with relative earnings data in an effort to develop skill measures which reflect individual productivities based on possession of uncertified skills as well as certified skills. [2]

Proxy measures of skill such as formal qualifications provide a basis for distinguishing between different grades of skill, some of which may be classified as 'high-level' or 'intermediate-level' skills relative to others. However, in seeking to establish a basis for regarding some skills (and

[1] An Inquiry into the Nature And Causes of the Wealth of Nations, Adam Smith, 1776.

[2] This approach rests on the assumption of perfectly competitive markets in which a firm will hire an additional hour of labour up to the point where that person's marginal productivity equals his/her marginal cost. Under this assumption, a measure of quality-adjusted total labour input can be obtained by weighting each different type of labour input (as signified by qualification levels) by its wage rate relative to low-skilled labour or the share that each type of labour occupies in total labour compensation (see, for example, Jorgenson et al, 2005).

occupations) as more 'strategically important' than others, we need to draw on alternative literatures which focus, first, on the tasks which skills enable workers in different occupations to perform; and second, on the ways in which different types of skill may be combined with each other and with other production inputs.

A recent literature, building on Roy's self-selection model into occupations (1951), attempts to link the tasks workers are required to perform in given jobs with the skills required to carry out those tasks – for example, Autor, Levy and Murman (2003) and Autor and Handel (2009). In the more sophisticated of these models (for example, Yamaguchi, 2010), a worker can be viewed as a bundle of heterogeneous skills (defined as the ability to perform a task) while an occupation can be viewed as a bundle of heterogeneous tasks; in both cases the level of skill/task complexity can be regarded as a continuous variable. This is a useful and appealing conceptual framework for thinking about skills and occupations.

However, in practical terms, applying it is hindered by data and modelling issues; these papers tend to classify skills very broadly – for example 'cognitive' and 'manual'; again this is of limited use for our purposes. Moreover, this literature is essentially descriptive in that it is devoted to analysing how different workers are allocated to different occupations, depending on the workers' skills and the requirements of the occupations, and relating this to wage rates; this does not provide much guide as to the relative importance of different skills from a policy perspective, except as revealed in wage rates.

A more helpful approach in the literature is that which looks at the particular role of different types and levels of skill in the production function. Here, Kremer's influential paper 'The O-Ring Theory of Economic Development' is particularly useful. Although the basic model treats 'skill' as homogeneous, the key point is that workers are imperfect substitutes and the overall output of the economy (or specific sectors) depends on how different workers are combined with each other, with low and high output equilibria possible. In this context, there may be positive externalities to the employment of high-skilled workers if they help raise the performance of lower-skilled co-workers. At the same time, the model can be extended to show how 'bottlenecks' can be created; if there are not enough workers with a particular type of skill, then other workers with different skills will not be able to use their own skills efficiently.

Combining these approaches, this suggests a conceptual framework within which we need to consider *both* the (multidimensional) attributes of individual workers ('skills') and how they are allocated and combined with other

production inputs within sectors and occupations. It suggests a perspective in which 'strategic' skills can be thought of in three distinct ways:

- first, individual (broad) skills that are required at a high level across a range of (important or strategic) occupations and sectors so that, if the workforce as a whole lacked such skills, the economy as a whole would suffer

- second, bundles of skills that are essential for important occupations in sectors regarded as strategic, so that even if some workers possess these skills in isolation, there are not enough workers with the requisite bundles of skills

- third, specific skills that, if lacked by firms in strategic sectors, would impede those firms' operations and prevent them from meeting their own strategic objectives

Thus, in order to identify strategically important skills, we need to identify the specific sectors and occupations that are of interest from a strategic perspective. Something is generally defined to be 'strategic' if it is important or essential to achieve a given objective. This suggests that we should define sectors and occupations – and the main skills associated with them -- as strategic if it can be shown that they contribute disproportionately to the key economic objectives of the government.

However, these objectives are usually expressed at a high level of generality. For example, launching the present government's Growth Review, the Treasury and BIS stated that:

> 'The overriding priority of this Government is to return the UK economy to balanced, sustainable growth…. The Government's vision is to create a dynamic economy, where it is easy to start up and grow a business and where every company can reach its potential. This means building a broad-based economy rooted in higher levels of business investment, open and competitive markets and greater exports. It means ensuring that the UK is well-positioned for the transition to a low-carbon economy….'
> (HM Treasury/BIS, 2010, p5) [3]

Similarly, the Prime Minister, outlining the government's growth strategy to the CBI, said:

> 'There are three parts to our strategy. First, using all available policy levers to create the right framework for enterprise and business investment. Second, using our resources to get behind those industries where Britain enjoys competitive advantages.

[3] http://www.hm-treasury.gov.uk/ukecon_growth_index.htm

> Third, using our power and muscle to make it easier for new companies and innovations to flourish and create a new economic dynamism.' [4]

This suggests a focus on skills which are either particularly important to sectors where the UK has a comparative advantage and/or which will help increase the trend growth of productivity through business investment and innovation. The underlying economic intuition – relating directly to the theoretical framework set out above- is that individuals with such skills generate (and do so disproportionately) economic externalities which are likely to contribute to higher economy-wide levels of productivity and, ultimately, living standards.

So in this context we define skills as 'strategically important' if they meet criteria such as:

- Contributing substantially to productivity growth (either directly, because individuals with such skills have high productivity; or indirectly, because they are essential to increasing the productivity of the broader sector or whole economy)
- Contributing substantially to innovation, for example in low-carbon energy technologies
- Are essential to, or facilitate the expansion of, industries where the UK has a competitive (or comparative) advantage, or where there may be bottlenecks in the availability of sufficiently skilled workers.
- Underpinning the diffusion and effective utilisation of 'enabling technologies' such as information and communication technologies which are central to economic growth in a wide range of sectors; again, the concept and presence of externalities is key here;
- Facilitating the expansion of 'high-growth firms', which are typically defined as firms with average annual growth in employment greater than 20% over a three year period.[5] Such firms account for a very large share of overall employment growth (NESTA, 2009).

Numerous government publications in recent years have asserted the strategic importance of sectors and, to a lesser extent, specific skills. However, there is generally relatively little in the way of analytic support for such judgements. For example, the objectives of the UK Innovation Investment Fund, established in 2009, are to 'drive economic growth and

[4] http://www.number10.gov.uk/news/speeches-and-transcripts/2010/10/creating-a-new-economic-dynamism-56115
[5] Eurostat-OECD Manual on Business Demography Statistics, 2007, p61.

create jobs by investing in growing technology-based businesses, including start-ups and spin-outs, in strategically important UK sectors including digital technologies, life sciences, clean technology and advanced manufacturing' (BIS, 2009). In relation to university disciplines, the Higher Education Funding Council for England (HEFCE) describes science, technology, engineering and mathematics (STEM) as 'strategically important' subject areas.[6]

So while there is a considerable degree of consensus that some sectors are strategically important – for example, life sciences, low carbon energy generation, and advanced manufacturing are almost always mentioned – the analytical foundation for this selection is often unclear.[7] The reason for the exclusion of some sectors is perhaps even less clear – for example the financial sector, which is identified as strategic in some contexts but not others.

It is also worth noting that the publications referenced above were prepared under the previous government, and hence may not reflect the priorities of the current government – although the public pronouncements of Ministers to date suggest a considerable degree of continuity. For example, the Prime Minister in his speech to the CBI (October 2010) singled out 'green technologies', creative industries, financial services, retail, pharmaceuticals and advanced engineering as areas of UK comparative advantage

A more analytical approach is taken by the UK Commission for Employment and Skills in its National Strategic Skills Audit (NSSA) which defines sectors as 'economically significant' by constructing an index from levels and growth rates of productivity and employment. [8] In this report we adopt a similar approach, seeking to identify strategically important sectors by considering a range of performance criteria: productivity, different measures of innovative performance and the incidence of high-growth firms (defined in terms of employment growth). Note that, by agreement with the MAC, this analysis is confined to private sector activities. Thus branches of the public sector which might be regarded as strategically important by some criteria, such as higher education, are not considered for inclusion in this category.

2.2 Identifying sectors and occupations that make greatest use of strategically important skills

Table 2.1 shows estimates of average labour productivity levels analysed at roughly two-digit sector level (derived from the Annual Business Survey, 2008) while Table 2.2 shows how sectors compare on two different measures

[6] http://www.hefce.ac.uk/aboutus/sis/stem.htm
[7] See, for example, New Industry, New Jobs.
[8] Skills for Jobs: Today and Tomorrow: the National Strategic Skills Audit for England and Wales, CES, 2010.

of innovative performance (derived from the Community Innovation Survey, 2009):

- Innovation intensity, defined as innovation-related expenditure as a percentage of total annual sales (an innovation input measure)
- Innovation leadership, defined as either introducing products which are new to each firm's market, or implementing process innovations[9] which are new to each firm's industry, or reporting both types of leadership (a measure of innovation success)

The top 20 sectors in terms of average labour productivity include seven sectors which also rank highly in terms of one or both innovation measures: oil and gas extraction; chemicals and pharmaceuticals; telecommunications services; computer services; aerospace manufacturing; architectural and engineering services; and computer, electronic and optical engineering. Computer services such as programming and consultancy also play a key role in supporting the diffusion and utilisation of information and communication technologies. These seven sectors thus are strong candidates to be regarded as strategically important, according to the criteria set out above.

When we turn to analysis of the incidence of high-growth firms by sector (Table 2.3), it is notable that of the seven sectors which are highly ranked on both productivity and innovation performance, it is only the service sectors among them which had above average shares of high-growth firms during the time period under consideration (2005-08). The manufacturing sectors on this list are lower ranked in terms of the proportion of firms recording very high growth in employment, probably reflecting stronger competitive pressures to economise on the use of labour than exist in many service industries. Taking this factor into account, the data on high growth firms support the designation of all seven sectors we have identified as key users of strategically important skills.

In addition, we also choose to add financial services to the list of strategically important sectors. No information on productivity is available for this sector and it ranks fairly low on both measures of innovation in Table 2.2. However, all branches of financial services are highly ranked in terms of their shares of high-growth firms (Table 2.3) and this sector plays a vital role in channelling credit throughout the economy, helping to shape patterns of specialisation and comparative advantage in the UK as in other advanced industrial countries (Svaleryd and Vlachos, 2005).

[9] Process innovations here refer to significant changes in the way that goods or services are produced or provided

In summary, the sectors which we identify as key users of strategically important skills in subsequent analysis and discussion are as follows:

SIC code (2007)	
6	Oil and gas extraction
20-21	Chemicals and pharmaceuticals
26	Computer, electronic and optical engineering
30.3	Aerospace manufacturing
61	Telecommunications services
62	Computer services
64-66	Financial services
71	Architectural, engineering and related services

For brevity this group of sectors will henceforth be referred to as 'strategically important sectors'. Further analysis based on the Labour Force Survey shows that these sectors differ greatly from other sectors in terms of workforce qualifications and occupational structure. For example, some 40% of all persons employed in strategically important sectors are university graduates compared to 11% in all other activities outside the public sector (Table 2.4). In addition, managerial, professional and associate professional occupations account for almost three quarters (72%) of all persons employed in strategically important sectors compared to 36% in other sectors (Table 2.5). We now go on to assess how strategically important sectors differ from other sectors in terms of employment of foreign-born workers and in the modes of entry to the UK of immigrant workers.

Table 2.1: Average gross value added per employee, total annual sales and total employment, 2008, analysed by sector

(Ordered by average gross value added per employee)

Standard Industrial Classification (Revised 2007)	Description	Average gross value added per employee	Number of enterprises	Total turnover	Total employment - average during the year
		£	Number	£ million	Thousand
B	Mining and quarrying	575857	1,216	63,545	63
21	Pharmaceuticals	192067	375	15,184	45
D	Electricity, gas, steam and air conditioning	190025	477	85,899	121
60	Programming and broadcasting activities	184095	2,077	8,087	21
50	Water transport	174067	1,529	8,049	15
19	Manufacture of coke and refined petroleum products	154600	244	39,685	10
61	Telecommunications	133353	5,677	64,100	215
E	Water supply, sewerage, waste management	108376	5,581	29,184	141
20	Chemicals	84484	2,865	47,054	126
63	Information service activities	79677	7,739	7,574	62
77	Rental and leasing activities	77601	16,469	23,856	158
62	Computer programming, consultancy and related activities	72786	109,890	67,536	541
52	Warehousing and support activities for transportation	69450	10,371	45,550	311
30	Aerospace and other transport equipment	69016	1,769	22,796	123
24	Basic metals	67095	1,583	21,403	84
73	Advertising and market research	65493	16,876	26,083	152
L	Real estate activities	63064	74,978	43,531	419
71	Architectural and engineering activities;	59813	68,749	46,689	449
46	Wholesale trade, except of motor vehicles	58812	108,489	779,546	1,187
69	Legal and accounting services	58592	61,925	43,369	569
29	Manufacture of motor vehicles, trailers	58565	3,319	50,817	177
51	Air transport	57806	980	21,841	93
58	Publishing activities	57645	11,624	21,064	172
26	Computer, electronic and optical products	57367	7,099	21,607	147
F (1)	Construction	56447	292,769	223,322	1,511
33	Repair and installation of machinery and equipment	56202	4,624	15,590	114
70	Activities of head offices; management	54954	116,862	46,156	435
28	Machinery and equipment	52930	10,084	32,393	213
10	Food products	48738	6,491	65,683	378
82	Office administrative, office support and other business support activities	46827	76,409	33,708	358
23	Manufacture of other non-metallic mineral products	45127	4,404	14,566	110
27	Manufacture of electrical equipment	44479	3,287	13,021	96

92	Gambling and betting activities	44194	1,707	64,099	103
79	Travel agency, tour operator and related activities	43802	6,804	35,419	101
17	Paper and paper products	43578	2,629	10,879	64
22	Rubber and plastic products	42831	6,639	21,765	189
74	Other professional, scientific and technical activities	42706	58,787	15,221	180
18	Printing and reproduction of recorded media	42695	16,516	13,555	151
95	Repair of computers and personal house	41645	5,857	2,935	31
25	Manufacture of fabricated metal products,	41588	26,606	34,731	342
32	Other manufacturing	39745	9,384	9,418	94
15	Leather and related products	39429	532	740	7
A (Part)	Agriculture, forestry and fishing	39213	13,416	4,841	47
16	Wood and related products	38405	7,891	8,110	79
31	Furniture manufacturing	37552	6,397	9,194	96
49	Land transport and transport via pipelines	37308	46,931	48,160	584
72	Scientific research and development	35102	3,998	13,006	108
90	Creative, arts and entertainment activities	33440	28,550	7,353	84
13	Textiles	32531	4,255	5,611	64
53	Postal and courier activities	31533	12,295	14,684	272
75	Veterinary activities	30356	3,215	2,476	45
14	Wearing apparel	30111	3,825	3,165	36
78	Employment activities	28081	19,558	36,427	884
96	Other personal service activities	27901	74,104	19,143	355
80	Security and investigation activities	26204	6,373	6,544	181
55	Accommodation	24645	15,726	17,509	389
93	Sports activities and amusement and recreation activities	22003	26,473	14,916	347
47	Retail trade, except of motor vehicles and motorcycles	21454	194,685	314,653	3,098
59	Motion picture, video and television programme production, sound recording and music publishing	18191	14,574	14,189	115
81	Services to buildings and landscape activities	16441	30,284	16,924	558
94	Activities of membership organisations	15097	20,082	8,527	185
56	Food and beverage service activities	14394	120,779	50,562	1,578
91	Libraries, archives, museums and other cultural activities	1020	1,659	1,452	51

Source: ONS, Annual Business Survey

Table 2.2: Innovation intensity and innovation leadership, 2009, analysed by sector
(Ordered by innovation leadership measure)

		Innovation-related expenditure as a percentage of annual sales (average)	*n* =	Percent of firms reporting innovation leadership	*n* =
30, 32, 33	Computer, electronic and optical products	7.7	*306*	41	*360*
73	Research and development	29.8	154	31	180
72	Computer services	8.4	*410*	31	*478*
64.2	Telecommunications	5.1	*92*	28	*114*
24	Chemicals, pharmaceuticals	3.9	*103*	28	*136*
29	Mechanical engineering	2.8	*230*	27	*285*
31	Electrical equipment manufacturing	3.2	*185*	24	*223*
11	Oil and gas extraction	2.1	*27*	23	*30*
25-26, 36-37	Other manufacturing	2.7	*643*	23	*760*
15-16	Food, drink and tobacco manufacturing	1.9	*310*	20	*379*
17-19	Textiles, clothing and leather manufacturing	2.0	*122*	19	*160*
34	Motor vehicles manufacturing	2.6	*202*	18	*238*
20-21	Wood and paper products	1.8	*216*	16	*249*
74.1	Architectural and engineering services	4.5	*480*	16	*579*
35.3	Aerospace manufacturing	3.0	*49*	15	*59*
22	Printing,publishing,recorded media	4.3	*246*	15	*303*
40-41	Electricity, gas and water	2.8	*54*	15	*62*
92	Recreational, cultural and sporting activities	2.5	*119*	13	*149*
27-28	Metals and metal products	2.0	*449*	12	*525*
65-67	Financial services	1.7	*428*	12	*536*
50-52	Retail and wholesale	1.1	*1822*	11	*2162*
70-71, 74.2-74.8	Other business services	2.0	*2906*	10	*3545*
55	Hotels and catering	1.0	*754*	7	*908*
60-63	Transport services	1.2	*1050*	6	*1195*
45	Construction	1.0	*929*	5	*1059*
	TOTAL	2.6	12286	14	14674

Source: UK Innovation Survey, 2009
Note:
Innovation leadership is defined as either introducing products which are new to each firm's market, or implementing process innovations which are new to each firm's industry, or reporting both types of leadership

Table 2.3: Incidence of high-growth firms, 2005-08, analysed by sector

SIC (2003)	Sector	% of firms with average annual growth in employment of 20% or more	*n* =
37	Recycling	10.7	*364*
62	Air transport	10.4	*193*
67	Activities Auxiliary to Financial Intermediation	9.7	*3193*
73	Research and development	9.4	*663*
65	Financial Intermediation, Except Insurance and Pension Funding	8.8	*1086*
66	Insurance and Pension Funding, Except Compulsory Social Security	8.7	*589*
72	Computer and related activities	8.7	*6535*
71	Renting of machinery and equipment without operator and of personal and household goods	7.8	*2266*
63	Supporting and auxiliary transport activities; activities of travel agencies	7.5	*3502*
74	Other business activities, including architectural and engineering services	7.5	*36769*
64	Post and telecommunications	6.8	*1480*
15	Manufacture of food products and beverages	6.8	*2933*
61	Water transport	6.5	*216*
45	Construction	5.9	*19858*
60	Land transport; transport via pipelines	5.8	*6104*
70	Real estate activities	5.7	*7124*
35	Manufacture of other transport equipment	5.6	*649*
51	Wholesale trade, except of motor vehicles and motorcycles	5.3	*19070*
55	Hotels and restaurants	5.3	*25884*
33	Manufacture of medical, precision and optical instruments	5.2	*1627*
30	Manufacture of office machinery and computers	4.7	*276*
52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	4.7	*17685*
31	Manufacture of electrical machinery and apparatus nec	4.5	*1804*
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	4.3	*8603*
25	Manufacture of rubber and plastic products	4.2	*3251*
32	Manufacture of radio, television and communication equipment	4.2	*828*
20	Manufacture of wood and of products of wood	4.2	*1736*
26	Manufacture of other non-metallic mineral products	3.9	*1398*
24	Manufacture of chemicals, chemical products and man-made fibres	3.7	*1451*
34	Manufacture of motor vehicles, trailers and semi-trailers	3.6	*1181*
22	Publishing, printing and reproduction of recorded media	3.3	*4966*
29	Manufacture of machinery and equipment nec	3.3	*4420*
28	Manufacture of fabricated metal products	3.0	*8046*
27	Manufacture of basic metals	3.0	*831*
36	Manufacture of furniture; manufacturing nec	2.9	*3110*
21	Manufacture of pulp, paper and paper products	2.7	*885*
17	Manufacture of textiles	2.7	*1663*
18	Manufacture of wearing apparel; dressing and dyeing of fur	2.5	*1300*
	TOTAL	**5.7**	***204387***

Source: Derived from ONS, Business Structure Database

Table 2.4: Highest qualifications held by persons in employment, 2010 (private sector only, population-weighted estimates)

	Strategically important sectors	Other sectors
	% of persons in employment	
Graduates	40	17
NVQ4 below Bachelor degree level	12	9
NVQ3	22	27
NVQ2	17	24
Other qualifications	5	9
Low or no qualifications	4	14
TOTAL	100	100
Weighted n =	*2764300*	*16747532*
Unweighted n =	*17954*	*111696*

Table 2.5: Major occupation groups of persons in employment, 2010 (private sector only, population-weighted estimates)

	Strategically important sectors	Other sectors
	% of persons in employment	
Managers and senior officials	26	17
Professional occupations	25	7
Associate professional and technical	20	10
Administrative and secretarial	15	9
Skilled trades occupations	4	16
Personal service occupations	0.2	3
Sales and customer service occupation	5	11
Process, plant and machine operatives	3	10
Elementary occupations	2	16
TOTAL	100	100
Weighted n =	2781983	16928926
Unweighted n =	*18071*	*112906*

Source: Labour Force Survey
Note: Sectors classified as strategically important comprise Oil and gas extraction; Chemicals and pharmaceuticals; Computer, electronic and optical engineering; Aerospace manufacturing; Telecommunications services; Computer services; Financial services; and Architectural, engineering and related services.

Section 3. Skilled migration into the UK: statistical overview

Estimates based on the Labour Force Survey suggest that about 8% of all persons in employment in the UK in 2010 had been born in non-EEA countries compared with 5% who had been born in EEA countries (Table 3.1). About four in ten employees born in non-EEA countries had first entered the UK in the ten years since 2000 and 97% of those persons had lived continuously in the UK since their arrival. For non-EEA-born employees who had first entered the UK before 2000, about 91% had lived continuously in the UK since first arriving.

Table 3.1: All persons in employment in the UK, 2010, analysed by country of birth

	% of persons in employment		**Whether lived continuously in UK since first arrival (%)**		
Country of birth:			*Yes*	*No*	*Total*
UK	86.8				
EEA, arrived before 2000	1.9		88	12	100
EEA, arrived 2000-05	1.5		93	7	100
EEA, arrived since 2005	1.5		98	3	100
Non-EEA, arrived before 2000	4.6		91	9	100
Non-EEA, arrived 2000-05	2.5		96	4	100
Non-EEA, arrived since 2005	1.3		98	2	100
TOTAL	100				
Weighted n =	*28510404*				
Unweighted n =	*192304*				

Source: Labour Force Survey

Table 3.2 shows that the distribution of UK- and foreign-born employees in sectors making most use of strategically important skills is much the same as in other sectors of the economy. Since a substantial proportion of non-EEA-born persons are subject to a selective immigration system if they enter the UK for employment purposes, we expect to find that they are better-qualified on average than are UK-born employees and this expectation is borne out in both strategically important sectors and other sectors. Just over half of all non-EEA-born employees in strategically important sectors are university graduates compared to 38% of UK-born employees who are qualified to graduate level. In other sectors 26% of non-EEA-born employees are university graduates compared to 17% of UK-born employees. Another striking contrast between strategically important sectors and other sectors is that in strategically important sectors just as high a proportion of EEA-born employees are graduates as is the case for non-EEA-born employees, even

though EEA-born migrants are not subject to selection procedures before entry. This can be taken as an indicator of the relatively high skill levels sought by employers in strategically important sectors. [10] Similar patterns of difference apply in respect of occupational structure, with similar large proportions (39%) of both EEA-born and non-EEA-born employees in strategically important sectors classified to professional occupations compared to 27% of UK-born employees (Table 3.4).

Table 3.2: Country of birth of persons in employment, 2010 (private sector only, population-weighted estimates)

	Strategically important sectors	**Other sectors**
	% of persons in employment	
UK	85.5	86.5
EEA, arrived before 2000	2.1	1.7
EEA, arrived 2000-05	1.5	1.8
EEA, arrived since 2005	1.2	1.9
Non-EEA, arrived before 2000	4.6	4.6
Non-EEA, arrived 2000-05	3.1	2.2
Non-EEA, arrived since 2005	2.0	1.3
TOTAL	100	100
Weighted n =	*2812998*	*17216109*
Unweighted n =	*18265*	*114823*

Source: Labour Force Survey

[10] See Appendix Table A1 for a more detailed breakdown of qualification levels by birth-country group and date of entry to the UK.

Table 3.3: Highest qualifications held by persons in employment, analysed by country of birth, 2010 (private sector only, population-weighted estimates)

	Strategically important sectors				Other sectors		
Country of birth:	**UK**	**EEA**	**Non-EEA**		**UK**	**EEA**	**Non-EEA**
	% of persons in employment				*% of persons in employment*		
Graduates	38	51	52		17	16	26
NVQ4 below Bachelor degree level	13	6	8		9	6	8
NVQ3	24	10	8		29	13	13
NVQ2	19	4	4		26	8	10
Other qualifications	2	26	25		5	43	29
Low or no qualifications	4	3	2		14	15	16
TOTAL	100	100	100		100	100	100
Weighted n =	*2360771*	*131697*	*271832*		*14483597*	*897459*	*1363130*
Unweighted n =	*15685*	*744*	*1525*		*98130*	*5453*	*8098*

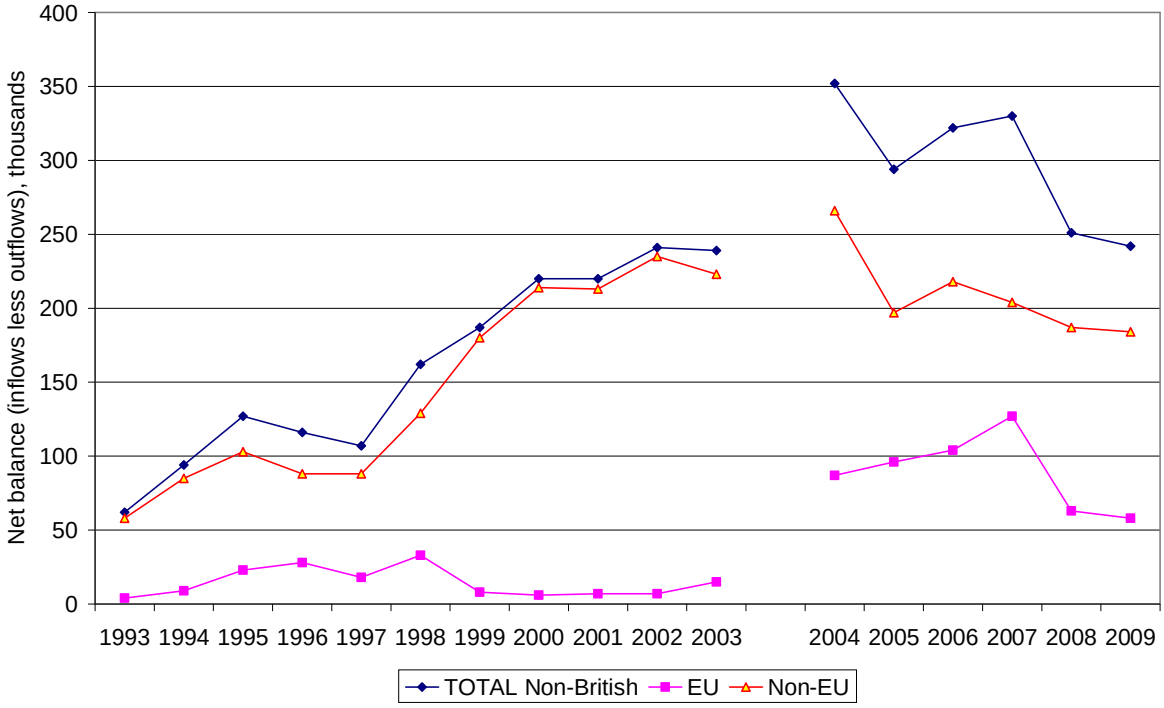
Table 3.4: Major occupation groups of persons in employment, analysed by country of birth (private sector only)

	Strategically important sectors				Other sectors		
Country of birth:	**UK**	**EEA**	**Non-EEA**		**UK**	**EEA**	**Non-EEA**
	% of persons in employment				*% of persons in employment*		
Managers and senior officials	28	22	24		18	12	16
Professional occupations	27	39	39		7	5	9
Associate professional and technical	16	17	17		11	8	11
Administrative and secretarial	13	8	10		10	7	8
Skilled trades occupations	6	2	3		16	15	10
Personal service occupations	0.2	0	0		3	3	3
Sales and customer service occupation	4	2	3		12	7	12
Process, plant and machine operatives	4	8	3		9	14	11
Elementary occupations	2	3	1		14	29	19
TOTAL	100	100	100		100	100	100
Weighted n =	*1854462*	*108784*	*219946*		*15157679*	*934540*	*1432578*
Unweighted n =	*12391*	*633*	*1237*		*102549*	*5655*	*8498*

Source: Labour Force Survey

As is well known, the number of immigrants from European Union (EU) countries increased sharply following the accession of Central and Eastern European countries to the EU in 2004. However, data from the International Passenger Survey show that net inflows from non-EU countries still substantially exceeded those from EU countries throughout the period since 2004 (Figure 3.1). These figures include dependents and other non-working persons (such as students) as well as people entering the UK for employment purposes.

Figure 3.1: Trends in EU versus non-EU immigration



Source: International Passenger Survey; Salt, 2010

The current Points-Based System of selection for would-be non-EEA-born immigrants into the UK is divided between 'Tier 1' routes for investors, entrepreneurs and individuals of 'exceptional talent' in the arts and sciences and 'Tier 2' routes for skilled migrants who have offers of employment from sponsoring employers. MAC (2010b) describes the three main Tier 2 entry routes as follows:

1. 'Shortage occupation' route for migrants entering employment in occupations which have been included on the Government's shortage occupation list

2. ‘Resident labour market test’ route which requires employers to meet formal requirements for advertising vacancies within the UK before employing non-EEA migrants

3. ‘Intra-company transfers’ for employees of multi-national firms entering the UK to take up skilled jobs within those firms; these employees must have at least 12 months prior experience of employment in sponsoring firms to qualify for this type of entry.

UK Border Agency Management Information data show that just over 63,000 Certificates of Sponsorship for Tier 2 entry were used by UK-based employers in 2010 (Table 3.5). Strategically important sectors accounted for 43% of these Certificates of Sponsorship in spite of the relatively small employment numbers in those sectors. Thus the number of Certificates of Sponsorship per 1000 employees was as high as 9.7 in strategically important sectors compared to 1.4 in other private sectors and 1.7 in the public sector. An additional key feature of non-EEA migrant entry into strategically important sectors through Tier 2 routes is that some 86% of them came in as intra-company transfers (ICTs) compared to 55% of Tier 2 migrants into other private sectors.

Thus it is clear that non-EEA migrants entering employment in strategically important sectors in the UK not only contribute disproportionately to the already high levels of skilled employees in those sectors but are brought in primarily as internal transfers within multinational firms operating in these sectors. Within the category of strategically important sectors, the largest absolute numbers of non-EEA migrants entering UK-based employment through the ICT route are found in computer services and financial services (Table 3.6).

Table 3.5: Overview of Tier 2 Certificates of Sponsorship used by UK employers, 2010

	Strategically important sectors	Other sectors, excluding public sector	Public sector	Total
	Number of Certificates of Sponsorship			
Intra-company transfers	23237	12776	181	36194
General (Shortage occupation and Resident labour market test routes)	3674	9227	12519	25420
Ministers of religion	0	892	206	1098
Sportspeople	0	341	1	342
Total	26911	23236	12907	63054
	Total Certificates of Sponsorship: row percentages			
Intra-company transfers	64	35	1	100
General (Shortage occupation and Resident labour market test routes)	14	36	49	100
Ministers of religion	0	81	19	100
Sportspeople	0	100	0	100
Total	43	37	20	100
	Total Certificates of Sponsorship: column percentages			
Intra-company transfers	86	55	1	57
General (Shortage occupation and Resident labour market test routes)	14	40	97	40
Ministers of religion	0	4	2	2
Sportspeople	0	1	0	1
Total	100	100	100	100
	Certificates of Sponsorship per thousand employees			
Intra-company transfers	8.3	0.8	0.0	1.3
General (Shortage occupation and Resident labour market test routes)	1.3	0.5	1.6	0.9
Ministers of religion	0	0.1	0	0
Sportspeople	0	0	0	0
Total	9.7	1.4	1.7	2.3

Source: NIESR analysis of UK Border Agency Management Information data on Certificates of Sponsorship (CoS), 2010. These figures describe used CoS, where an application that corresponds to the certificate has been submitted, but not necessarily approved. These data are management information and are neither National Statistics nor have they been quality assured to National Statistics standards. They are presented for research purposes only and are provisional and subject to change.

Table 3.6: Tier 2 Certificates of Sponsorship, 2010, analysed by sector of employer
(Ordered by total number of Certificates of Sponsorship)

	Total number of Certif-icates of Sponsor-ship	Intra-company transfers	General (Shortage occupation and Resident labour market test routes)	Ministers of religion	Sports-people	Total		% of total
		% of total Certificates of Sponsorship						
STRATEGICALLY IMPORTANT SECTORS								
Computer programming, consultancy and related activities	17,459	94	6	0	0	100		28
Financial service activities, except insurance and pension funding	6,539	68	32	0	0	100		10
Extraction of crude petroleum and natural gas	800	82	18	0	0	100		1
Telecommunications	493	76	24	0	0	100		1
Manufacture of computer, electronic and optical products	353	84	16	0	0	100		1
Insurance, reinsurance, pension funding exc compulsory social security	351	86	14	0	0	100		1
Architectural and engineering activities; technical testing and analysis	276	54	46	0	0	100		0.4
Activities auxiliary to financial services and insurance activities	257	76	24	0	0	100		0.4
Manufacture of basic pharmaceutical products and preparations	145	72	28	0	0	100		0.2
Financial and insurance activities	123	89	11	0	0	100		0.2
Manufacture of chemicals and chemical products	95	81	19	0	0	100		0.2
Manufacture of aerospace and other transport equipment	20	75	25	0	0	100		0.03
SUB-TOTAL	**26,911**	**86**	**14**	**0**	**0**	**100**		**43**
OTHER SECTORS, EXCLUDING PUBLIC SECTOR								
Other professional, scientific and technical activities	4,086	80	18	2	0	100		6
Food and beverage service activities	3,545	2	98	0	0	100		6
Activities of head offices; management consultancy activities	2,204	88	12	0	0	100		3
Information service activities	1,465	90	9	0	0	100		2
Legal and accounting activities	1,411	65	35	0	0	100		2
Information and Communication	1,349	91	9	0	0	100		2

Sports activities and amusement and recreation activities	535	1	39	0	60	100		1
Retail trade, except of motor vehicles and motorcycles	534	51	49	0	0	100		1
Other manufacturing	532	82	18	0	0	100		1
Accommodation	445	12	85	2	0	100		1
Other personal service activities	387	14	12	74	0	100		1
Scientific research and development	366	31	69	0	0	100		1
Activities of membership organisations	341	2	6	91	0	100		1
Creative, arts and entertainment activities	340	27	73	0	0	100		1
Advertising and market research	333	59	41	0	0	100		1
Other sectors	5,363	53	44	4	0	100		9
SUB-TOTAL	**23,236**	**55**	**40**	**4**	**1**	**100**		**37**
PUBLIC SECTOR								
Human health activities	5,972	2	98	1	0	100		9
Education	4,075	2	94	4	0	100		6
Residential care activities	1,878	0	99	1	0	100		3
Human Health and Social Work Activities	520	0	100	0	0	100		1
Public administration and defence; compulsory social security	462	0	99	0	0	100		1
SUB-TOTAL	12,907	**1**	**97**	**2**	**0**	**100**		**20**
TOTAL	**63,054**	**57**	**40**	**2**	**1**	**100**		**100**

Source: See Table 3.5.

Section 4. High-level skills, economic performance and skilled immigration

Section 3 has shown that migrants working in strategically important sectors are disproportionately well qualified and working in professional occupations, and that many employers use the Points-Based System to secure non-EEA migrants for such positions. However, it does not necessarily follow that without access to non-EEA migrants, there would be a disproportionately negative economic impact. In seeking to evaluate the economic contribution made by non-EEA migrants in strategically important sectors, a central question is whether skilled migrants and skilled resident workers within the UK are readily substitutable for each other.

If skilled migrants and skilled residents are fairly similar in skills, knowledge and experience, then recruitment of skilled migrants can be readily seen as a means of exerting downward pressure on the wages and work conditions of resident workers. Thus, for example, Epstein, Kunze and Ward (2009) present evidence from a 2000 survey of 850 employers in five European countries (including the UK) that high-skilled foreign workers are not seen by employers as significantly different from skilled resident workers in terms of formal education, motivation and job characteristics. They then deploy an efficiency wage model to explain why some employers are willing to incur the extra costs of recruiting skilled migrants in spite of their apparent similarities to skilled resident workers. Their argument is that skilled migrants operate as a kind of 'reserve army' helping to increase competition in the labour market and thus encourage greater work effort by skilled residents.

An assumption of a high degree of substitutability between skilled migrants and skilled residents is also implicit in some of the evidence presented to the MAC 'Limits to Migration' enquiry in 2010 which suggested that recruitment of skilled migrants into Information Technology (IT) jobs in the UK – even through intra-company transfers -- was a direct threat to business opportunities for UK-based IT contractors and to employment opportunities for resident IT workers (MAC, 2010b: 231). These UK concerns have parallels in the United States where Luthra (2009) suggests that IT-skilled migrants – brought in under the H1-B temporary visa programme -- are often deployed as more flexible (if not cheaper) alternatives to US-resident IT workers.

However, there are alternative perspectives which give serious consideration to the possibility that some skilled migrants may possess very different skills, knowledge and experience from those of skilled residents. In this context Borjas (1994, 1995) sets out a theoretical argument why the 'immigration surplus' (defined as the increase in national income accruing to residents as the result of immigration) is larger when migrants are skilled and their skills

are sufficiently different from those of resident workers for migrants' skills to be complementary to the skills of residents and to resident-owned capital.

As Borjas makes clear, a positive immigration surplus may coexist with a redistribution of wealth between winners and losers in the host economy so policy-makers will not necessarily wish to base immigration policy on efficiency grounds alone. But his analysis draws attention to the need to distinguish high-skilled migrants from other types of migrant in evaluating the economic impact of immigration. In addition to the key mechanism of complementarities between skilled migrants and skilled workers, Borjas (1995) suggests that other reasons for a positive relationship between migrants' skills and the size of the immigration surplus may include:

- Capital-skill complementarities
- External effects (spillovers) of skilled workers in production
- The higher probability of skilled migrants paying taxes and the lower probability of them requiring welfare assistance compared to unskilled migrants

Recent empirical evidence for the US suggests that, at high skill levels, the core skills possessed by migrants may often be very different from those of residents in ways that reduce the potential for skilled residents to be displaced in the labour market. For example, Peri and Sparber (2011) find that skilled US residents are more likely to specialise in jobs requiring interactive and communication skills while skilled migrants tend to specialise in jobs requiring analytical and quantitative skills. This suggests that skilled residents may adjust to skilled immigration flows by changing occupations, not by entering unemployment or leaving the workforce.

The potentially positive effects of skilled immigrants possessing very different specific skills, knowledge and experience to those of skilled residents become even clearer if one thinks about the key *mechanisms* by which high skills in general may contribute to economic performance. For example, skilled labour has been found to be more complementary to the introduction and/or effective utilization of information and communications technologies than is low-skilled labour (Autor, Katz and Krueger, 1998; Bresnahan, Brynjolfsson and Hitt, 2002; Chun, 2003). The principal mechanisms involved are that high skilled workers can contribute more than low skilled workers to the selection, installation, operation and maintenance of microelectronics-based technologies and also to the adaptation of these technologies to firm-specific requirements.

Other important channels of influence by which skills may affect relative performance include skills-related externalities, or spillover effects, in

particular those related to innovation.[11] Examples include the transfer of knowledge between firms, sectors and countries through foreign direct investment (FDI) which is attracted to economies with a high skills base while simultaneously bringing with it new technologies and knowledge which augment the skills base of host countries (Barrell and Pain, 1997; Blomstrom and Kokko, 2003).

Some of the specific channels by which FDI can contribute to innovation in host countries include technology transfer, interactions with domestic suppliers, skill upgrading in local labour markets and additions to the level of competition at regional and national levels (Harris and Robinson, 2004). However, the wider impact of spillovers through investment by multinational enterprises depends on home-country firms possessing the 'absorptive capacity' to take full advantage of new knowledge, ideas and technologies that become available through spillovers (Cohen and Levinthal, 1989; Zahra and George, 2002). High-skilled workers can contribute to absorptive capacity directly through the direct application of their knowledge and experience but also by helping to increase the knowledge and receptivity of lower-skilled co-workers (Kirby and Riley, 2008).

Given that knowledge search and utilisation in the course of problem-solving play such important roles in these explanations of the positive relationship between high skills in general and economic performance, there are many ways that high-skilled migrants in particular can contribute to productivity and innovation if their skills are distinctively different from those of resident workers. For example, high-skilled migrants may possess language skills and knowledge of foreign markets and cultures which high-skilled residents find hard to acquire and which both help to speed up cross-border knowledge flows and make effective use of that knowledge. The selective nature of immigration entry systems may also add to the probability of skilled migrants possessing above-average skills even in areas where there are overlaps with skilled residents.

Relevant empirical evidence on these issues includes studies focussing on:

- the links between high-skilled migrants and measures of productivity, innovation and trade performance
- the economic value of cultural diversity
- high-skilled labour deployment by multinational employers

[11] Skill-related externalities may occur if private sector decisions to invest in skills development yield benefits to individuals or employers other than those who have made the decisions to invest in skills formation.

For example, Huber et al. (2010) analyse industry-level data across a panel of 12 European countries for the period 1995-2004 to estimate the impact of migrants' skills on productivity. They define as immigrants workers whose country of birth differs from the country in which they work and are able to distinguish between EU migrants and non-EU migrants in each of the 12 countries. They find that the use of non-EU migrant labour in particular is positively and significantly linked to productivity growth in industries classified as 'skill intensive'. This is in line with Paserman (2008)'s study of Israeli manufacturing in which she found more evidence of a positive relationship between the migrant share of the workforce and productivity in high-technology sectors than in low-tech sectors.

Other studies have identified positive links between skilled immigration and measures of innovation performance, for example, rates of patenting. In two recent studies based on US data, these positive effects are attributed to the direct contributions of highly-educated migrants to the stock of innovation-related skills and knowledge in the host country (Kerr and Lincoln, 2010; Hunt and Gauthier-Loiselle, 2010). In other cases migrants are credited with contributing to knowledge and technology transfer across borders, as in a study of 19 OECD countries between 1980-90 (Le, 2008).

Many migrants are also well-placed to contribute to expansion of trade through their knowledge of and business contacts in their countries of origin. Wagner et al (2002) report a strong positive association between skilled immigration and trade in a number of papers that use a 'gravity model' (based on country sizes and the distances between them) to analyse bilateral trade patterns. Using an enhanced gravity model, Partridge (2008) estimates the effects of lagged waves of immigration on Canadian import and export flows to 40 countries of origin for immigrants to Canada and finds a positive association between skilled immigrants and both import and export trade flows.

The possibility that migrants possess specific kinds of knowledge and personal networks which have economic value and which differ greatly from the knowledge assets and network links typically possessed by residents is explored in a number of papers which investigate the impact of 'cultural diversity' on labour market outcomes and measures of economic performance. In general, diversity among workers can be expected to have both costs and benefits for firms in countries receiving migrants. While costs may be driven up by communication problems, there are also creative possibilities in people from different cultural backgrounds coming together to share ideas and attempt to solve problems (Lazear, 1999; Alesina and La Ferrara, 2005).

Recent evidence based on US city-level data suggests that the positive benefits of cultural diversity may be substantial. For example, Ottaviano and Peri (2006) found that a measure of diversity of birth-countries of residents at city level in the US was positively related to the wages of US natives. They are unable to exclude the possibility that this result is due (in part at least) to unobserved characteristics of US natives in some cities with high diversity (such as greater 'tolerance') but their findings are consistent with migrants' skills being complementary with the skills of natives. Other evidence from Germany suggests that cultural diversity is positively associated with economic outcomes. Niebuhr (2010) finds that R&D employment (proxied by different measures of the share of foreign nationals engaged in R&D) is positively related to patent applications per head of population at regional level while Audretsch (2010) reports that measures capturing the share and the variety of foreign nationals at regional level are positively associated with new firm formation.

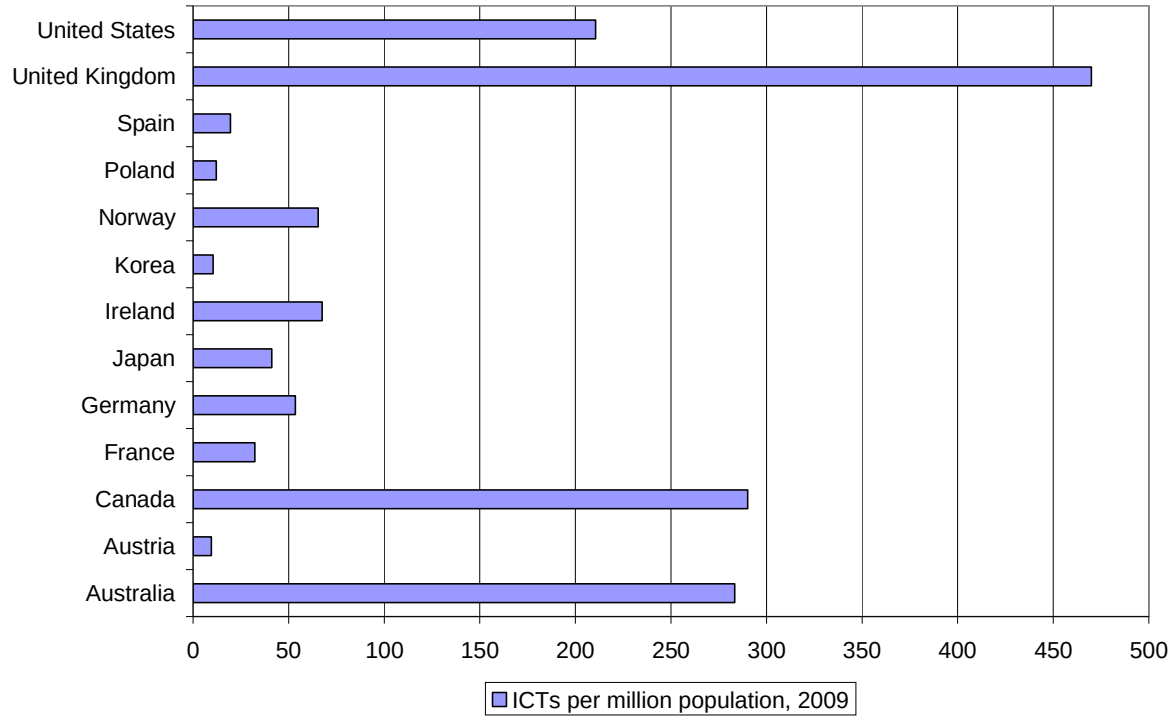
Research on labour utilisation and deployment by multinational companies also suggests that the positive effects of cultural diversity on knowledge transfer and problem-solving are likely to be greatest at high skill levels. For example, Farndale, Scullion and Sparrow (2010) argue that, as a result of growing internationalisation of markets, many multinational firms now devote considerable resources to 'global talent management' and to the career development of valued staff. One of their key requirements is for managers and professional staff who combine knowledge of business practices in different countries with extensive experience within their own companies. Many multinational firms depend on free flows of personnel across international borders within their organisations to help meet these requirements. The importance of combining firm-specific knowledge and experience with cross-border mobility also emerges from analysis of Community Innovation Survey data for the UK which suggests that international *internal* networks within firms contribute more to innovative sales than do international external networks (Frenz and Ietto-Gillies, 2009).

Studies of UK-based financial firms show that they employ large and highly specialized pools of high-skilled labour who are multinational in citizenship in order to service their own firms and clients on a global scale (Beaverstock, 2009). Key requirements are workers who have international experience and who are familiar with different cultures and ways of working and different regulatory jurisdictions (Jones, 2003). In other strategically important sectors such as aerospace and oil and gas extraction, long-term assignments involving cross-border intra-company transfers support both knowledge and technology transfer within each firm and career development for staff members (Millar and Salt, 2008).

By contrast, in many foreign-owned IT services firms operating in the UK, intra-company transfers (ICTs) often take the form of high-skilled migrants being brought into the UK in order to acquire a better knowledge of UK clients' business needs before returning to their home countries (Millar and Salt, 2007). Although this kind of deployment seems to support concerns about immigration reducing opportunities for UK-based IT contractors, an offsetting factor to consider is the potentially higher quality of IT services which are eventually supplied to UK clients as a result.

The considerable evidence of complementarities between high-skilled migrants and high-skilled residents and the links between intra-company transfers, skills resourcing and knowledge flows has obvious relevance for UK-based firms in strategically important sectors which have been shown above to have disproportionately large shares of graduate and professional employees and a predominance of ICTs among Tier 2 migrants which they bring into the UK. Indeed, the volume of ICTs per million population into the UK is substantially higher than other large European countries and also exceeds the equivalent ratio for traditional migrant destinations such as the US, Canada and Australia (Figure 4.1).

Figure 4.1: Intra-company transfers per million population, selected countries, 2009



Source: OECD, International Migration Outlook 2011

OECD (2010) reports that many European countries have recently adopted policies to facilitate residence permissions for intra-company transferees, for example Belgium, Denmark, France and Germany. Belgium has changed its work permit conditions to allow junior management the same benefits as executive personnel. In Denmark foreign nationals who work in a Danish company's foreign affiliate or department and are supposed to work in the Danish company for an innovative, developmental or educational reason, can get a residence permit if wage and employment conditions are similar to Danish standards. Foreign nationals covered by this scheme are entitled to a residence permit for up to three years with potential of extension. In France, new legislation came into force in 2008, relaxing the conditions for granting a residence permit to intra-company transferees by decreasing the period of secondment from 6 to 3 months. In Germany a resident labour market test is no longer essential in the case of intra-company transferees or their family members who are sent to Germany.

These developments suggest that the high proportion of ICTs in the UK is not seen as a disadvantage by governments in other European countries. Indeed, some evidence presented to the MAC's 'Limits to Migration' enquiry suggests that ease of access for ICTs plays a very helpful role in securing Foreign Direct Investment to the UK (MAC, 2010b). Furthermore, ICTs are less likely than Tier 1 migrants (entering the UK as individuals) to encounter the kinds of barriers to knowledge transfer that Williams (2007) describes with regard to individuals who struggle to make their ideas heard within organisations where they are newcomers.

In short, there are a number of different mechanisms by which high skilled migrants are likely to contribute positively to the performance of UK firms. Any advantages of cultural diversity should also be strong within the UK due to the scale and quality of immigration that the UK has received in recent years. For example, Peri (2005) shows that the UK is closer in the scale of immigration to other immigration-centred economies (eg, Canada, Australia, US) than it is to other EU countries. In addition, Algan et al (2010) find that skilled migrants to the UK are better qualified relative to resident workers than is the case in France and Germany.

Nonetheless, there remains concern that high levels of skilled immigration reduce the incentives for UK-based employers to provide training for resident employees. We now go on to discuss this issue in detail.

Section 5. Does recruitment of skilled migrants contribute to reduced upskilling of resident workers?

In general, evidence for the UK supports an argument that substituting skilled migrants for skilled residents is harder at the upper end of the skills spectrum than it is at lower skill levels (Dustmann, Frattini and Preston, 2008). However, other research findings continue to emerge concerning possible displacement of skilled resident workers by skilled migrants in host-country labour markets. For example, Borjas (2009) estimates that US natives who entered the labour market with PhD qualifications in science and engineering subjects between 1968-2000 incurred substantial wage losses between 1993-2001 as a result of labour market competition from foreign-born PhDs in these subjects. This finding reinforces previous evidence of native-born PhDs being under-represented in employment in science and engineering fields in the US (Levin et al, 2004).

However, as Borjas notes, the great majority of foreign-born PhDs competing with US natives in science and engineering labour markets entered the US as foreign students and then remained in the country following completion of their studies. Therefore, in many ways the skillsets of migrants and residents in this example may be considered to be fairly similar. Although newly-graduated foreign-born PhDs in the US may possess language skills and understanding of foreign cultures that US-born PhDs do not possess, what both groups of PhDs have in common is a lack of prior work experience. Thus neither group has had the opportunity to acquire the distinctive and sought-after skills and knowledge that were emphasised in Section 4 above, namely, the complex knowledge and personal networks that come from actually working in different cultural settings and regulatory jurisdictions. Nor are newly-graduated PhDs of foreign birth necessarily better placed than native-born PhDs to offer new ideas and perspectives to employers on technical problem-solving and innovation.

In short, even at relatively high skill levels, the skills and knowledge possessed by skilled migrants and skilled residents may sometimes be quite similar and the two groups may therefore be substitutable for each other to some degree. The extent of substitutability is always an empirical question. Thus, even at the high skill levels relevant to strategically important sectors, there is always a possibility that immigration may reduce the incentives for individual residents to invest in high-level skills and for employers to develop high-level skills among resident workers.

In the case of incentives for home residents to invest in acquiring high-level skills through their own study efforts, the UK has in recent years been distinctive for the fact that average salary returns to graduate education have held up well in spite of rapid growth in higher education participation (Machin,

2003; Walker and Zhu, 2008). Although there is some recent evidence of widening dispersion of returns around the average level, with much lower earnings for graduates who regard themselves as 'overqualified' for the jobs they hold (Green and Zhu, 2010), this is widely attributed to the large and diverse supply of UK-born graduates, not to the impact of foreign-born graduates seeking employment in the UK.

With regard to employer-provided training, MAC (2008) concludes that there is 'little systematic empirical evidence to suggest that immigration has directly caused reduced investment in training' (p136). Indeed, even when there appears to be evidence of a negative relationship between immigration and training, this might be explicable by other factors. For example, in an Australian study, Baker and Wooden (1992) found that, although there was a negative correlation between immigration and in-house training provision, this reflected the fact that skilled immigrants were over-represented in low-training industries rather than that incentives to provide training were lowered by the increased supply of immigrant labour.

One way to assess this issue is to consider the well-known economics literature which examines why many employers are willing to provide training in general skills (skills that are potentially usable in many different workplaces) even though the recipients of such training may subsequently choose to make use of these skills in other firms.

A driving factor behind general skills training provision is that many labour markets are imperfectly competitive, that is, employee wages do not equate to their marginal products. For example, Stevens (1994) develops the concept of 'transferable' skills which have value in more than one firm but for which wages could fall below worker productivity for reasons such as small numbers of firms in particular labour markets which value particular kinds of skills. Other possible impediments to competitive labour markets include mobility costs and imperfect information available to both firms and workers. Acemoglu and Pischke (1999) argue that firms' willingness to invest in equipping workers with transferable skills depends on there being a 'compressed' wage structure such that wages increase more slowly than productivity as skills increase. The sources of such compression could include not just transaction costs and asymmetries of information, but also institutions tending to drive up wages at the low-skills end of the labour market such as trade unions and minimum wage legislation.

At the same time, if training firms are to benefit from post-training gaps between worker productivity and wage growth, they need to take steps to minimise the prospect of losing trained workers once they have acquired new skills. Green et al (2000) present evidence for the UK that training firms often succeed in reducing labour mobility by engaging in human resource

management practices designed to increase organisational commitment and labour retention.

In this context the willingness of employers to upgrade the skills of existing employees and to provide initial training for unskilled resident workers will depend on factors such as:

1. The direct, indirect and opportunity costs of providing training
2. The anticipated impact on productivity of developing higher levels of skill
3. The anticipated impact on post-training wages
4. The anticipated impact on post-training labour mobility of skilled workers

Thus, for example, training provision is likely to be higher the lower are training costs, the more expected productivity improvements outweigh expected growth in wages and the harder it is for newly-trained workers to find employment with other firms. The likely effects of skilled immigration on these influences on employer training decisions will vary depending on the extent to which migrants' skills are broadly similar to the kinds of skills that employers could expect to develop through providing training for resident workers. The impacts of skilled immigration are also likely to vary depending on whether the training concerned takes the form of upskilling of existing employees or initial training for newly-recruited unskilled workers.

In the case of perfect substitutability between skilled migrants and skilled residents, employers can avoid the costs of general skills training (but not the costs of firm-specific training) by recruiting skilled migrants. At the same time employers can hope to achieve the same improvements in productivity by recruiting skilled migrants as if they had provided training for resident workers. Taking only these two factors – costs and productivity improvement -- into account, skilled immigration is likely to contribute to reduced training provision for existing employees unless the extra costs of providing firm-specific training for migrants are expected to outweigh the costs of providing general skills training for existing employees. Initial training for unskilled resident workers, especially long-duration initial training such as apprenticeships, is even more likely to decline in the presence of skilled immigration. However, these tendencies towards reduced training of resident workers may be offset to some extent if skilled immigration leads (through increased competition in the labour market) to downward pressure on post-training wages and the ability of newly-trained resident workers to find employment in other firms.

In the case where skilled migrants and skilled residents possess different kinds of skill which are potentially complementary to each other, with positive implications for productivity and innovation performance, the impact of skilled immigration on employers' training decisions could be very different. On the one hand, for skills which resident workers are best suited to acquire, it will still be cost-effective for employers to provide residents with training even though skilled migrants are available. Furthermore, to the extent that post-training productivity is enhanced by the prospect of combining skilled resident labour with skilled migrant labour, the incentives for employers to provide training for residents may even be increased by the presence of skilled immigration. On the other hand, when migrants' and residents' skills are not substitutable for each other, skilled immigration will not contribute to downward pressure on post-training wages and post-training labour mobility among resident workers. In this case, the impacts (or lack of impacts) of skilled immigration are likely to be much the same for upskilling of existing employees as for initial training of newly-recruited unskilled resident workers.

This perspective sheds light on how employers may respond to 'skill shortages' of different kinds such as external recruitment difficulties and perceived gaps in existing skills (internal skill gaps). As noted by Anderson and Ruhs (2008) and SQW (2010), employers have a number of different options open to them when responding to skill shortages, including expanding their recruitment effort, increasing training, improving salaries and work conditions, developing less labour-intensive modes of production and seeking to recruit more migrant workers. Here we are concerned with the extent to which increased use of migrant labour may substitute for increases in training.

If the required skills can only be developed among resident workers, then the impact of skilled immigration on employer training responses to skill shortages should be minimal. However, if migrants can be expected to possess the required skills already and resident workers need training in order to acquire them, then the outcome will tend towards the case described above when migrants' and residents' skills are readily substitutable for each other. In a third scenario when the sought-after skills are only likely to be possessed by migrants, then employers will naturally respond to skill shortages by seeking to recruit skilled migrants. The implications for training of resident workers will then depend on the degree of complementarity between these migrants' skills and resident workers' skills.

In Section 11 below we report on case studies carried out for this project which suggests that, in firms which make extensive use of strategically important skills, recruitment of skilled migrants is rarely used as a substitute for training of UK resident workers. Taken together with our earlier discussion about the potential complementarities in strategically important sectors between the skills possessed by high-skilled migrants and those possessed

by high-skilled resident workers, our findings suggest that under-training of resident workers is less of a threat in strategically important sectors than in other sectors where migrants' and resident workers' skills are more interchangeable.

In this context it is worth noting that, according to National Employer Skills Survey data for 2009, the incidence of upskilling training for existing employees in many strategically important sectors is above average compared to other sectors of the economy (Table 5.1, Columns 1-3). In the case of apprenticeship training, only aerospace and computer, electronic and optical engineering have above average shares of establishments offering such training (Column 4).

In part, relatively high levels of upskilling training are only to be expected in strategically important sectors since they employ above-average proportions of highly-qualified employees who typically receive more training than do lower-skilled employees. However, multivariate analysis shows that continuing training levels are still significantly higher in strategically important sectors even when controls are introduced for workforce skills (proxied by a wage-weighted qualifications index) and other establishment characteristics such as establishment size, sector, region, product strategy and geographical market focus. The current relatively high incidence of training in strategically important sectors needs to be taken into account when formulating immigration policy.

Table 5.1: Incidence of employer-provided training in strategically important sectors and other sectors, 2009

	Percent of establishments arranging or funding either on- or off-the-job training	Percent of establishments arranging or funding both on- and off-the-job training	Training intensity: percent of establishments arranging or funding five days or more training per employee	Proportion of establishments offering apprenticeships	*Sample size*
Strategically important sectors:					
Oil and gas extraction	71	51	17	10	*35*
Chemicals and pharmaceuticals	76	51	14	12	*340*
Computer, electronic and optical engineering	80	53	14	19	*745*
Aerospace manufacturing	83	60	10	30	*58*
Telecommunications services	81	51	34	7	*639*
Computer services	77	45	24	7	*2054*
Architectural, engineering and related services	83	59	21	11	*2128*
Financial services	81	52	34	4	*2456*
Other private sector activities	71	41	20	12	*57392*
Public sector	92	74	37	12	*13305*
TOTAL	**75**	**48**	**24**	**11**	***79152***

Source: National Employer Skills Survey, 2009
Base: All establishments

Table 5.2: Conditional correlations between training measures and establishment characteristics (marginal effects)

Dependent variable:	Provide either on- or off-the-job training	Provide both on- and off-the-job training	Provide apprenticeship training
Strategically important sector	0.066***	0.070***	0.041***
	[0.008]	[0.010]	[0.007]
Skills index	0.134***	0.215***	-0.038***
	[0.013]	[0.014]	[0.009]
10-19 employees	0.158***	0.217***	0.066***
	[0.004]	[0.007]	[0.005]
20-49 employees	0.215***	0.335***	0.107***
	[0.004]	[0.007]	[0.006]
50-99 employees	0.220***	0.413***	0.176***
	[0.004]	[0.009]	[0.011]
100-249 employees	0.234***	0.480***	0.256***
	[0.004]	[0.010]	[0.016]
250-499 employees	0.230***	0.478***	0.380***
	[0.006]	[0.015]	[0.026]
500-999 employees	0.224***	0.510***	0.335***
	[0.010]	[0.022]	[0.043]
1000 or more employees	0.222***	0.556***	0.424***
	[0.021]	[0.025]	[0.086]
Single-establishment enterprise	-0.125***	-0.121***	0.014***
	[0.005]	[0.006]	[0.003]
Product strategy index	0.001***	0.002***	0.001***
	[0.000]	[0.000]	[0.000]
Regional market focus	0.039***	0.057***	0.007
	[0.006]	[0.008]	[0.005]
National market focus	0.035***	0.039***	-0.022***
	[0.005]	[0.007]	[0.004]
International market focus	0.017**	0.006	-0.017***
	[0.007]	[0.008]	[0.005]
Observations	43207	43207	39739
Log likelihood	-22167.494	-25382.721	-13389.235
Pseudo R sqd	0.134	0.136	0.0863
Wald Chi2	5185	6978	2378

Source: National Employer Skills Survey, 2009
Notes: *significant at 10%, ** significant at 5%, *** significant at 1%.
Probit estimates. Robust standard errors in brackets. Dependent variables = 1 if each type of training in provided; = 0 otherwise. Marginal effects are evaluated at the mean values of other independent variables. The reference category for firm size variables is under 10 employees. For geographical market focus variables the reference category is local market focus. The skills index is a wage-weighted qualifications index. The product strategy index is based on survey responses to questions regarding the extent to which the establishment competed in a 'premium quality' product market; the extent to which competitive success depended on price; and the extent to which the establishment saw itself as an innovation leader. For further details of the skill and product strategy indices, see Mason (2011). All equations include sector and regional dummies.

Table 5.3: Conditional correlations between intensity of training measure and establishment characteristics

VARIABLES	**Number of days training per employee per employee (banded intervals)**
Strategically important sector	0.139***
	[0.019]
Skills index	0.280***
	[0.030]
10-19 employees	0.209***
	[0.014]
20-49 employees	0.213***
	[0.013]
50-99 employees	0.150***
	[0.019]
100-249 employees	0.131***
	[0.023]
250-499 employees	0.183***
	[0.040]
500-999 employees	0.05
	[0.056]
1000 or more employees	0.278**
	[0.124]
Single-establishment enterprise	-0.382***
	[0.011]
Product strategy index	0.005***
	[0.000]
Regional market focus	0.097***
	[0.016]
National market focus	0.078***
	[0.013]
International market focus	0.039**
	[0.016]
Observations	43207
Log likelihood	-74463.195
Pseudo R sqd	0.0274
Wald Chi2	4260

Source: National Employer Skills Survey, 2009
Notes: *significant at 10%, ** significant at 5%, *** significant at 1%.
Ordered probit estimates. Robust standard errors in brackets. The dependent variable is a seven-point index of training intensity, ranging from 0 = No training provided to 6 = 30 days or more training provided per employee per year. For details of independent variables, see notes to Table 5.2.

Section 6. Employers and stakeholders

6.1 Introduction

The purpose of carrying out qualitative research was to help meet the overall aims of the research in identifying skills of strategic importance to the UK and to determine how important migration is as a means of meeting strategic skill needs. To do this we carried out case study interviews in two of the eight sectors identified as strategically important in the statistical and literature review. The two specific sectors chosen were the financial services industry, with the emphasis on banking, and aerospace engineering. The financial services industry had the second highest number of Certificates of Sponsorships in 2010 (see Table 3.6) this coupled with the changes to the Tier 1 route suggests that Tier 2 visas would become an increasingly important route for banks, thus warranting further investigation. Aerospace engineering was considered to be of interest as there appear to be a few key skills shortages within the sector which have a considerable impact.

Additionally, the qualitative research was intended to enable the study to focus on employers' practices in the current labour market and economic climate, whereas published literature on skills and migration may not cover employer responses to the most recent policy developments in sufficient depth, or across all sectors of interest to the research.

In this section we describe the organisations which took part in the research. We first describe the case study employers, selected from the aerospace engineering and finance sectors and then the stakeholders who represent employers across industries as well as the two sectors which formed the focus of the qualitative research.

6.2 The case study employers

The qualitative evidence for the project was obtained from five aerospace and seven financial services employers, all of whom operated in retail and/or investment banking. Although initially it had been planned to interview five employers from each sector, two niche banks agreed to be interviewed at the end of the fieldwork period and due to their specialist skills and requirements it was decided that it would be a valuable exercise to include them in the study.

The five aerospace employers offered a range of products and services from aircraft maintenance to the design, engineering and manufacture of civil, military and commercial aircraft systems and structures. A number delivered other products in addition to those produced by the aerospace divisions of their organisations; however, the interviews focused on the areas of work described above. All but one of them are multinationals, although all are headquartered in the UK.

The seven banks provided a wide variety of products and services including personal and business banking retail services such as mortgages, investments, credit cards

and accounts, as well as a variety of investment banking services relating to asset management, investment banking and wealth management for high net worth individuals. All the retail and investment banks operated globally and four of them had international parent companies that had their headquarters overseas. The two niche banks offered very specific services that catered, on the whole, to clients of defined religious or ethnic groups, though they did not limit their products and services to these groups.

The interviewees from the case study companies were managers who were responsible for a range of functions, such as global mobility, human resources (HR), recruitment, policy and government affairs. In addition, we spoke to recruitment consultants and a solicitor employed by the companies who had experience of UK migration policy and the current Points Based System (PBS). Interviews took place between June and July 2011, and the report presents the experiences of interviewees at that time. As is the norm in qualitative research, the quotes within the report have been taken from transcriptions of recorded interviews and therefore reflect spoken language.

Table 6.1 below summarises information on the case study employers.

Table 6.1 Case study employers

Pseudonym of organisation	Single/multi-site	UK/ international operations	UK/ international HQ	UK employees
Aerospace 1	Multi	International	UK	5,000+
Aerospace 2	Multi	International	UK	5,000+
Aerospace 3	Multi	UK	UK	5,000+
Aerospace 4	Multi	International	UK	1,000-4999
Aerospace 5	Multi	International	UK	5,000+
Bank 1	Multi	International	International	100-999
Bank 2	Multi	International	UK	5,000+
Bank 3	Multi	International	International	1-99
Bank 4	Multi	International	UK	1,000-4999
Bank 5	Multi	International	UK	5,000+
Bank 6	Single	International	International	1-99
Bank 7	Multi	International	International	5,000+

6.3 Stakeholder organisations

In addition to the case study employers, representatives of six stakeholder organisations were interviewed for the research, and additional information was obtained from two further organisations. Organisations taking part in the interviews were: the Confederation of British Industry (CBI), the Chartered Institute for Personnel and Development (CIPD), the British Chambers of Commerce (BCC), UKTI, and the two sector skills organisations for finance and engineering - the Financial Skills Partnership and SEMTA. The research considered the work of two further stakeholder organisations - the Institute of Directors and the Federation of Small Businesses.

Two main criteria were used to select these organisations: they represent the views and interests of business representatives at a policy level; they have addressed the issue of migration in various ways, including through reports and in representations to Government and, in the case of the two sector skills councils, have a particularly important role in skills development in their industries. The aims of these organisations and their work on migration issues is summarised in Table 1.2. Discussions with stakeholders were wide-ranging and included their perspectives on strategically important skills needs and migration, approaches to meeting these needs, including training, and the potential effects of changes in migration policy. These perspectives had been gained from their members in various ways, including through surveys, consultations and committee proceedings. Interviews took place between May and July 2011.

Table 6.2 Stakeholder organisations taking part in the research

Organisation	Aims	Work on migration issues
Confederation of British Industry (CBI)	Membership organisation lobbying for UK business on national and international issues. Works with the UK government, international legislators and policy-makers. Policy is decided by members who are senior professionals from across industry sectors and in large companies and SMEs.	Commissioned research finding that demand for highly skilled people will intensify during the economic recovery and that employers fear they will not be able to recruit to high-level jobs. In its submission to the UKBA consultation on limits on non-EU economic migration argued for migration policy which enables employers to recruit specialist skills from abroad when necessary.
British Chamber of Commerce	The national body for a network of Accredited Chambers of Commerce across the UK. Chambers of Commerce serve member businesses in its area and the wider business community. They provide representation, services, information and guidance to their members. The BCC aims to shape Government policy affecting businesses, and focuses on key areas of activity including International Trade, Skills Development and Business Services.	Produced paper *Migration Policy Brief* (2009) arguing the need for flexible migration policy to meet the needs of employers who recruit migrants to meet skills needs. The paper outlines BCC policy, which includes lesser restrictions on non-EU migration. It has argued that work permit changes must support business growth and migration limits must not prevent employers from getting the skills they need. BCC responded to the UKBA consultation on the non-EEA migration cap in 2010 arguing that the UK economy will suffer if the cap on migration is too strict, affecting migration levels and investment.
Chartered Institute of Personnel and Development (CIPD)	Professional body for human resourcing (HR) and development, with around 135,000 members. CIPD provides support and development for its own members who work in HR. It aims to drive sustained organisational performance through HR, shaping thinking, leading practice and building capacity within the profession.	With KPMG produces a quarterly *Labour Market Outlook* survey which includes employer practices in relation to recruitment of migrants, within and outside of the EU. Its recent findings suggest a heavy reliance on migrants in finance and engineering, and in the public sector for non-EU doctors, nurses and academics. CIPD made a submission to the UKBA consultation on limits to non-EEA migration in 2010. It has contributed to policy debates on migration, raising the economic costs of a strict cap on migration.
UK Trade and Investment (UKTI)	UKTI works with UK-based businesses to provide information and advice to assist them in achieving success in international markets. It also encourages the best overseas companies to look to the UK as their global partner of choice.	UKTI carries out consultation with companies at parent level to assist strategic direction of UK investment decisions. This includes advising businesses on current migration rules. UKTI also represents the interests of UK business, including on

		issues of migration at national policy level.
Financial Skills Partnership	One of 33 Sector Skills Councils (SSCs), which are independent, employer-led, UK–wide organisations designed to build a skills system that is driven by employer demand. The FSP is the sector skills council for accountancy and financial services across the UK and acts as a link between industry, government and education.	The FSP carries out a UK-wide Employer Skills Survey, which looks, among other issues, at skills shortages and gaps. Its most recent survey included an assessment of the impact of the UK Border Agency proposal, 'Limits on non-EU economic migration' on businesses in the sector.
Semta	One of 33 Sector Skills Councils (SSCs), which are independent, employer-led, UK–wide organisations designed to build a skills system that is driven by employer demand. Semta is the Sector Skills Council for Science, Engineering and Manufacturing Technologies. It aims to address the sector's skills needs, providing expert support to improve performance and growth.	Semta responded to the Government consultation on the annual limit on economic migration in September 2010 and to the Partial Review of the Government's Official Shortage Occupation List in 2009. Semta has produced a paper for MAC on 'Clarifying labour market conditions in Engineering Occupations' (2011).
Institute of Directors	Membership organisation for business leaders providing services to members and representing their interests through information and research. Has 43,000 members supported by 44 regional branches across the UK and an international network. Members include start-up entrepreneurs to directors in the public sector and CEOs of multinational organisations. Membership includes access to professional development programmes and networking.	Produced a paper: *Immigration - the business perspective* (2007) suggesting strong support for encouragement of immigration to alleviate skills shortages, but also evidence that IOD members believe immigration is too high relative to skills needs. Paper was used to present IOD's view on immigration to Government. Has recently produced paper on the immigration quota expressing concern at potential impact on employers reliant on non-EU recruitment to meet skill needs.
Federation of Small Businesses	Aims to promote and protect the interests of the self-employed and owners of small firms. It has 210,000 members across 33 regions and a network of 194 branches. It has a lobbying arm aimed at representing members' interests to Westminster and the devolved parliaments, and development managers at regional level.	The FSB responded to the UKBA consultation on the migration cap in 2010, It is opposed to a cap on non-EU migration, on grounds that it restricts economic growth and competitiveness. Presented submission to the Government's consultation on limits on non-EU economic migration. It has recently carried out a survey of members on the effects of changes in the criteria for Tier 1 and 2 of the points-based system.

Section 7. The employer case studies: business strategies and skill needs

7.1 Introduction

In this section of the report we look at the key aims and objectives of the case study employers, at the workforce skills needed to meet these. We also explore their understanding of the term 'strategically important skills' which were the focus of the research, and the importance of these to case study employers.

7.2 Key aims and objectives of case study employers

Many of the case study companies were market leaders or were prominent in their sector. A number were very large employers. All the companies discussed growth in some form, though the extent and reasoning behind this varied greatly. One aerospace establishment wanted to increase capacity to enable the more efficient processing of their current work requirements as physical space and, to a lesser extent, shortage of key staff were prohibiting their ability to add aircraft lines or new clients to their portfolio. This employer did not currently compete in the external market but provided services exclusively to their parent company; although they felt it was still important to remain competitive because the parent company could re-contract to another provider. Another aerospace company was in a similar position whereby they only provided services for other divisions of the organisation, therefore one of their key aims was to provide support in terms of supply and cost to their internal clients. They were also strongly focused on innovation and wider business aspects such as corporate social responsibility.

Several of the case study employers specifically discussed global expansion. For one establishment, becoming more global had led to rapidly increasing growth. Others were actively seeking new global markets to increase revenue as part of general business expansion. In the case of one aerospace company, saturation in several of the country-level defence markets they traded in, as well as changes in the requirements of the UK and United States markets was driving a move to expand in other locations. Conversely, two international banks were trying to increase their presence in the UK market by expanding their branches or client base here. These two organisations aimed to offer specific services and knowledge not available in traditional UK banks.

Employers also mentioned the importance of customer services and meeting their clients' needs, increasing investment value for clients and providing a competitive service. Developments in innovation and technology were expressly mentioned by both a bank and an aerospace company as being an integral part of their objectives or a way of achieving these objectives.

7.3 Main workforce skills needed to meet business objectives

The skills predominantly mentioned by the aerospace employers were those related to a range of engineering and technical roles, as well as quality assurance and project management. Specific roles included aircraft engineers, mechanics, technicians and licensed aircraft engineers, manufacturing, design, fatigue and damage tolerance, stress, composite and landing gear engineers. There was also a need for business support functions such as HR, recruitment, procurement, supply chain logistics and finance and technical leadership.

Within the engineering and technical roles, case study employers highlighted the complexity of the processes and the array of specialist engineers who may be needed for the manufacture of a single product. For example, one consultant described their work as follows:

> *'There are so many engineering disciplines that go into building a wing. It's not just one specific skill, it is a multitude of engineering skills that are all required to deliver this product.'* (Aerospace 5).

The banks identified lending, sales, client services, IT skills as well as specific investment or technically related abilities such as fund management, real estate investment, analysis, trading, insurance, actuarial skills and back office operational skills. In addition to these, also mentioned were the business support functions needed in departments such as human resources, finance and marketing. A number also mentioned the difficulty of defining or summarising the skills or roles that are important due to wide range of services and clients they deal with. As one respondent explained:

> *'it's difficult to understand in a concise way because we have such a huge variety of things, so we need to maintain enough people in those front office revenue generating functions to bring in new money or for the investment bankers and the traders to be trading successfully. But then behind that, we also need to have sufficient numbers of IT operations support and core presenter type staff to support all of those people.' (Bank 7)*

In terms of meeting their requirements for expansion, or because of the global nature of their business, they required explicit market and cultural knowledge of the countries or regions they were targeting. As the representative of a bank stated:

> *'We're looking to expand and I think it's taking those skills from abroad, bringing them in to expand here so that we can expand out…They look for experience. If you're looking to really break into a new market, then you pick the talent from that market to then move it to the UK'* (Bank 2).

These objectives and general organisational culture also made language skills and mobility highly valuable. Similarly one of the niche banks applied Sharia law to their investments, and distinguished themselves from competitors by having Sharia experts in their workforce.

7.4 Applicability of the term strategically important skills

The term 'strategically important' was not one which case study employers themselves used. While some immediately understood its significance, not all were initially sure about what it referred to. One of the aerospace employers was definite about which skills and job roles this covered on a generic level. Another recruitment manager from a bank also had well-defined idea of what these skills meant to the organisation, though he pointed out that it could cover a range of conventional employees as well as more elite staff:

> *'You can look at the word "strategic" in two ways. People who are massively revenue generating, they may have roles in themselves which are fairly routine as traders, but obviously that's the lifeblood of the company. You then also have people who are strategic in that they're very senior within the company in terms of the direction of the company, so we have those two types of people.'* (Bank 7).

Other employers found it harder to define the term 'strategically important' due to the great variety of the job roles and intricacies of their businesses. Also difficult was identifying the distinction between what would be considered strategic as opposed to vital to the business, as described by managers from an aerospace company and a bank:

> *'The end to end process is highly complex, highly engineered. Seventy per cent of the production is through the supply chain or the components, so we only manufacture thirty per cent of parts that go together, so we have a huge supply chain, very complex in terms of its end to end delivery, all of the challenges that go with that in terms of commercial pricing, delivery, sourcing, the economic factors on certain players, surviving, disappearing, all the usual. So all of the parts in the equation are equally important to us.'* (Aerospace 1).

> *'If you suddenly go back to the branches, you would have a mortgage advisor, someone who is knowledgeable about markets, knowledgeable about products and services ... If you look at traders you have to have someone who has knowledge, understands the market place, the markets themselves, stocks, understands the realistic terms of their role and what this means to the business because , with traders, if they get it wrong, they get it wrong and it can be extremely expensive So it's really difficult to try and say which aspect or which is more important because if we didn't have our branches we wouldn't really have a business'* (Bank 5).

For others, there was a feeling that the majority of roles are strategically important to sustaining the organisation, not just those that are revenue generating or directly involved in product related work, as two respondents explained:

The keys ones are the procurement, the finance, HR, supply chain logistics, engineers and manufacturing, they're the key ones, and everyone is necessary' (Aerospace 5).

'I mean, they all play their role, don't they?' (Bank 4).

We also discussed the term 'strategically important' with stakeholders, who expressed some uncertainty about the term but generally understood it to refer to high level and high value graduate skills, including advanced knowledge and technical skills. Stakeholders also included leadership and management skills within the category of strategically important. One stakeholder also referred to intermediate level skills as sometimes of strategic importance, but that generally those of most importance were professional and management level skills. Stakeholders also referred to niche skills. For example, one respondent explained:

'It could even be a particular technology [that is needed], or a particular type of coding in software or knowledge about particular material properties, where the headline is material scientist but actually it is pressure testing of layered carbon fibre' (Stakeholder 3).

One stakeholder felt the term 'economically valuable' was more useful than 'strategically important' and that 'it will mean different things to different organisations' (Stakeholder 1).

Stakeholders gave a range of examples of jobs for which their members recruited from outside of the EEA which might fall into the category of 'strategically important'. Skill needs for which they recruit outside the EEA are described in more detail later, but with regard to occupational areas, stakeholders referred to engineering and finance, and not only because these were a particular focus of our research. One stakeholder who had no specific interest in engineering gave the following example:

'One example that comes up over and over again is qualified project managers. In sectors like engineering and infrastructure and things like that, it does come up rather regularly. Structural engineers, specialised engineers, the sorts of posts that we see as being part of a global market' (Stakeholder 2)

This respondent also referred to nuclear engineering skills as needing to be sourced from outside the EEA. Another stakeholder referred to the need for scientists and for both engineers and scientists with language skills. Sectors identified by this stakeholder as of particular importance included biosciences and software. A number of respondents stated that the skills are often industry, sector and even employer-specific. They included areas where UK based employers and universities have limited expertise and knowledge transfer capacity. They noted that the kinds of skills which employers sourced from outside the EEA were usually in 'small pools'. The respondent quoted above explained:

'There may be five, ten, fifty of them in the world, and you want to go after them, regardless of where they come from' (Stakeholder 2).

Therefore, another stakeholder stated that the need for non-EEA recruitment was to meet the need for specific professional skills rather than of particular industries. He referred to shortages of doctors, nurses, care workers, social workers and psychologists. This respondent observed that:

'Our members in health trusts seem to be relying very heavily on Australian psychologists, New Zealand psychologists and South African' (Stakeholder 5).

Stakeholders also made the point that lower level skill needs are very largely met from inside the European Union. As one respondent stated:

'We don't get the sense that we're importing legions of low-skilled labour from outside of the European Union at all. When a company commits to going for someone from outside the European Union, it's because they will deliver a very high return or have a skill level that's very high' (Stakeholder 2).

This is not to say that employers represented by the stakeholder organisations recruited only higher level skills from outside the EEA. It was noted that engineering maintenance, for example in the aircraft industry and more routine IT skills are sourced from outside the EEA. There was some uncertainty about whether engineering maintenance, while not a high level skill, could be regarded as strategically important and also whether it was an area of skill shortage within the UK.

7.5 Benefits of strategically important skills to the organisation and the economy

In general the employers we spoke to were key players in their industries and employed significant numbers of people, as well as being part of sectors that significantly contribute to UK GDP. In addition, several mentioned aspects of their work that evidenced the importance of their key skills to their own establishments and the economy as a whole. Innovation and technology were mentioned in both industries though more particularly in aerospace. One manager described how their work involved *'creating new innovative products out of new innovative materials'.* Another manager indicated the commitment the organisation had made to research and development:

'Innovation is actually integral to our processes across the piece...We're in the top 10 in terms of investment in research and development. Last year we invested [in excess of £300 million] in that to actually put us where we are' (Aerospace 5).

An HR manager in one bank pointed out the importance of technology to the industry, and the large impact the sector as a whole has on the economy:

> *'The financial services sector has gone through an enormous change over the last few years... So I think having technology that can deliver information to the investors in order to make sensible market decisions, understanding the risks before they buy, sell, whatever, and the wider impact, I think is important, not only to us as an organisation, but to people as consumers, to markets, because if markets go down, everybody loses'* (Bank 4).

Another significant role of the aerospace industry is their involvement in delivering international Government contracts.

> *'and we provide the equipment that the UK Government has promised in that agreement'* (Aerospace 2).

Therefore, employers agreed that the skills of their workforce had wider benefits to the UK economy in generating employment and investment.

Section 8. How strategically important skills needs are met

8.1 Introduction

In this section, we describe first which employees are considered to have strategically important skills and the recruitment methods used to obtain these individuals. Then we discuss in further detail the qualities, experience and qualifications that are sought by employers when recruiting, as well as any training given to enable the development of strategically important skills.

8.2 Who are employees with strategically important skills

For the banks, strategically skilled employees fell into several types of roles. As would be expected, one of these was senior and/or strategic management and another was investment professionals, such as fund managers, investment bankers, analysts, credit risk specialists and client advisers in wealth management. Retail professionals included those dealing with lending and mortgages. Several banks also pointed out the importance of IT professionals. Employees with strategic skills did not necessarily have to be elite or highly specialised, for example, one employer mentioned branch managers as they are trying to expand into the UK, making it important that managers at this level could ensure these branches developed in line with the organisational culture of the parent company. Another of the banks currently specialised in real estate investment, so that their key employees included real estate investment originators and placement professionals. Both retail and investment banks indicated the strategic importance of core employees such as mortgage advisers and traders, without which the businesses would not exist.

Aerospace companies first and foremost discussed engineering and technical roles. Within these roles there was a high level of specialisation depending on the business needs of the organisation. Positions included manufacturing engineers, tooling and fixing engineer, purchasing engineers, aero-thermal engineers, licensed aircraft engineers, mechanics and technicians, fatigue and damage tolerance engineers, stress engineers, composite engineers and landing gear engineers. This list is not definitive as highlighted by a consultant for one company, which also stated that all their engineering roles are strategically important.

> *'There's probably 20 different engineering job titles that we currently publish at the moment trying to recruit, so there's so much diversity within the engineering field'* (Aerospace 5).

In addition to engineering and technical roles, a number of employers also indicated management and leadership positions and other business occupations such as finance, HR and procurement.

8.3 How strategically skilled employees are recruited

Most of the case study employers had well-established graduate recruitment schemes, and in the case of aerospace, apprenticeship schemes. These schemes were often the route by which high calibre individuals were initially employed, of

whom many would then develop their careers to become strategically important employees. It was stated that this would not necessarily be the case with employees from the apprenticeship programmes, although some would further their qualifications and experience to achieve this. However, it was not a consideration in this recruitment process and would be difficult to ascertain whether individuals had this potential at that stage.

Recruitment of employees in possession of strategically important skills was directed towards more experienced staff and senior management. For this group of individuals, a range of recruitment methods were used, such as advertising in national and trade press, using industry-specific online recruitment sites, and utilising head hunters (banks) or search agencies. A manager in a large bank described their potential to use focused recruitment methods for more senior or specialised employees, if required:

> *'We have our own internal recruitment team and we also have a headhunting facility within our organisation which are our own employees who are executive search. So for certain senior or specialist roles we would employ their resources. So they would actually go looking through things such as Linked-in and other professional sites to find a calibre candidate that we would be looking for'* (Bank 5).

This same bank also emphasised the high level of talent they have in the organisation leading to recruitment from their internal jobsite, and their ability to recruit through their external website and jobsite, meaning that they did not generally have to headhunt. In contrast, one investment bank stated that they did tend to look amongst their competitors for their strategically skilled employees because of the precise skills set sought and the training that would be required to prepare individuals from another industry. In some cases they targeted certain individuals from these establishments.

As well as internal jobsites, for the majority of these companies, employers' external websites were an important way of attracting a significant proportion of applications. Several employers mentioned that their reputation led them to receiving a large number of applications in this manner.

8.4 Qualifications, skills and experience of strategically important employees

Employers in aerospace primarily wanted engineering and technical skills. The two companies that dealt with aircraft maintenance and repair were looking for mechanical and technical skills as well as those held by licensed aircraft engineers. Another vital skill mentioned by both these employers was the ability to operate to a high degree of precision.

Strategic employees in aircraft maintenance had vocational qualifications or degree equivalent professional qualifications, for example licensed aircraft engineers have to

undertake a two year course and also gain two years of relevant work experience before they are qualified as Category B licensed aircraft engineers.

The other aerospace organisations looked for a broad range of specialist engineering skills in a range of engineering occupations. Attaining these skills usually involved studying to master's level in a highly technical subject as well as several years of experience. Leadership and strategic management capabilities were also in demand, as were experienced and qualified individuals in business roles.

Similarly in the banking sector, strategic skills encompassed high level strategic management as well as specific investment skills that pertained to organisational needs. So, for example, advanced mathematical skills were in demand when recruiting analysts, as were the specific investment skills of professionals who worked in asset management, trading and investment banking. In addition to these, several banks stated the need for professional IT skills. These employees tend to be graduates and often have additional post-graduate or professional qualifications.

Of particular importance to banks, due to their international nature, were language skills, cultural knowledge and technical expertise of the international markets in which they operated. Several of these institutions stressed the importance of having access to an international workforce that brought in experiential skills that by their nature could not be acquired in the UK, as described by one manager:

> *'Some of the individuals that come here, it's not quantifiable in saying they have this skill. It's to do with the person they are, it's to do with their experiences, the knowledge, the companies where they've worked and they may have worked in, from Japan, Japanese organisations which have a different structure, have a different way of operation and business management. They would come to the UK, they would bring those skills. You wouldn't actually find that with someone who is British or a British National because they've never in that environment'* (Bank 5).

This global element is seen as a crucial part of their organisational culture and the way the industry works. As another representative from a bank explained:

> *'It'd be very difficult for the bank just to focus on simply British and European nationals, because it is a global operation so you need to have that global element when you're working in the more senior positions to be able to provide that experience to then develop into that particular market.'* (Bank 2).

The willingness to be mobile was also seen to be a desirable quality, as described by one HR manager:

> *'So one of the things we're looking for when people join is to have the ambition to move about, so to be mobile and we're also looking to increase the language skills of the organisation. We want people to be, yeah, truly mobile, certainly in the younger parts of their career'* (Bank 4).

The international aspect was just as vital for the two banks attempting to strengthen their position in the UK. For one, this was because they felt the process of establishing the branch network according to the values and aims of the parent company required that initially experienced staff needed to be brought from overseas. They also required individuals who were fluent in one of the several languages of their target customers. The other employer had an important group of clients from the Middle East who want to invest in UK real estate, so of particular importance here were individuals who had the ability to work effectively with Middle Eastern clients, indicating the need for cultural awareness and language skills. This organisation also offered investments that followed Sharia law, so knowledge of this area in addition to the required business skills was important.

There was also a feeling within banks that they are multinational organisations working in an extremely competitive environment who want to employ the best and brightest person for the job. One respondent stated, *'It's not about nationality etc, it's the particular individual'* (Bank 2).

Individuals considered to have strategic skills were all experienced employees, either home-grown in the organisation or recruited with experience from similar firms.

8.5 Training to develop strategically important skills

The majority of the case study employers in both sectors are heavily involved in training and continual professional development. There was a general expectation that employees of all levels should have support to develop their capabilities throughout their careers. This could include retraining of individuals from related industries on very practical skills, graduate trainees who needed to gain experience of the commercial world and further develop their technical skills and potential high flyers and strategic managers.

For example, one aerospace company discussed a conversion course that allowed them to retrain workers from the motor and ship building industries to meet the demands of aircraft maintenance. A representative of this company explained:

> *'It's not critical if you're in a garage working on a vehicle. You don't have to work to a thousandth of an inch. You do in aviation. So we try to instil the different cultural aspects around safety and accuracy that they may not have experienced before*' (Aerospace 3).

Several of the case study employers had large graduate or apprenticeship schemes that provided the bulk of their relatively inexperienced employees. These recruits would then be exposed to the different functions of the company before embarking on a particular career route. Training at this stage could also entail any professional qualifications they needed for their particular role.

A number of banks had global graduate recruitment schemes, which involved trainees spending set periods of time in international locations to encourage this

perspective, and one bank explicitly included language training as part of their programme as they believed it to be vitally important. A representative stated:

> *'We want these language skills badly enough that part of our graduate programme is about giving these people a different language. And it forms part of their training'* (Bank 4).

Development was not limited to less experienced members of the workforce. Organisations provided access to numerous training routes, such as adult apprenticeships, professional qualifications, accredited and non-accredited external training, and training that aided the development of other core skills such as leadership and management. Respondents from case study organisations in the two sectors described their training programmes:

> *'We also have different programmes...where you're looking for high flying people that you bring straight in, which is a European initiative... it's bringing people in from Europe'* (Aerospace 5).

> *'We run various training courses in-house and various training programmes, not only for their technical skill but as managers, certainly at 10 to 15 years they're normally becoming managers, so we, there are business management skills programmes, there are fundamental business programmes, so that's a big part of our offering to our employees is continuing professional development'* (Bank 4).

Apart from courses and training programmes, case study employers also built on individuals' abilities by enabling them to gain experience in other parts of the company. This, however, was a route normally used for a more select number of individuals. As a respondent at an aerospace company explained:

> *'We do have some development assignments where we say, actually, we think that person might be a future leader. And so we want to bring them in'* (Aerospace 2).

Two of the employers, an aerospace company and a bank, actually felt that the recruitment and training they carry out in the UK was generally sufficient to meet their needs for strategically important employees. However, for the bank an important part of this was having access to an international workforce, which was possible because of being located in London, and enabled them to also recruit non-EEA graduates and experienced hires. For the aerospace company it was also related to the security requirements of their work making the recruitment of foreign nationals difficult.

Section 9. Shortages of strategically important skills

9.1 Introduction

In this section we describe the causes of skills shortages, their consequences to the organisation and the various measures used to mitigate and to solve the issue.

9.2 Causes of skills shortages

The overwhelming cause of skills shortages experienced by case study employers was the inability to find a sufficient number of individuals with the correct skill set for certain roles. Retention was not identified as a problem, with the majority of employers stating that they had a long-serving workforce. Neither did the case study employers highlight issues related to an ageing workforce.

The representative of an aerospace company described the difficulty they had in finding manufacturing engineers:

> *'For example this year in the manufacturing engineering space, we want to look to recruit three hundred people, even with the ordinary initiatives around partnering through universities, degrees, internships, the going back to look at unsuccessful candidates, we still believe we would be able to identify and recruit one hundred out of about three hundred. That is a non-sustainable pattern and that goes year on year'* (Aerospace 1).

They felt this was driven by the decrease in the number of candidates they could recruit from university courses, and stated that there had been a significant decrease in students that achieved first class degrees in production and manufacturing courses in the preceding years. The representative of another aerospace company also stated that they could not find applicants with the exact technical skills they needed from UK graduates:

> *'They're coming, predominantly the shortage occupations are the ones from, are people from India because they seem to be very highly qualified in the jobs that we actually find difficult to recruit for, and China'* (Aerospace 5).

The lack of high calibre graduates in technical subjects was also a reason given for skills shortages by employers in the financial services industry. Two particular problems were identified related to this. Firstly there was a feeling that there was an overall decline in the numbers of students studying these courses leading to a decrease in the available pool. In addition, several employers maintained that the quality of graduates from the UK and EEA, in general, did not match those of graduates from certain Asian countries in terms of technical and mathematical ability and job readiness. One respondent from a bank explained:

> *It's very difficult to find technology graduates or the skill sets that we have in the UK, because university career paths are geared in a slightly different way to economies like India and China'* (Bank 2).

Other reasons for skills shortages given were more industry or company specific. For example, qualifications for licensed aircraft engineers were only recognised from other European countries. At the same time, UK qualified individuals had access to several other international markets, leading one consultant to surmise that they were being lost to locations that offered better salaries.

The other case study employer that worked in aircraft maintenance did not feel that staff had left for highly paid contracts in other countries or chosen to work in other industries. He did however feel that a combination of several factors such as location, a specific problem for them, pay and the need for those who hold overseas qualifications to retake the UK equivalent qualification had contributed to their inability to attract suitable applicants to their organisation Additionally for this company, an earlier cost cutting exercise involving redundancies had been another factor that had led to them being short of skilled employees.

Another situation in which employers were finding it difficult to recruit was when they were seeking skills that were not generally available in the UK job market. For example, one of the two banks looking to expand in the UK wanted staff that had a good understanding of the parent organisation, banking skills and language capabilities. The other required staff to have knowledge of Sharia law and be culturally familiar with the Middle East in addition to core banking skills, as pointed out by one their HR manager:

> *'Our skill shortage has very much been in the back office areas in terms of skills, in credit and market risk, in regulatory reporting, in those areas. And I think that has been because we're asking for quite a lot when we're asking for people to be qualified in what you would usually ask in a conventional bank. And then we're asking for actually we'd like you to have had exposure to the Sharia aspect of things as well'* (Bank 6).

Other banks also experienced these difficulties when seeking senior employees with expertise on how distinct international markets or businesses operated. Bank 6 was also concerned that it would have problems recruiting at senior levels as they expanded in the UK market.

9.3 Consequences of skills shortages

Skills shortages resulted in adverse consequences on the day-to-day level with indications that there could be more serious penalties in the long-term. Several employers stated that projects and workloads were being delayed, and one employer stated that they had been forced to sub-contract work in the short-term and that their workforce did not work as effectively as it could do. There were also impacts on existing staff with individuals working longer hours, needing to carry out work previously done by a larger workforce, and coming under more pressure, as described by a manager:

'Stress, really. My technical team particularly, one of the guys left because it was too much. One of the guys, we recruited him in April 2009 and he left in April 2010 because of … less than a year he lasted. He said he couldn't cope with the workload, the pressure' (Aerospace 3).

One bank discussed how shortages led to a slowing down of hiring which in turn impacted on overall revenue. There were also concerns that there could be more serious consequences, such as UK companies losing work to competitors and partners in other countries or that employers would have to use alternative methods that are less efficient would to reach targets. The consequences are discussed in greater detail in Section 12.

9.4 Measures taken to address skills shortages

The case study employers were taking a range of measures to counteract the effects of skills shortages. One of the primary ones involved upskilling existing staff: banks valued an international perspective and language skills and had included these elements in their graduate training; and both sectors discussed international development assignments for senior staff. Employers with an aircraft maintenance function provided access to professional qualifications and ran conversion courses to bring in people from related industries, such as ship building and the motor industry or ex-servicemen through the armed forces career transition programme. A bank also discussed augmenting its workforce using temporary staff.

In general, training and upskilling are ongoing and important functions in these organisations. There was some indication that training practices have been adapted to mitigate skills shortages or restrictions on economic migration. A representative from a bank discussed using intra-company transfers (ICTs) to bring in individuals from international locations who would train staff for a period of time before returning to their home country. This was used throughout the company with individuals coming from overseas to train the workforce in the UK and vice versa. One aerospace company discussed how they had re-assessed and recruited candidates that had not initially been accepted in their graduate scheme. They then invested more in initial training to ensure that they were job ready. This example, however, relates to individuals at the beginning of their careers, where there is room to build in this additional training. Skills shortage occupations or those subject to immigration restriction which are also deemed to strategically important are unlikely to be at this level and, more importantly, are likely need a substantial longer time to develop. The evidence suggests that for some occupations which require strategic skills that are in short supply there is a tension between the immediate lack of access to individuals with these skills and the time period necessary to develop the skills within the available workforce.

Some companies in the aerospace industry have invested in more long-term solutions to skills shortages, by trying to ensure that students graduating from UK tertiary education do so with the key skills for the industry. To achieve this they have

worked with universities to ensure that key, strategic skill areas are included in the course, and one organisation works in partnership with the further education and higher education sector to provide the training required to manufacture their new product.

A number of employers felt optimistic that these approaches could yield benefits in the next three to five years in terms of having new graduates with enhanced skills, but this did not help their current situation. Moreover a longer time was seen as necessary for these approaches to deliver experienced UK graduates. In addition to the above , aerospace employers worked closely with schools to increase awareness of their industry and advertise their training schemes, as described by one employee whose main responsibility was to work with student and teachers in primary and secondary schools, as well as colleges.

> *'linking with local schools, colleges, trying to promote the work that we do, trying to make sure that people are aware of what we offer from a career point of view, and if people are considering us as a career or the company as a future employer, what do they need to actually get in'* (Aerospace 5).

Other measures to address skills shortages are discussed further in Section 11 in the context of alternatives to recruiting non-EEA migrants.

Section 10. Recruitment of migrants with strategically important skills

10.1 Introduction

In this section we look at the use which case study employers made of non-EEA migrants, at whether they were used to meet shortages of strategically important skills, to complement skills of UK and EU employees or to substitute for them. We look at the use of direct recruitment from outside the EEA, at intra-company transfers (ICTs) and graduate recruitment as routes and methods by which non-EEA migrants with strategically important skills arrive in UK workplaces. As well as looking at why companies make use of these employees, we look at reasons why they do not, at some of the disadvantages and barriers to recruiting from outside of the EEA and at possible alternatives.

10.2 Recruitment of migrants

There was no single or predominant reason for employing non-EEA migrants in the case study companies and differences were found between the approaches of employers in the aerospace and banking industries. These were evident both in the extent of non-EEA recruitment and in the extent of and use of ICTs. The aerospace employers had recruited only small numbers of non-EEA migrants to meet strategically important skill needs. Where they had recruited non-EEA migrants this was for three main reasons: to meet the need for specialist engineers; to develop new areas of knowledge for which there is no existing base within the UK; and to develop understanding of operations between global sites.

Banking employers described recruitment from outside of the EEA as a more regular practice, along with the use of intra-company transfers. Like aerospace companies, they recruited non-EEA migrants for specialist or niche skills. They also moved staff between international locations to develop understanding of operations across sites and to transfer knowledge and skills. However, this practice was more widespread and integral to business operations than in the engineering companies, and staff in a range of roles at senior level were valued for their international experience, perspective and language skills.

Recruitment of specialist skills

Aerospace employers said they recruited small numbers of engineering specialists who are in short supply both nationally and even internationally. One respondent described these as including:

> *'….manufacturing engineer, on the leadership side, chief of engineering, process planners, tooling and fixturing engineers, purchasing engineers and then, on our gas turbine supply chain design we have aero-thermal engineers and stress engineers'* (Aerospace 1).

Some of the case study companies were engaged in leading edge research and development and could only meet the needs for these skills through sourcing more widely than the UK. The same respondent quoted above explained that:

> *'In the aero-thermal stress engineering specific skill sets we have 15 vacancies. At the moment we are attracting no relevant candidates'* (Aerospace 1).

Two of the case study companies said that these non-EEA recruits, although small in number, were crucial for their research and development strategies. They were described as typically at master's level in engineering. One respondent explained that the company would like to recruit 300 new recruits in manufacturing engineering to develop new areas such as composites. However, it could, realistically, only recruit 100 through UK and EEA graduate recruitment, internships and applications. Countries of origin were largely the Indian sub-continent and the Far East. One respondent explained that the company fills its vacancies in shortage occupations by recruiting from India *(Aerospace 5).*

Banks recruited skills which were either in short supply in the UK or where they are more suited to the business than domestic applicants because of their particular knowledge and skills. Investment bankers and senior analysts were among the employees which some banks regularly recruited from outside the EEA. The skills of these staff were considered critical to business performance and banks did not wish to be restricted to national boundaries in their search for the highest calibre recruits. As the representative of an international bank explained,

> *'It gives us a much bigger pool of talent to look for, if we're trying to employ absolutely the best of the best'* (Bank 7).

Some other respondents said that they practised non-EEA recruitment where skills could not easily be sourced from within the UK or where they were better outside the EEA. The representative of a large UK based bank explained that:

> *'There may be certain skills where the calibre of finance studies that the individuals undertake in China tends to be at a higher standard than in other parts of the world. We frequently find that individuals from China have stronger finance skills than some other places'* (Bank 5).

Another bank (B6) recruited IT analysts from the Middle East, although this was partly for their additional cultural knowledge and understanding of operations in the parent organisation, including Sharia law.

Although banks wished to source recruits from the widest possible pool, international recruitment also gave them skills and knowledge based on the experience of living and working within non-EEA markets, operations and cultures. Recruits from within the UK and EU applicants do not have these qualities which were seen as crucial for business operations and development. A number of case study representatives

emphasised the global nature of their operations and the benefits of having employees with language skills and cultural knowledge and understanding. This was also a key reason for transferring staff between locations.

Stakeholders also referred to the need for the finance sector to employ people who can communicate with customers in overseas markets, but that employers in other sectors had the same requirements. A stakeholder respondent explained that without employees with language skills, it would be difficult to trade with overseas customers from within the UK:

> *'Where you have got high value manufacturing, be it chemicals, metals or composites, and you are working with the local market, particularly if you are making bespoke or tailored products, being able to have a conversation with a customer in their own language enables them to operate from the UK base'* (Stakeholder 3).

Aside from language skills, stakeholders, like employers, referred to a need to recruit individuals with appropriate cultural knowledge and understanding for some roles.

Non-EEA Graduate recruitment to meet specialist skills needs

Case study companies in both the aerospace and banking sectors recruited graduates of non-British nationality to meet strategic skills needs. This was both through the Post-Study Work route for graduates from UK universities and also through international recruitment.

A number of the Aerospace case study companies had previously recruited non-EEA migrants to their graduate training programmes via the Post-Study Work route. One case study employer estimated that as many as 10 per cent of its seventy graduate recruits were non-EEA. These had been recruited for their knowledge and skills in specialist areas of engineering needed by the organisation to develop new technologies. One respondent said that the employment prospects of engineering graduates were extremely good and that, consequently, the pool of available talent in the UK is very small (A5).

Also in relation to graduate recruitment, another respondent explained that the company targets universities elsewhere in Europe and the Far East. As they explained:

> *'We find that they're a good place to get people who are quantitatively very strong, who have very, very strong mathematical ability. Within the UK we only really tend to hire from Oxbridge and very good red brick universities but we find we cannot satisfy the demand for those interns and graduates solely from UK universities, hence we have to look outside'* (Bank 7).

The representative of one bank explained that this was not about substituting for UK graduates but about building a strong team of complementary skills. He explained that, 'It's assisting the skill set that we have in the UK' (B2).

Like some of the aerospace companies, banks were also recruiting non-EEA migrants through the Post-Study Work route to their graduate training programmes. These were recruited for their language skills and cultural knowledge and understanding, as well as for their qualifications and potential for professional development. As one respondent explained:

> *'As part of the graduate recruitment scheme we are looking for people who have, say, Chinese Mandarin. They are normally Chinese nationals that have come to the UK to be educated. They'll work with us for however many years, they might go back to China or they may go to a different international location and then come back'* (Bank 4).

Mobile careers were reported to be attractive to graduates both from the UK and internationally. Therefore, offering the opportunity to work and live in locations including New York, India or Singapore was seen as assisting banks to recruit graduates for development to senior, strategic, positions.

Therefore, while the aerospace companies were recruiting graduates of non-EEA origin for specialist knowledge and skills which are either non-existent or in short supply in the UK, the banks were recruiting graduates with additional skills, particularly in language and cultural knowledge, which are unlikely to be found among graduates brought up and educated within the UK.

Transfer of knowledge and skills, through ICT and recruitment

Transfer of knowledge and skills was reported to be one of the main reasons both for recruiting employees from outside of the EEA and also for transferring staff between locations.

While most of the case study companies used Intra-company transfers, the practice was much more common among the banks than the aerospace companies. One aerospace company transferred small numbers of staff between company sites internationally to gain experience and understanding of operations. This was both to develop individuals' skills and to improve operational effectiveness. A representative of this company gave a number of examples of deployment of non-EEA employees across various functions within the organisation:

> *'I think under 200 were from outside the EEA. A significant number of those are Americans. They're here on some temporary period. We have a reasonable number of Australians who come here, they're working in our legal department. We had somebody who was working in the corporate centre and was in charge of corporate responsibility. He was running that for us globally. We had somebody else in performance excellence, which is about capability*

development. We would tend to see people in the land and armaments business, because that's basically run out of the US. They come across to manage part of that business' (Aerospace 2).

It was pointed out that movement was as much out of the UK to non-EEA locations as to the UK from other international sites.

In the banks, transfer of staff between international locations was practised frequently, for varying periods and for a range of reasons. One reason was for senior level employees to gain an understanding of operations in international locations in order to improve global operations and communication. These transfers were typically for relatively short periods of a few years, for example. As global organisations, career routes in banks are not confined within national boundaries and, for professional employees in banks with a strong international presence, mobility plays a part in career development. As the representative of a UK based bank with a strong international network explained:

'An individual could create a whole long career if the were really, really, focused on doing so by moving between the businesses, the job, the type of division and the countries over twenty years' (Bank 5).

For a number of the case study employers, non-EEA transfer, and also recruitment, was practised in order to assist expansion of operations into new territories internationally. The banks needed employees from these locations to input into decisions about the design and delivery of products. In two cases, this was to develop business within the UK. This was seen to be possible only with the transfer of employees into the UK with knowledge of the bank's organisation and operation in its home country. This knowledge encompassed such areas as products, business practices, marketing, customer service and general business strategy. Transfer of employees and, most importantly, transfer of their skills and knowledge to UK-based staff, was regarded as highly beneficial to business operations within the UK. It was also important to employers in the aerospace industry. One respondent explained:

'The international element is very, very important, to open up markets and to open up talent pools' (Aerospace 1).

Having staff from non-British backgrounds, either through ICT or through recruitment was seen as essential to the success of the company globally rather than just in the UK. As the same respondent quoted above stated:

'We are clearly the hub of the business as we stand today, so there is a need to draw in people [from overseas] to then send them out again and understand the business' (Aerospace 1).

Stakeholders also identified one of the key reasons for non-EEA recruitment or ICT as setting up an existing overseas business within the UK. The ability to recruit or,

more usually, transfer employees was seen as a key business requirement for such companies. Therefore, as a respondent explained:

> *'The view is that initially, not surprisingly, if you want to establish a company, you will surround yourself with people that you know and trust. They will be linked to your parent company, so they will be part of our organisation, but they will be outside of Europe, so they will be migrants'* (Stakeholder 3).

These individuals do not necessarily settle in the UK in the long term, as the same stakeholder respondent explained:

> *'…bit by bit, in theory, they will start to leave and they will start to replace them with local management….so there can be a pattern for new investment. The basic rationale for the larger companies is that they are global organisations, and one of the fundamental things they require , in any country that they are in, is the ability to actually deploy initially their own staff where they think their staff can actually best provide a result or a particular service to them'* (Stakeholder 3).

Stakeholders also referred to the benefits of recruiting individuals with strategically important skills in creating jobs for residents and in boosting economic activity and spending. One stakeholder expressed the view that this factor had not been given due consideration in decisions about UK Government migration policy and felt that, for this reason, there should be no limits placed on entry of individuals with high level skills and knowledge (Stakeholder 3).

The transfer of knowledge out of the UK to new business locations outside of the EEA was seen as equally important to the development of a global business by both employers and stakeholders.

More generally, the mix of cultural backgrounds was seen by some employer respondents as having benefits of different perspectives on business practice. A respondent from a bank asserted:

> *'I walk around this business here and I see people and I talk to people from all over the world who work here. Personally, I think that's a fabulous thing. I learn. It allows me to adapt. I would find it quite limiting if it was just a UK-based organisation because to work in the world today I think you have to have a global mindset'* (Bank 5).

Employers in both aerospace and banking also felt that they benefited in less tangible ways from international recruitment and transfer, particularly in improving diversity within the workforce. This was seen to bring different perspectives and experiences, as well as different languages and areas of technical and cultural knowledge. A respondent from one of the aerospace companies stated:

'It does have a sort of peripheral advantage in terms of broadening the cultural diversity within an organisation... We promote equal opportunities and we also embrace diversity' (Aerospace 5).

These benefits were more explicitly acknowledged by the banks. The representative of a large UK bank expressed the view that employing senior employees from international backgrounds 'makes us a richer and better company'. She explained that she meant both richer financially and 'richer in character' and that this, in itself led to business benefits (B5).

Other reasons for recruiting non-EEA migrants

Two of the case study employers had sponsored or transferred maintenance engineers from outside of the EEA. While these are arguably not employees with strategically important skills, these employers explained that aircraft maintenance is crucial to business operations. In one of these case study organisations non-EEA migrants working for another employer, located overseas, were brought to the UK to be trained to work on UK Government defence projects. The programme of training was extensive, taking a period of nine to twelve months. The company explained that this was the most effective way to train this workforce in the necessary skills. In the second case study, maintenance workers were recruited from the Far East to carry out aircraft maintenance. This approach was explained with reference to recruitment difficulties from within the UK, resulting from poaching of UK nationals and also from loss of maintenance engineers to jobs outside of the UK, including in the Middle East. In 2008 this employer recruited as many as 300 maintenance workers from outside of the EEA.

.

10.4 Methods of recruiting migrants

In Section 8 we referred to methods of recruiting employees with strategically important skills. We also asked about whether employers went about recruitment of migrants with these skills differently. The aerospace and banking case study organisations differed in the ways in which they recruited their non-EEA employees. In general, the aerospace companies sourced migrants through their general advertising, which they carried out through their websites and publication in trade journals. Information about vacancies was therefore available to potential applicants world-wide. It is somewhat surprising, given the need for specialist engineering skills in the aerospace sector, that the case study organisations did not report using head-hunters. One case study respondent explained this with reference to the limited number of aerospace employers, and within these organisations, limited numbers of specialists. Therefore it was thought that interested potential applicants would be looking out for vacancies on websites and specialist magazines. This respondent explained:

> *'The chances are if you are a composite stress engineer and you want to work in the aerospace industry, you will look for a job with [name of company]'* (Aerospace 5).

Low staff turnover and the emphasis on home-grown talent may also have been a reason for this approach, with the employer channelling its recruitment energies into graduate recruitment, through attendance at job fairs and university open-days.

One of the case study aerospace companies carried out targeted recruitment of maintenance engineers from the Far East (see earlier). The entire recruitment process for these employees was carried out in their home location, and included security and medical checks. These individuals were recruited for their technical skills, their English language skills, both of which were tested in the recruitment process, and also for their work ethic.

Targeting of recruits with strategically important skills was a more standard practice of case study organisations in the banking sector, particularly the larger organisations with high demands for such skills. This included the use of head hunters who sourced from within the UK and more widely where considered necessary. The remit given to recruiters was described as one of searching nationally and then widening the search internationally, usually without a specific EU-wide search. As one respondent from an international bank explained:

> *'Depending on what the role is, predominantly they would still be from the UK, if it was a UK location. However, for certain roles and for certain experiences, we would widen the search and it would potentially be international'* (Bank 4).

And the representative of a Middle Eastern based bank explained that:

> *'If we're talking about guys heading up new products, they would probably come through a head-hunter and it would be for us to say what market to go to. The head-hunter we engaged recently was instructed to map the London market first, then broaden to the UK and then broaden to A N other place, to do the rest of the world basically'* (Bank 6).

Not all of the case study banks used head-hunters on a regular basis, but recruited through advertising on their own websites. Word of mouth was also mentioned as a method of recruitment by a UK bank operating in around 60 countries:

> *'What may happen is that an individual who works here may know someone who's an Australian and they may say this person would be ideal for the job so there's an element of they will refer this person, and we will call that an employee referral, which many companies have. The individual would still have to apply, we've not gone out seeking that individual but an employee has referred them as a good candidate'* (Bank 5).

We referred earlier to the practice of recruiting graduates from UK universities who include those originating overseas. These were not necessarily targeted by case study organisations, but recruited as strong candidates for the organisation's graduate recruitment programme. The Post-Study Work route was used for this recruitment. In addition, as described above, companies sometimes recruited graduates with particular knowledge and skills from overseas. One bank based in the Far East but with a strong presence in the Middle East also recruited in this location to be mobile between there and the UK. This respondent explained that:

> *'There are certain universities that we have been targeting to try to attract people within the local jurisdiction because there haven't necessarily been the graduates available in the UK who would be willing to go, let's say, to Bahrain, Dubai or some of the locations where we need people'* (Bank 1).

Another bank targeted graduate recruitment at technical universities in France but also at universities internationally with a high output of graduates with technical expertise, particularly in maths (Bank 7).

10.5 Use of work permits and intra-company transfers (ICTs)

Work permits

The study employers employed non-EEA migrants using various work permits and arrangements. Many of the employers had recruited under Tier 2, for skilled migrants with a job offer. Banks reported greater use of Tier 2 than aerospace companies, although our sample is small and may not be representative. Some employers said they had some employees who had entered the UK under the old Tier 1 (General) route, which allowed highly skilled migrants to enter the UK without a job offer. As one employer explained:

> *'What we have found historically is that the more senior people are, the more they've been able to come in through the Tier 1 route, so they've needed less assistance, whereas it's the graduates and the lower ranking, lower paid staff who typically are the people we bring in on Tier 2 general'* (Bank 7).

One employer sponsored the applications for indefinite leave to remain for employees who have come via Tier 2 or Tier 1, once they are eligible. This is done with the agreement that they will repay some of the costs should they leave within three years of this being granted. In practice, this had never happened since migrants had stayed with the organisation.

Employers reported that they currently had sufficient numbers of certificates of sponsorship, and regarded Tier 2 permits as just one of the entry routes for the skilled staff they needed. However, some concern was expressed at uncertainty surrounding the future number of Tier 2 visas allocated to employers in view of the recent cap on Tier 2 (general) (see Sections 12 and 13).

Stakeholders also reported that for most of their members, the extent of recruitment from outside of the EEA was small. As stated above, larger employers were the primary users of both Tier 2 (general) and ICTs. Recruitment outside of the EEA was seen as difficult for smaller employers, as one respondent explained:

> *'The biggest firms, they've got the HR departments and all that who can deal with it, but smaller, further down the chain, it's harder'* (Stakeholder 1).

At the same time, Tier 2 recruitment was seen as sometimes essential to meet a specific skill need.

Stakeholders also referred to geographical variations in skills sourcing, with employers in London and some of the major cities as having the highest demand for non-EEA recruitment. One stakeholder, who surveyed members on skills shortages and on migration, commented that respondents wishing to recruit from outside of the EEA were generally larger firms located in London (Stakeholder 4). As another stakeholder explained:

> *'The greatest need [for non-EEA migration] is in London, Edinburgh, Leeds, Norwich – places where you've got concentrations of financial services. With engineering, you'll find it around the aerospace businesses, in clusters in the West of England, you'll find it around the renewable energy businesses that are starting to grow in the North East, or the nuclear industry – Norfolk, Suffolk and, again, Bristol'* (Stakeholder 2).

As this respondent suggests, geographical differences in demand for non-EEA recruitment generally reflected the location of industries with high-level skills demands, including financial services, engineering and specialist sectors such as nuclear.

Some employers spoke about changes which had been made in rules governing the recruitment of skilled migrants with a job offer. The raising of the qualification level from NVQ level 3 to level 4 was mentioned, but was not reported to have affected practice, since migrants recruited from outside the EEA were generally at level 4 or higher. However, it had affected the use of Tier 2 for short term assignments for trainees (B2). Employers recruiting under Tier 2 also complained that the process was slower than several years ago, with one employer remarking that:

> *'I've got six or seven on-going cases that, historically if it was 2008, would be in post now and the work would be following and we would be using those skills immediately. But they're still on-going because of the current system'* (Aerospace 5).

As described earlier, many of the case study employers employed individuals through the Post Study Work route. These were recruited from UK universities as part of employers' graduate recruitment programmes. They were generally reported to be a small proportion of graduates recruited. In some cases they were recruited

for their potential to be internationally mobile, including to their country of origin. Therefore, as explained earlier, they were recruited for their language skills as well as for their technical knowledge and potential. One of the case study employers, a UK bank, recruited some of its graduate intake from students working part-time in its call centres to fund their studies, under Tier 4 (the visa for students aged 16+ wishing to study in the UK).

A number of employers reported using additional schemes to employ non-EEA individuals. The main variation was permits allowing individuals to train within the UK for a limited period. For example, one aerospace company was engaged in temporary transfer of technicians of another firm, located overseas, to train in the UK to work on defence projects in their home location. Another aerospace company had done this in the past but was of the view that this route had become more difficult. Aerospace employers also said they had used Tier 5 where non-EEA staff were used to carry out work classified for trading purposes (the temporary workers and youth mobility visa scheme). One of the banks also reported using Tier 5 to provide placements to students in the Middle East, which had been difficult to organise in part because of poor advice from the British Embassy.

Intra-company transfers

Intra-company transfers (ICTs) were used by all the case study employers, for reasons explained earlier. In most cases they were used to move senior staff to gain experience or to transfer knowledge and expertise, particularly for business expansion. One employer gave a number of examples of employees who had been brought into the UK on ICTs:

> *'We've just brought in a specialist lawyer from the States who deals with export controls from a US perspective, we're bringing in somebody to cover our Director of Communications while she is off on maternity leave. We also have some development assignments where we think that person might be a future leader'* (Aerospace 2).

Similarly, a respondent from one of the banks explained that the ICT route is used for senior employees and under specific circumstances:

> *'An assignment is seen very much as an investment so it tends to be high profile individuals across the board. These are people that are excelling and they are seen as the future strategic leaders of the organisation'* (Bank 1).

We referred above to the use of ICTs for business expansion. Two of the case study banks were in niche banking areas, expanding within the UK to particular markets. Therefore it was seen as most appropriate to use ICTs to transfer knowledge through the temporary relocation of staff. In relation to staff with IT expertise, a representative of one of these banks explained:

'When we bring people we need somebody who is already trained in our system, otherwise it takes a lot of time for us to train in the system' (Bank 3).

This bank employed non-EEA citizens only through the ICT route rather than recruit under Tier 2 (general). One of the reasons for this was that it wanted employees to regard the period of stay in the UK as a 'learning experience' of how the bank can expand its operations into new territories, and to use this to develop their careers in their home country. This is a typical use of the ICT route. Another reason for use of ICTs, stated by a different case study bank, was to train up staff based outside of the EEA to transfer expertise back to their home country to develop the organisation within that location. As the representative for a UK bank stated:

'We use the ICT route to continually up-skill [staff in] all our countries. Globally it's the easiest way for us to do this' (Bank 5).

ICT assignments were reported to be of varying length, sometimes as short as three or six months, for example where staff come to the UK to learn skills to apply in their home countries, and in other cases as long as three years. Individuals might also come to the UK for short periods every year or so, again to build up the organisation's business overseas, including through transferring knowledge and skills obtained during the ICT period to their home-based team.

We also discussed the relative importance of intra-company transfers and other recruitment under Tier 2 with stakeholders. These respondents stated that intra-company transfers (ICTs) are used predominantly used by larger employers, since smaller companies do not generally have overseas operations, particularly outside of the EEA. However, some smaller companies do make use of ICTs in certain circumstances, for example when seeking to set up operations within the UK. Larger employers were acknowledged to be using both Tier 2 (general) and ICTs to meet their strategic skills needs. The importance of Tier 2 was explained by one stakeholder as follows:

'It's the most economically valuable. You're bringing people over with a job offer. They tend to contribute more in terms of tax and skills and knowledge transfer' (Stakeholder 1).

10.6 Relocation packages

Relocation packages were typically offered to employees coming to the UK through the ICT route and through those coming for temporary periods as trainees, or through Tier 5 for example. The level of support given to both ICTs and international recruits in the aerospace case study companies varied. While basic support, such as costs of flights and provision of temporary accommodation was standard, private health cover and payment of education costs was not. Levels of support depended on the seniority of employee, however, some companies provided considerable support to staff below senior level. Assistance with travel and accommodation was

given to temporary, Tier 5 workers, and usually additional support to Tier 5 employees, but this reflected seniority as much as migration status.

Relocation and intra-company transfer packages in the banks tended to be generous. All seven case study banks provided private health cover to their permanent employees, and this was included in the contracts of non-EEA recruits and those coming to the UK on ICTs. This reflected benefits which are included as part of the employment contract for all employees. For strategically important employees, the banks paid for children's education, where this was provided for UK based staff at the same level of seniority. As with aerospace employers, more senior employees were given more support. As one case study employer explained:

> *'If it's an international signing, it tends to be all-singing, all-dancing, where you will get allowances for business services, education and shipping. If it's a permanent relocation it tends to be a one-off allowance and you as an individual choose to use that on the things that you need to initially pay for* (Bank 1)'.

It was also apparent that some discretion was exercised in the package offered to both Tier 2 and ICT employees, with more generous provision, in terms of assistance with housing, healthcare and private school fees to more senior staff of particular strategic importance to the organisation (B7).

10.7 Disadvantages and barriers to recruiting migrants with strategically important skills

We have referred to a range of advantages to employing non-EEA migrants and to some of the benefits experienced by case study employers. We have also described some of the additional costs of recruiting non-EEA employees with strategically important skills, for example relocation. Case study employers also referred to a number of other disadvantages and barriers to recruiting from outside of the EEA. These were principally the perceived complexity of rules surrounding non-EEA recruitment, the length and complexity of application forms, the time taken for applications to be approved and the costs involved. While the larger banks generally contracted out the management of mobility and international recruitment to specialist organisations and, in the case of legal aspects, to in-house or retained lawyers, smaller organisations and many of the aerospace companies managed migration in-house. They were therefore aware of the complexity of processes and the work involved in obtaining Tier 2 visas.

Employers managing the recruitment of non-EEA migrants, with limited resources, experienced difficulty in keeping up with changes in immigration rules, for example the introduction of new tiers, changes in criteria and the removal of old tiers, for example Tier 1. The perceived complexity of rules around non-EEA migration was reported to have implications for time and cost in making applications. It also left some employers unsure about whether they were complying or breaching

regulations. The level of fees charged for visas and delays in processing were also cited as barriers to non-EEA recruitment.

The employers who had least difficulty with managing migration and saw few disadvantages were those who had put considerable resources into managing the recruitment of employees through work permits and facilitating intra-company transfers. These were generally the banks, who had teams of staff engaged in overseas recruitment and transfer and who also had expertise on-tap through legal teams and immigration specialists. We have explained that, for many banks, non-EEA recruitment and transfer was essential to operations, therefore the costs and complexity surrounding the recruitment of migrants were generally seen as unavoidable or essential expenditure.

Some respondents expressed the view that there is currently too much responsibility on employers to interpret immigration rules. As a representative of an aerospace company argued:

> *'[the UKBA] shouldn't let a company decide we can do this, go out to an agency and double check, because the rules are so complicated, and then ultimately, two years down the line find out they've done something wrong and be penalised…the Government needs to be held responsible for immigration policy, not UK companies'* (Aerospace 5).

However, the alternative view was expressed that employers who experience skills shortages should be given more freedom to recruit overseas. Some respondents expressed the view that, where shortages are apparent at the level of advanced skills, the process of recruiting from overseas should be easier than at present. It was argued that the Government does not have sufficient understanding of skill sets to make such decisions. Two employers from the banking sector proposed the introduction of a highly trusted employer scheme which would give more responsibility to employers to manage migration decisions themselves (see Section 13). They also felt that this could reduce the delays currently experienced with visa approvals.

A number of respondents referred to cost as a disadvantage of recruiting from outside of the EEA. Stakeholders emphasised that non-EEA recruitment of individuals with strategically important skills was not practised in order to reduce staffing costs, since it is an expensive and time-consuming process. As one respondent explained:

> *'It is not, as sometimes it's perceived, an easy option, but sometimes it is an essential option, even though it's an additional cost'* (Stakeholder 3).

Another stakeholder reported that, because of the bureaucracy involved, he had anecdotal evidence that some of its members felt that applying for Tier 2 visas was

‘more hassle than it’s worth’ (Stakeholder 5) and that only employers with a genuine need to recruit from outside of the EEA were doing so.

While many stakeholders talked about the general problems of complexity of migration rules, lengthy application forms and delays in approval, some had more specific complaints. Particular difficulties with understanding rules governing the use of work permits were reported by employers wishing to bring employees or trainees into the UK for relatively short periods for temporary work, for training or for internships.

Complexity of immigration rules was not the only disadvantage of recruiting non-EEA migrants. Recognition of qualifications was also mentioned by a number of employers. One aerospace employer referred to difficulties in having overseas qualifications recognised for regulated occupations such as aircraft engineering. This respondent explained that an aircraft engineer recruited from South Africa had been obliged to sit 15 modules of the CAA qualification, which took more than three years to accomplish. The same employer also referred to difficulties in attracting non-UK applicants and even employees working on its overseas sites to its UK locations, for reasons including the UK weather. As one respondent remarked:

> *‘Why would you want to move from sunny California to not quite sunny Scotland and the life-style change and everything else?’* (Aerospace 3).

A further reason for relatively low levels of non-EEA recruitment by some of the aerospace case study organisations was the need for security clearance for staff working on defence contracts, and the difficulty of obtaining adequate references covering a five year period for individuals employed overseas, whether or not they are EEA nationals.

Section 11. Training and other alternatives to non-EEA recruitment

Employers who recruited regularly from outside the EEA were asked whether they felt there was scope to reduce this practice through developing alternative recruitment strategies and through training of resident workers.

Some of the case studies in the aerospace sector felt that they had already developed strategies to minimise the need to recruit migrants, with training at the centre of these. Their strategies commonly included graduate training and development programmes supported by internships; and large-scale apprenticeship programmes with progression, through company sponsorship to degree level. Case study employers said these strategies were long-term and were successful in attracting and retaining quality employees. A number of the case study employers had sizeable graduate recruitment programmes and were investing heavily in other forms of training and workforce development. One aerospace company, employing tens of thousands of staff in the UK, had an apprentice count of around a thousand and found that this long-term investment, combined with low staff turnover, meant it was able to meet most of its skills needs without recourse to non-EEA recruitment. Employers continually reviewed the success of the training strategies and programmes: in relation to post-16 recruitment in particular, some respondents in the aerospace sector said they were currently benefiting from a high standard of applicant for their apprenticeship programme and were hopeful that this would continue.

It was evident, however, that skills gaps did occur, despite employer investment in training. Therefore, the aerospace company cited above still recruited occasionally from outside of the EEA for specialist skills and regularly transferred staff between international locations. Skills gaps sometimes resulted from the implementation of other business strategies, for example downsizing. Therefore waves of downsizing through voluntary redundancy had left holes in key skill areas which could not be sourced easily from within the UK. Skills gaps also resulted from weaknesses in succession planning, where cohorts of skilled employees reached retirement. These gaps were met by training and development of existing employees where possible.

Although employers were investing in training, some identified scope for expanding this activity. This was, however, not necessarily straightforward. One case study employer referred to a barrier to expanding apprenticeships in the shortage of employees who were free to supervise these trainees, and also to lack of availability of engineering courses at apprenticeship level available locally (A4). This was not confined to apprenticeship level: we referred earlier to the absence of some areas of specialist engineering at university level within the UK. One engineering respondent also referred to the shortage of leadership skills within the UK, and the need for much more widespread leadership training, so that individuals with such skills were more available within the UK. As an aerospace engineering employer remarked:

> *'A B1[12] apprenticeship will give you a certifier on an aircraft. It won't necessarily give you someone who can go out and get a twenty-five man team running effectively'* (Aerospace 3).

Therefore, our findings suggest that training activity might be increased through closer links between business strategy and training at firm level and improved planning of education and training provision in skill areas of strategic importance. However, evidence from our case studies suggests that this may not reduce employers' needs for external recruitment, including from outside the EEA. It was argued that even the most strategic training approaches and the best apprenticeship and degree sponsorship programmes cannot meet all skill needs. Therefore, some employers saw it as inevitable that some skills, particularly at senior level and in niche areas will need to be sourced from overseas.

Employers referred to ways other than training in which their levels of non-EEA recruitment might be reduced. . Possible measures included more testing of the UK labour market and of recruitment from other European countries. One aerospace employer was currently reviewing applications it had initially rejected to give UK and EU applicants a 'second chance'. It was doing this in response to reductions in its Tier 2 allocation and in anticipation of future changes in UK immigration policy. Some scope was identified for greater use of 'home grown talent' through development of junior staff. Some banks were considering increasing their involvement in apprenticeship schemes, sponsorship of university students and use of internships (see later). Apprenticeship entry following 'A' level studies at 18, rather than at 16, was of interest to some banks.

One employer said that, for their own organisation, poaching of staff working within the UK finance sector was one alternative to recruiting from outside of the EEA but felt that adopting such an approach would be seen as unacceptable to senior management and would affect relationships with competitors. While measures to increase the use of home-grown or EEA talent were either in place, or under consideration, they were seen as having limitations in the case of some skill needs. Some employers referred to the importance of their international operations and the high value of employees who spoke the languages, understood business operations and wider culture of the countries in which the organisation operated. Employers said that such a combination of skills would be difficult to find from within the UK or EEA, and impossible for an employer to develop through training. In some roles, having employees from the country of origin of the organisation's operations was seen as important for credibility. One employer explained:

> 'Our client advisers in wealth management head up desks for certain regions, so there would be, for example, Lebanon desk where it's important that you have somebody of Lebanese origin performing that role' (Bank 7).

[12] B1 licence permits the holder to issue certificates of release to service following line maintenance

Therefore, employers believed it was necessary to continue to fill some positions from recruitment outside the EEA.

Section 12. Meeting future skills needs

12.1 Introduction

Our discussions with employers focused both on their current practice and also on the impact of Government policy in relation to migration on their human resource and skills strategies. We asked employers about whether they planned to change these in any way in the short, medium and longer term. This section presents employers' plans for future recruitment and what they might do should restrictions on the recruitment of non-EEA employees with strategically important skills be tightened.

12.2 Plans to change the recruitment of migrants and residents

Case study employers were not planning to change their current recruitment practices in relation to strategically important skills or their approaches to recruiting employees at other levels. This was largely because they felt they could generally work within the current requirements although, as we have described, not without some difficulties. A number of employers, particularly in aerospace, also felt they were doing all they could to increase the supply of these skills through their current UK recruitment and training programmes. One aerospace employer explained that 70 per cent of senior managers at one of its sites had joined the company as apprentices, showing that *'the career paths are there really for people to actually progress to the top'* (Aerospace 5).

However, a number of employees, in both sectors, were taking steps to increase the supply of employees with strategically important skills. One aerospace employer was reviewing its salary levels to see if they were competitive and to explore scope for enhancement. Other employers in both sectors were looking to improve their links with universities to attract high calibre recruits to their graduate programmes. In some cases this was with a view to attracting more UK graduates. However, the banks did not wish to reduce their recruitment of graduates of non-EEA origin and expected to continue to recruit these from UK and overseas universities. The respondent of one bank said that their plans were to make recruitment more global than currently:

> *'Because of our desire to have greater mobility of employees and to increase our language skills so that we can operate in other locations outside of the UK, which is where the emerging markets are, I can see us moving to a far wider recruitment practice and it being on a much more global stage. How we'll do that, I'm not sure. We're looking at it with our graduate programme at the moment'* (Bank 4).

Concern over further limitations to recruitment of graduates has led one employer to consider changing its graduate programme to include more training of Chinese recruits within China, rather than in the UK. In the longer term, this bank would recruit more graduates of UK origin if there was an increase in the supply of maths

and science students, including at post-graduate level. An increase in the supply of language skills would also increase the attractiveness of UK graduates for this employer. One of the aerospace case study companies was working actively with universities to change the content of courses to improve the supply of skills through UK recruitment. A representative of the company explained:

> *'The idea is that, within three to five years we'll start having home-grown engineers that we can rely on, but at the moment it's not there'* (Aerospace 5).

Employers in the aerospace industry also identified a need for the sector to make itself more attractive to young people, and were engaged with schools in promoting knowledge and understanding of careers in engineering. It was felt that these might raise interest among young people in the sector, but that benefits would be felt only in the longer term.

12.3 Implications of tighter restrictions on migration for meeting strategically important skill needs

All case study employers expressed concern at the possibility that restrictions on the inward migration of skilled workers might be tightened. Greater restrictions on ICTs were seen as potentially most serious for many employers, but were seen as less likely to be introduced than other restrictions. Reductions in the allocation of Tier 2 visas were seen to have the potential for most impact on current practice and to have the most serious implications for business operations and skills strategies. Aerospace employers were concerned that senior engineers would look outside the UK to develop their careers. This was seen to apply most to those graduating outside of the UK, but also to UK graduates interested in a global career. Banks also expressed concern about how they would source particular areas of expertise which are either in short supply or not available from within the UK. In addition to concerns about recruitment, respondents from case studies in the banking sector expressed concern at the potential loss of skills transfer and knowledge should restrictions be placed on ICTs and Tier 2 (general) recruitment. One representative of an international bank described the potential effects of restrictions on inward migration on the organisation:

> *'There would be certain parts of our business that would actually really struggle. It would have an astronomical effect on [the bank], yes without a shadow of a doubt.... skills transfer and knowledge would be lost'* (Bank 1).

The representative of another bank argued that,

> *'It'd be very difficult for the bank just to focus on simply British and European nationals, because it is a global operation so you need to have that global element when you're working in the more senior positions, to be able to provide that experience to then develop into that particular market.'* (Bank 2).

Aerospace engineering companies also had concerns that they might lose contracts if they were not able to obtain the skilled staff. As described earlier, difficulties were reported in obtaining visas for non-EEA engineers to be trained within the UK to work on contracts based overseas. A number of aerospace respondents expressed concern that further restrictions of such arrangements, and on recruiting skilled staff from outside of the EEA could result in loss of contracts. It was also thought that some countries might reciprocate in restricting entry of UK citizens, and that this would affect organisations' global operations and talent transfer practices. One respondent argued:

> *'India is very unhappy about these things. We could see new restrictions coming in from India which would prevent us from moving our people there. That would be a huge impact and stop us getting export contracts. There are some big defence contracts coming out in India now, we'd really like to be involved in those'* (Aerospace 2).

Some case study employers were concerned about graduate recruitment, presumably because of the forthcoming closure of the Post-Study Work route. A number of banks used this route to recruit students with the technical knowledge and language skills needed by the business. One respondent expressed fears that:

> *'Our graduate programme would suffer and our graduate programmes produce the potential leaders of tomorrow. They are senior managers and other people that actually allow the company to grow'* (Bank 5).

The representative of another bank said that, without this supply, it would need to carry out more direct recruitment overseas.

Employers also expressed views on potential changes to settlement. Aerospace employers were of the view that any period of less than 3 years was insufficient for to develop and utilise skills. As one respondent explained:

> *'Our starting gambit is that, if we are bringing in individuals on a permanent basis, we would like the opportunity to keep them on a permanent basis and that would cause us a problem if they don't have the right to settlement'* (Aerospace 1).

Therefore, a number of employers said they wanted to keep the specialist skills of migrants, which had been enhanced through further training and experience within their organisations. The exception to this was mobility for training in specific skills, which could be of less than a year in duration. Respondents in the banking case studies expressed similar concerns about changes to settlement entitlement. One respondent believed that tighter limits on settlement would be problematic because many of these employees would not return to their home country with the preferred level of knowledge to work at senior level (B4). The representative of another bank was of the view that a reduction in settlement, under Tier 2, would impact negatively

on recruitment, of both UK and overseas applicants because skilled individuals may not want to undertake long distance relocation for a limited period. Not all respondents were of this view, however, with the representatives of one international bank stating that it would have no problem with a limit of 3 years, since it transferred staff temporarily to assist with business development within the UK, and did not want them to remain longer (Bank 3).

The possibility of tighter restrictions on inward migration of non-EEA skilled individuals had led most of the case study organisations to consider alternative forms of work organisation. One possibility was to locate more activity, particularly manufacturing, outside of the UK. Some employers had already, to some extent, implemented this strategy. One case study respondent was adamant that this strategy was not because of lower labour costs, as is sometimes argued:

> *'Singapore as a labour market is not cheap, absolutely not cheap at all, so if we were picking a country in Asia to base ourselves in for cheap labour, it would not be Singapore. It is the attractiveness of the willingness to operate and invite us in as a business and generate the presence and opportunities locally as well as their education system. It is a combination of many factors'* (Aerospace 1).

Respondents in other aerospace companies also said that movement of parts of the business out to South East Asian locations would be a possibility that their organisations would consider if restrictions on non-EEA inward migration were tightened. The banks also saw off-shoring as an option, both for selected parts of the business which are currently located in the UK and for training. One of the case study employers, which was currently developing a branch network within the UK stated that:

> *'Right now the UK is a hub, but if we are restricted in bring people then our top man will say, "forget about UK, let us concentrate on America, Canada, China. The bank will expand internationally". But UK will lose out, that can happen'* (Bank 3).

With regard to graduate recruitment, two banks said that changes to Tier 4 would affect their graduate sourcing and training, with one saying that it would have to carry out more direct recruitment overseas (Bank 2) and another saying that it would look to off-shore its graduate programme in terms of the delivery of training to graduates (Bank 5). A third said that it would need to think 'creatively' about how to address restrictions in the recruitment of graduates of non-EEA origin. Possibilities might include sponsoring undergraduates who could be given some training before entering the graduate programme, or accelerated programmes delivered in the home and host locations (Bank 4). Whether these options were feasible was seen to depend on their appeal to potential graduate recruits, who might be attracted by alternative offers from the US among other locations.

Companies in both the aerospace and banking sectors said that a possible option was to carry out more training in locations outside of the UK. This was seen to have a number of draw backs, in giving trainees less direct experience of UK operations, and also to have implications for costs in transferring senior training staff from the UK to overseas locations.

Section 13. Policy measures: employer views

13.1 Introduction

This section of this report outlines the policy measures that employers thought should be taken in order to address current skills shortages and to ensure that their future skill needs are met. Areas of discussion with employers included: criteria that employers thought should be used as a basis for allocating work-related visas, appropriate further action that they thought should be taken to address existing and future skills shortages and other measures that could be put in place to increase the supply of strategically important skills.

13.2 Appropriate criteria for allocating work-related visas

We asked employers what criteria they thought was appropriate for allocating work-related visas. There was a strong consensus among both banking and aerospace employers that business and skill needs should be the main criteria on which decisions were made with regards to the allocation of work-related visas. Most of the employers interviewed commented that they only sought to recruit from overseas when the skills required were unavailable within the UK.[13] Indeed, one respondent commented. A representative of this company argued:

> *'It is not rocket science is it? People must be asking why we are they going to the Far East to get labour? We are not doing it for a laugh are we? It is costing us money, we are doing it to support our customers...If we could find the people in the UK it would be easy'* (Aerospace 4).

Such a view was shared by another aerospace company who thought that the visa process should be more straightforward in cases where there was a demonstrated need for specific skills, particularly once the resident labour market test had been completed:

> *'why should there be a problem if these people are desperately needed, we're proving that we're looking internally in the UK, we have to prove that we have advertised within the UK for a certain amount of time. We can't find people, let us have them, that's the, where's the problem in that?'* (Aerospace 5).

The same individual commented on how he thought that the current requirements for the resident labour market test wasted the time and resources of the company since individuals with the specialist skills required rarely sought jobs through the avenues where they were required to advertise positions. A number of respondents, in both sectors, commented on the requirement to conduct a Resident Labour Market Test

[13] It should be noted that employers in the finance sector indicated that, even if improvements were made to increase the supply of strategically important skills, they would still see the benefit in recruiting from outside the EEA because of the global nature of their business and the added value gained from international experience and different cultural perspectives (see Section 5).

through advertising in Jobcentre Plus. While they understood the principle of looking first at UK candidates, they felt that the required approach was inappropriate and a poor use of time and resources. The aerospace respondent quoted earlier complained:

> *'It's a tick-box exercise that we go through. To publish a vacancy at a Jobcentre, it's going to take you an hour at least, for each time you do that to have no one to respond. Then you have to wait four weeks before we can advertise, look at people from outside the UK. It just makes it longer and longer'* (Aerospace 5).

As well as being time-consuming, for skilled positions this process was reported to always result in no applicants, as this respondent remarked:

> *'There's not too many composite stress engineers going to the Jobcentre looking for work unfortunately'* (Aerospace 5).

Similarly, a respondent from a bank argued that advertising in jobcentres was not an adequate test of the resident labour market for professional staff, since they would be unlikely to be signing on for unemployment benefits.

The aerospace respondent quoted above went on to talk specifically about the shortage occupation list, stating that he thought the visa process should be simplified for those individuals who were being brought over under this Tier 2 category and also made more flexible and can respond to employers' changing needs:

> *'When the company has a shortage occupation that is actually helping the UK economy, then that should be an easy process, it should be just a yes. I think the mining industry was really hard hit because they couldn't bring specialist engineers in again, and it just is almost a nonsense when there's people that we need and are going to add value to the economy and we can't bring them in'* (Aerospace 5).

As the quote above demonstrates, some employers linked business need with the economic benefit that highly skilled migrants could bring to the UK economy. Such benefits were seen as being related to productivity as well as in terms of the contribution that high-net worth individuals could bring to the economy. A respondent from the aerospace industry also emphasised that individuals that were being brought to the UK were able to support themselves financially:

> *'If there's a justifiable economic reason why we would bring somebody in, we should be able to do so...This is driven by finances isn't it? And if we can say, look, actually we're supporting them whilst they are here. They are getting paid their wage, work are paying extra stuff on top. They are not a burden on society'* (Aerospace 2).

One of the banks also suggested that the level of investment that a company made in the UK could potentially also be a criteria for allocating work permits (Bank 3).

Migrants' qualifications, skills and achievements were also seen as important criteria, particularly by respondents from the banking industry. Indeed, one interviewee thought that the quality of the university that migrants had graduated from, the type of degree they had undertaken and their level of academic achievement should be taken into account (Bank 7). The individual explained that staff applicants are numerically and psycho-analytically tested; he felt that those who score highly should be given priority. Interestingly, he went on to add that more emphasis should be placed on an individual's skills and achievements than on their salary and that as a bank, the high salaries that their staff earned gave them an unfair competitive advantage over other industries. The same respondent quoted above said their personal view was:

> *'At the moment it seems to be just so much focused on salary, salary, salary, really. I think a fairer way of doing it would be more based around the academics, the level of achievement, skills etc...but that's a personal thing'* (Bank 7).

The need for greater flexibility within the existing points-based system was also emphasised. Interviewees from both industries commented on the need for the government to examine the skill requirements of different industries and increase the flexibility of the system so that their varying needs could be met. Indeed, one of the respondents argued for a move away from a 'one size fits all approach' to a situation where 'there should be different yardsticks for different industries' (Bank 3). Similarly, one of the aerospace companies emphasised the need for the government to keep abreast of developments and changes in industries. They were also critical of the level of in-depth industry knowledge that the government had, despite its consultations with employers, and thought that some of the changes that were made to immigration rules could have unintended consequences:

> *'...there are broad brush approaches to job titles, IT or manufacturing etc but the intricacies within that I don't think the government will ever understand the skillsets that delve into those broad categories. So they make some sweeping decisions closing routes without really actually understanding the knock on consequences'* (Aerospace 1).

Two respondents suggested that the level of bureaucracy should be reduced for those companies with strong records in immigration compliance. Both were broadly supportive of the current points-based system but felt that a company's track record should be taken into account and a fast-track procedure applied to those organisations with a strong record:

> *'If our track record is also that everybody has come for a limited period and gone back, that should be considered and then there should be some*

relaxation. Okay, there is no need to go through the laid down route...Okay fine they want to bring in 10 people, they can come straight away. As an employer, we are giving all the guarantees' (Bank 3).

A similar view was shared by another bank who felt that a system similar to the Highly Trusted Sponsor Scheme which exists for Tier 4 migrants would be useful for employers who regularly bring highly skilled migrants to the UK:

'*...if there was some sort of scheme which gave preferential treatment to continual users of that scheme, which would be the Highly Trusted Scheme, that would be a definite advantage...'* (Bank 2).

Interestingly, despite such calls for greater flexibility within the points-based system, one of the aforementioned banking respondents felt that the government should tighten up the criteria for intra-company transfers limiting the use of ICTs to those employees who have been on the company payroll for three or five years. They felt that such action would help to limit any misuse of the ICT route and would in turn make it easier for those businesses using the route legitimately to bring employees to the UK. They also thought that the dependent unmarried children of those individuals who were brought to the UK through the ICT route should be eligible for a visa for the duration of their parent's stay in the UK (Bank 3).

13.3 Stakeholder views on the effects of migration policy

Stakeholders had both current concerns about the effects of migration policy on their members and on the economy more widely, and in relation to possible future policy developments. Current concerns focused on the bureaucracy surrounding applications for Tier 2 visas, on uncertainty in relation to Government policy and action in this area and the consequences of greater restrictions on Tier 2 (general) and ICTs should the Government decide to introduce these.

Some stakeholders felt that the applications process for Tier 2 was both time-consuming and slow. Although larger employers, and particularly those based in the UK, were reported to have relatively little difficulty, companies were reported as not always expecting visa applications to take as long as they did. Smaller employers were reported to be less able than larger employers to deal with both the bureaucracy surrounding Tier 2 and also in keeping up with current requirements.

Stakeholders expressed the view that employers' ability to plan their skills needs was hampered by uncertainty in relation to Government policy on Tier 2 (general) and ICTs. This was seen to potentially deter business investment within the UK from outside. As this respondent explained:

'It just adds to a bit of a feeling of, "do we want to relocate something there?" If you're thinking five, ten years ahead, what's the landscape going to look like' (Stakeholder 1).

Small firms with specific high level skill needs were seen to be potentially most affected by restrictions on overseas recruitment. One stakeholder expressed the view that faced with the possibility of skills shortages, such organisations will not expand or will become risk averse. As this respondent explained:

> *'That's a huge concern to us. You can't get the flow of labour that you need, in order to grow your company, you're going to become yet another risk-adverse, plodding British company and that's not the way we need to go forward'* (Stakeholder 2).

Stakeholders expressed concern for how employers might meet their future skills requirements if greater restrictions on Tier 2 were to be introduced. One stakeholder stated:

> *'My concern for [employers] is that the number of visas to meet this net migration target will go down as Parliament progresses and that it is likely to coincide with the tightening of the settlement criteria as well... I think in five years time we might reach a real crisis point where many have to go back but the number of visas over time will come down'* (Stakeholder 5).

There was also concern about reciprocity of action from other Governments in terms of their migration policies if the UK is to cut back on non-EEA migration. It was felt that if the UK were to make it more difficult for skilled staff to relocate to the UK that other countries might also raise barriers. As discussed earlier, some concern was also expressed about possible restrictions on settlement of individuals recruited under Tier 2, which was the subject of a UKBA consultation at the time of the research in June 2011.

The greatest concern with potential barriers to the recruitment of highly skilled labour from outside of the UK was with possible consequences for businesses wishing to set up or to expand in the UK. Stakeholders gave examples of where businesses were struggling to recruit highly skilled staff and were considering moving the business elsewhere:

> *'We have currently got a company that has been blogging in the text city, high technology sphere, and they had three co-founders in that company, two of them came in with the non-PBS bit...they are struggling to get the third person in, their view is the third person - their third co-founder - can find a visa in the states. And what they have said to us is, if he can't come and join them it won't be a question of we will find someone else, we will move the business to where we can locate someone'* (Stakeholder 3).

On the other hand, it was also argued that, within the UK, prior to the introduction of the points-based system, sectors such as finance and IT had become international centres because of their ability to recruit from all over the world. One stakeholder explained that:

'One IT company that I spoke to a while ago chose London over Berlin because they knew that the vast majority of their employees would move with them when they moved to London as their European HQ but if they moved to Berlin they wouldn't' (Stakeholder 3).

Stakeholders also argued that companies would consider off-shoring if they were not able to recruit skilled staff to work in the UK. It was also argued that restriction on migration of skilled individuals sends out a negative message to potential investors from outside of the UK. One stakeholder believed that restrictions on bringing in entrepreneurs and investors were stricter than elsewhere in Europe. It was felt that, to develop sectors such as IT, it was particularly important not to restrict the growth of small businesses, who may be especially reliant on niche skills which they may need to source overseas.

In addition to the concerns described above, stakeholders had particular views on aspects of current policy. One such concern was about ICTs, where some stakeholders expressed the view that these should be treated entirely separately from Tier 2 to reduce the bureaucracy involved in entry via this route.

13.4 Appropriate further action by employers to address skills shortages

Section 9 of this report has already outlined a range of initiatives that are being undertaken by employers to address their skill shortages. As we have seen, such practices broadly fall into three categories: working with schools to encourage interest in the industry from a young age; apprenticeships for school leavers; and training and upskilling for existing staff. This section will briefly examine any further action that employers thought should be taken to address their skills shortages; some of these were currently under consideration for uptake in the future.

Respondents from both industries raised the issues of apprenticeships and upskilling. For example, one of the aerospace companies we interviewed indicated that it was considering an additional apprenticeship scheme for B1 licensed engineers who were greatly needed by the company. The company explained that it was already receiving funding from a public-sector body to deliver other types of apprenticeships and was thinking about approaching the same body for further assistance with the new apprenticeship scheme (Aerospace 3). Similarly, a bank described how they were considering the use of an apprenticeship scheme whereby school leavers would be taken on at a junior staff level and would work with the bank four days a week and spend one day a week working towards an NVQ:

'I think training's quite important...addressing school leavers who may not have the skills, they can actually get out into the workplace and gain skills on the job at the same time as getting their qualification' (Bank 6).

Where possible, upskilling was also viewed as an important way of meeting their skill needs. Indeed, one aerospace company noted that they had already begun upskilling graduates at work so that they could develop the business acumen that

was required for the job. The company in question anticipated that they would continue needing to do this in the future since they were not always able to recruit individuals with the skills required (Aerospace 1).

Upskilling was not only advocated in the workplace, but extended beyond this with one bank suggesting that banks should work with universities to develop students' finance-related skills prior to graduation and simultaneously expose them to the possibilities of a career in finance. The same respondent felt that it was important to show students that such careers were socially accessible and that

> *'you don't have to be an Oxbridge graduate who's been to Eton or Winchester to get a job in an investment bank, that is, if you're focused about how you go through school and university you can take that path'* (Bank 7).

13.5 Assistance needed by employers to address skills shortages

As this report has demonstrated, many of the employers interviewed are already undertaking appropriate training and development schemes with a view to addressing their current skills shortages. Some employers from the aerospace industry also commented on the need for increased government funding for training and further government investment in engineering courses. This did not appear to be a concern for banks, who presumably were able to fund their own training.

One of the aerospace companies interviewed recommended that increased government funding should be provided to regional colleges for engineering apprenticeships citing that there were no such apprenticeships available at colleges close to the location of their firm (Aerospace 4). The same respondent described a situation where competitors often poached their apprentices and as such felt that a training levy on firms, as has been used in the past, could encourage training and reduce poaching practices. Another respondent from the aerospace industry indicated that although they were already receiving government funding to assist them with their training needs, further support would be very welcome given the significant financial burden that it placed on the company (Aerospace 5).

The same respondent also raised concerns about the level of investment in engineering equipment in schools and colleges:

> *'...many of the engineering courses that they do in schools, they may not be able to deliver because they haven't got the engineering equipment...a lot of schools can only deliver the classroom or the theory side of it, because they can't, because they haven't got the equipment'* (Aerospace 5).

He felt that as a result of this, students were not being sufficiently exposed to the practical side of engineering and had to work in the industry for longer before they become sufficiently experienced. One solution posed by the company was for government assistance and investment in a practical space for engineering training:

'Well I mean you could have a company training centre but linked in with the local education authority or something like that' (Aerospace 5).

According to the respondent, such a joint venture could entail funding for college lecturers and staff and a commitment from the company to provide trainers to work with GSCE and A-level engineering students.

We asked stakeholders about training as an alternative to non-EEA recruitment. This was generally not regarded as a feasible approach to meeting employers' needs for strategically important skills because, as described earlier, they include specialist knowledge and skills which employers cannot themselves provide.

Stakeholders felt that training offered by local colleges, particularly at further education level, should be linked more closely to the needs of local employers. It was noted that colleges currently offer courses on the basis of demand from potential students, who may not be aware of their future employment prospects. One stakeholder argued that such planning should be the responsibility of local authorities with the assistance of Local Enterprise Partnerships. At the same time, this stakeholder acknowledged a problem in time-scales, with colleges planning and delivering courses in cycles of three or four years with employers planning skills needs only six months or a year ahead. More generally, employers were seen to lack a strategic approach towards skills needs, with the same stakeholder arguing:

> *'We're really saying, hand on heart, employers are at fault because they're often very, very badly articulating demand and articulating need'* (Stakeholder 2).

This shortcoming was expressed particularly in relation to smaller employers, but larger employers were also seen to insufficiently engage in succession planning and to be putting plans in place to replace currently ageing workforces. The same stakeholder quoted above explained this with reference that, 'Business is tough, you're focusing on getting the job done' (Stakeholder 2).

Another stakeholder identified a potential problem in over-training where investment is made to forestall future skills shortages. This respondent asserted that:

> *'One thing we don't do as a nation is invest massive amounts in training just to develop the surplus. It was tried with physiotherapists, it was tried with doctors and by the time the physiotherapists, and then doctors, came out of their respective cohorts, that wave had passed, and then they all went overseas to work because there wasn't enough work here. And so nobody is going to say, what we need to do is invest millions in new engineers, because by the time that comes to fruition, we may not need that type of engineer, or that volume'* (Stakeholder 3).

Another stakeholder believed that concern about poaching of trained employees was a deterrent to investment in training, and that there is a 'culture of accountancy'

around training within the UK, which leads to employers focusing too much on the short-term costs of training rather than the longer term benefits (Stakeholder 6). Stakeholders argued that it was not feasible for existing employees to be trained to the high level of skills and knowledge needed within the required timescales. As one stakeholder argued:

> *'We are talking about highly skilled work and up-skilling is an option for the majority of jobs, but for these very highly skilled jobs it isn't. If it is, then it's going to take the involvement of further study alongside any workplace learning, which will take time and needs are immediate'* (Stakeholder 5).

Therefore, stakeholders believed that training of existing employees was not a feasible way of meeting employers' needs for strategically important skills. Similarly, while stakeholders supported the expansion of apprenticeship programmes and apprentice numbers within the UK, they did not feel that this policy had relevance to employers' higher level, or strategically important skill needs.

13.6 Other steps to increase the supply of strategically important skills

Employers from both industries felt that there was a need for the government to re-examine its higher education policy and identify and invest strategically in areas in which there were skills shortages in order to increase the supply for the future. One of the banks interviewed emphasised the role that businesses should play in feeding back information on skill requirements to the government in order to assist them with identifying areas in need of policy change. The same respondent commented that,

> *'...the UK's moved from being a large manufacturer to a service provider, and it's about understanding what skills we need as a country to be able to be successful and ensuring that we equip the next generations with those skills to be able to fulfil it.'* (Bank 4).

Two of the employers interviewed indicated specific practices that could be undertaken by the government in order to increase the supply of strategically important skills. Both involved increased higher education funding to those areas in which skills shortages exist. One respondent suggested that the government could sponsor or make university courses cheaper in those areas in which a skills shortfall was identified (Bank 4) while another respondent stated that they thought higher education courses in areas such as engineering should be provided free-of-charge in order to encourage student uptake:

> *'We need to get something, keep on about grass roots, they need to start getting people into engineering out of the schools and start getting some engineering degrees going again...whatever the country needs, you ought to encourage the younger generation to go into these areas'* (Aerospace 4).

Suggestions for encouraging interest in these subjects were not limited to higher education. Indeed, another aerospace company highlighted the need for the

education sector to work in partnership with industries in which a skills shortfall was identified and to encourage interest and exposure to these careers from a young age. The respondent described how there were certain types of engineering that are not on the UK university curricula or that have a very low uptake. They felt that part of the challenge was getting young people interested as early as possible and 'taking the blinkers off' (Aerospace 5). As such, they were investing time and resources into collaborating with schools and other organisations on short-term engineering-related projects where students made on-site visits and participated in a practical engineering project such as building a glider.

In addition, one of the aerospace companies interviewed felt that the industry's skill needs could not simply be met by encouraging individuals to take up engineering courses. Rather, it felt that improvements were needed in the quality of the education system, particularly in science subjects. The aerospace company that raised this issue acknowledged that this was a long-term endeavour:

> *'the education system feeding through and growing that base...it is a virtuous circle because the more you feed through the talent, the more they develop that industry and the industry becomes attractive....that takes years and years, generations'* (Aerospace 1).

One of the issues raised by the company in relation to the education system was the difficulty in distinguishing between candidates:

> *'There are too many people with the same qualifications and the amount of A*s that come through, there is no distinguishing characteristics anymore. There is no tiering to make it obvious as to who the real talent are at that level...People can blossom at various different times but to then get a pool of individuals who are all three A's...It doesn't help'* (Aerospace 1).

The company argued that this made it more difficult to recruit the appropriate individuals for the job.

Stakeholder interviews explored the range of alternatives to non-EEA recruitment to meet strategically important skill needs. These included increasing recruitment of UK graduates and those from within the EEA.

Stakeholders reported that their employer members were experiencing difficulties recruiting sufficient numbers of graduates in science, technology, engineering and maths (STEM) areas from within the UK. This was believed to result, to some extent at least, from the employment of STEM graduates in non-STEM areas, including finance and other areas of business. It was also seen as a consequence of insufficient numbers of students taking these subjects at undergraduate and post-graduate levels within the UK, and even earlier at ‘A’ level. Stakeholders also reported that resident labour market tests conducted by employers had failed to meet strategically important skill needs.

Problems were also identified in the skills and knowledge of UK graduates. The same stakeholder quoted above reported that its members complained at the 'narrow skills base' of UK graduates in subjects such as engineering and IT training, in comparison with those qualifying overseas. He elaborated:

> *'If you import the equivalent from wherever, they are likely to have a wider range of skills: business awareness, financial management skills, greater managerial skills more generally than the UK which is very qualification driven and blinkered'* (Stakeholder 5).

A number of stakeholders referred to shortcomings in the skills and attributes of UK graduates as deterring employers from increasing their levels of national recruitment and reducing non-EU sourcing. Complaints from employers were reported to include poor numeracy and literacy. Some very specific complaints included lack of business letter writing skills and a tendency to write in 'text-speak'. These deficiencies were reported to be evident from candidates' CVs. One stakeholder believed that this problem was recognised by UK Higher Education institutions and built into their employability programmes, which include work placements.

The possibility that employers might increase recruitment from within the EU was also discussed with stakeholders. Two stakeholders expressed the view that employers could recruit from the UK and EU labour markets more than they do currently. One stakeholder reported that many employers currently recruit substantial numbers of highly skilled employees from within the EU, giving the examples and economic forecasting. He argued:

> *'Once you've got the whole of the EU to think of, the French universities, the German universities, there are some pretty top people being churned out, all of whom have immediate right to work here without too much trouble'* (Stakeholder 4).

However, he went on to say that:

> *'In an ideal world they would want to [recruit outside the EEA] because why wouldn't they want to employ the best available people? If you've got a US graduate or a Brazilian graduate, or a Chinese graduate whose got these really specialist skills, why wouldn't you?'* (Stakeholder 4).

Recruits from outside of the EEA were seen to have a number of advantages over candidates from within the EU, but outside of the UK. These include greater fluency in written and spoken English, both among recruits from English speaking countries such as Australia, South Africa and the USA, and from the former and current Commonwealth countries, including India. One stakeholder explained:

> *'Education systems are broadly similar, common language and there's a greater transfer between those countries and the UK, whereas in the case of*

Spain for example, perhaps it's difficult to recognise the validity of the qualifications and how good these people are' (Stakeholder 5).

Therefore an issue of confidence in the qualifications of EU applicants was identified, which had not been overcome by the development of lists of equivalents since the formation of the EU in 1993.

Section 14. Summary and assessment

The research project

This report examines evidence on the potential effects of new restrictions on skilled immigration on the UK's ability to meet 'strategically important' skill needs. The research used two main approaches: a review of evidence from existing literature and data and case study research with employers and stakeholders.

Identifying key users of strategically important skills

'Strategically important' skills are defined here as skills that contribute disproportionately to key economic objectives of the government such as productivity growth; high levels of innovation (for example in low-carbon energy technologies); the expansion of industries where the UK has a competitive (or comparative) advantage; the diffusion and effective utilisation of 'enabling technologies' such as information and communication technologies which are central to economic growth in a wide range of sectors; and increased numbers of rapidly-growing firms.

Using productivity, innovation and firm growth criteria, we identify the following sectors as key users of strategically important skills: oil and gas extraction; chemicals and pharmaceuticals; telecommunications services; computer services; aerospace manufacturing; architectural and engineering services; and computer, electronic and optical engineering.

These sectors are conspicuous for employing above average shares of university graduates and people classified to professional occupations. Statistical analysis shows that non-EEA migrants entering employment in strategically important sectors in the UK contribute disproportionately to the already high levels of skilled employees in those sectors and that most such migrants are brought into the UK as internal transfers within multinational firms operating in these sectors.

Are skilled migrants complementary to or substitutes for skilled resident workers?

In seeking to evaluate the economic contribution made by non-EEA migrants in sectors where strategically important skills are vital, a central question is whether skilled migrants and skilled resident workers within the UK are readily substitutable for each other or whether the skills of migrants tend to complement those of residents, with positive implications for productivity and innovation performance.

Our review of research evidence on the links between high-skilled migrants and measures of economic performance, the economic value of cultural diversity and the rationales for deployment of high-skilled migrants by multinational employers suggests that many high-skilled migrants do indeed have distinctively different skills from those of resident workers. For example, high-skilled migrants often possess language skills and knowledge of foreign markets and cultures which are rarely

found among high-skilled residents and which both help to speed up cross-border knowledge flows and make effective use of that knowledge.

These findings from existing research suggest there may be cause for concern about proposed limits on immigration which might restrict the ability of employers in search of strategically important skills to bring in high-skilled workers from non-EEA countries. However, in spite of the evidence of limited substitutability between skilled migrants and skilled resident workers, and the scope for complementarities between the two types of skilled labour, it remains possible that some employers in strategically important sectors make use of migrant labour as an alternative to providing upskilling training for resident workers. Therefore, as part of this project we carried out new case studies designed to shed new light on how employers obtain and develop strategically important skills, with a view to learning more about the extent and nature of any trade-off between recruitment of migrants and training provision.

The role of strategically important skills inside firms

Case study interviews were carried out with employers in aerospace manufacturing and in financial services and with representatives of stakeholder organisations such as employer associations and sector skills councils. While the concept of strategically important skills was understood by employers and stakeholders, the term was not one which they used to describe skills. The skills described by employers as those needed to meet business objectives included those of strategic importance to the organisation, but they felt the term applied best to senior people, who generate revenue and profit and who enable expansion. These included employees with advanced knowledge, technical and niche skills. Employers in banking sometimes referred to employees with language skills, technical skills and cultural knowledge and understanding of markets as of strategic importance.

Employers acquired strategically important skills through a combination of training and development of existing staff and recruitment of individuals with specialist high level skills. Employers had experienced shortages of strategically important skills, principally because they are in short supply, rather than because of retention problems or because of poor strategic planning. A particular problem was identified in the shortage of high calibre graduates in the UK in technical subjects, for example, engineering and maths.

Consequences of skills shortages included reduced productivity, delays to contracts and the need to sub-contract work which could be carried out in-house. Companies were taking a number of measures to address skills shortages, including training of graduates, school-leavers and other entrants, up-skilling existing staff and working with schools and universities to improve the supply of skills in the future.

Migration and strategically important skill needs

With regard to the question of whether skilled migrants and skilled resident workers within the UK are substitutes for each other, the case study findings suggest that migrants are not used as a 'reserve army' with equivalent skills to resident workers, to increase competition or to encourage greater work effort by resident skilled employees. Rather migrants with strategically important skills are sought in order to obtain skills which are not seen as readily available among UK resident workers.

The main reasons for employing non-EEA migrants were found to differ between sectors. Aerospace employers generally said they employed relatively few of them, but that those that they did recruit were needed to meet their skill needs, particularly in specialist or niche areas. The banks recruited more regularly from outside of the EEA, not just for those reasons, but also because banking is a global business and there is the need to employ individuals with language skills and in-depth business and cultural understanding of operations in international locations. This was also a key reason for transferring staff between locations. This supports existing research evidence that skilled migrants are employed for their language skills, international experience and knowledge of business practices in overseas locations. Intra-company transfers (ICTs) were regarded as vital for the banks to develop understanding of world-wide operations and to share and develop expertise of individuals and organisations and to expand operations in the UK. These reasons are likely to be common to industries which operate in global markets.

Employers in both case study sectors recruited non-EEA graduates for their knowledge and skills in specialist areas, for example engineering or maths. This is in line with existing research evidence that skilled migrants are more likely than skilled resident workers to specialise in jobs requiring analytical and quantitative skills. Migrants of this kind were not substitutes for UK-resident workers but enabled organisations to build teams of experts with complementary skills. In addition, non-EEA recruitment and intra-company transfers were often used to help existing overseas businesses to set up within the UK, using knowledge and expertise from outside of the UK. This was seen to create jobs in the UK, develop skills and to boost economic activity and spending.

In general, our evidence did not suggest that employers had a particular preference for recruitment of non-EEA nationals. Rather they saw such recruitment as necessary to source skills which are scarce in the UK and EEA and to operate at an international level. Employers said they generally sourced their non-EEA recruits through their normal advertising routes and did not generally target recruitment overseas. Head-hunters were used largely by banks for key, senior and niche positions. The types of skills in shortage were in specialist areas such as engineering and mathematics, and skills which combined language with knowledge of markets, business operations and culture.

Aside from clear economic benefits of recruiting from outside of the EEA, employers reported other benefits, principally in improving workforce diversity. Migrants brought different perspectives and experiences to the workplace, as well as different languages and areas of technical and cultural knowledge. These skills are essential for global business operations. Our review of research evidence suggests that the economic value of cultural diversity bestowed by migrants may be substantial.

Employers emphasised that recruiting from outside of the EEA was not an easy option. They referred to rules surrounding non-EEA recruitment, the length and complexity of application forms and costs involved. They accepted these costs and procedures because they considered they had little option than to recruit and transfer staff from outside of the EEA. Companies who managed processes themselves, rather than use migration specialists, were sometimes unsure that they were following the rules. Stakeholders were aware of other barriers and disincentives to recruiting from outside of the EEA experienced by their members. These included recognition and understanding of some overseas qualifications and obtaining security clearance. These barriers did not reduce the use of migrants because they were seen as essential to meet skill needs.

Does recruitment of skilled migrants substitute for training of resident workers?

Employers believed that there is scope to reduce levels of non-EEA recruitment through improvements to training and education but that this is not necessarily a straightforward process and requires Government support. They already invested relatively heavily in training, as was confirmed by our analysis (based on Labour Force Survey data) of the incidence of training in sectors identified as key users of strategically important skills. Several case study firms also worked with schools and universities to stimulate interest in their sectors among young people. They felt that, to meet skills gaps, more public investment is required in training, particularly through funding of provision by regional colleges who feed skills into sectors such as engineering. Other suggestions to encourage training activity included re-introduction of a training levy and increased levels of investment in engineering equipment in schools and colleges. Such measures, while seen as useful in stimulating training activity, were not seen to have the potential to meet employers' needs for high level niche skills, and therefore to dispense with the need to recruit migrants.

Improvements in Higher Education (HE) were seen as important to meeting shortages of strategically important skills. Suggested changes included closer tailoring of courses to strategic skill needs and incentives to students to take subjects in demand by employers. This could help address shortages of graduates in such areas as engineering. Closer working between employers and education, particularly HE, to help meet skills shortages was also suggested. These, and other, training-related measures were seen as taking some time both to put in place and to produce skills at the advanced levels required by employers. Moreover, they require continual

investment and need to be flexible to respond to changes, in such areas as technology, products and markets. These changes make it difficult for training to keep pace with employer skill needs, but only a very high level of responsiveness can allow for more high skill needs to be home-grown rather than obtained through migration.

While employers and stakeholders felt that training could address some of the skills shortages which are currently met through inward migration, it was not regarded as a complete solution, even in the long term. This was because employers sometimes require specific combinations of qualifications and experience and also because migrants bring with them additional value through their international experience, language skills and knowledge of business operations and culture in particular locations. Therefore, non-EEA migrants are valued not only for their technical skills but for their additions to the diverse mix of backgrounds and skills which organisations value. Some employers, particularly in the banking sector, wanted these employees among their graduate cohort and as part of their permanent workforce. Therefore, some degree of non-EEA recruitment was seen as inevitable and desirable.

APPENDIX

Table A1: Highest qualifications held by persons in employment, analysed by country of birth and arrival date in UK, 2010 (private sector only, population-weighted estimates)

A: Strategically important sectors

Country of birth:	UK	EEA, arrived before 2000	EEA, arrived 2000-05	EEA, arrived since 2005	Non-EEA, arrived before 2000	Non-EEA, arrived 2000-05	Non-EEA, arrived since 2005
	% of persons in employment						
Graduates	38	50	60	40	53	53	47
NVQ4 below Bachelor degree level	13	9	4	3	12	6	3
NVQ3	24	16	9	2	12	6	3
NVQ2	19	9	1	1	8	3	<1
Other qualifications	2	13	24	50	12	31	45
Low or no qualifications	4	3	2	4	3	2	2
TOTAL	100	100	100	100	100	100	100
Weighted n =	*2360771*	*58428*	*42301*	*33016*	*127253*	*85644*	*56889*
Unweighted n =	*15685*	*363*	*220*	*171*	*757*	*459*	*299*

B: Other sectors

Country of birth:	UK	EEA, arrived before 2000	EEA, arrived 2000-05	EEA, arrived since 2005	Non-EEA, arrived before 2000	Non-EEA, arrived 2000-05	Non-EEA, arrived since 2005
	% of persons in employment						
Graduates	17	23	16	11	25	24	30
NVQ4 below Bachelor degree level	9	9	5	3	8	6	7
NVQ3	29	21	10	8	16	10	7
NVQ2	26	13	7	3	12	9	3
Other qualifications	5	21	50	56	22	36	39
Low or no qualifications	14	13	12	20	16	16	14
TOTAL	100	100	100	100	100	100	100
Weighted n =	*14483597*	*283687*	*299678*	*326527*	*759365*	*366711*	*224621*
Unweighted n =	*98130*	*1822*	*1817*	*1886*	*4692*	*2113*	*1221*

References

Acemoglu, D. and Pischke, J-S. (1999) Beyond Becker: Training in Imperfect Labour Markets, *Economic Journal*, 109 (February), pp. F112-F142.

Algan, Y. Durtmann, C. Glitz, A. and Manning, A. (2010), The Economic Situation of First and Second-Generation Immigrants in France, Germany and the United Kingdom, *The Economic Journal*, 120, pp. F4-F30.

Alesina, A. and La Ferrara, E. (2005), Ethnic Diversity and Economic Performance, *Journal of Economic Literature,* 43(3), pp.762-800.

Anderson, B. and Ruhs, M. (2008), *A need for migrant labour? The micro-level determinants of staff shortages and implications for a skills based immigration policy*, London: Migration Advisory Committee.

Audretsch, D., Dohse, D. and Niebuhr, A., (2010), Cultural Diversity and Entrepreneurship: A Regional Analysis for Germany, *Annals of Regional Science*, 45 (1): 55-85.

Autor, D., Katz L. and Krueger, A., (1998) Computing inequality: have computers changed the labour market? *Quarterly Journal of Economics* 113: 1169-1210.

Autor, D. H., F. Levy and R. J. Murnane (2003): "The Skill Content of Recent Technological Change: An Empirical Exploration," Quarterly Journal of Economics, 118(4), 1279–1333.

Autor, D. and M. Handel (2009): "Putting Tasks to the Test: Human Capital, Job Tasks, and Wages," NBER Working Paper 15116.

Baker, M. and Wooden, M. (1992) Immigration and Its Impact on the Incidence of Training in Australia, Australian Economic Review, 25(2): 39–53.

Barrell, R., and N. Pain (1997), Foreign Direct Investment, Technological Change, and Economic Growth within Europe, Economic Journal, 107, pp. 1770-1776.

Beaverstock, J. (2009), Immigration and the UK Labour Market in Financial Services: a Commentary, in Ruhs, M. and Anderson, B. ed. '*Who Needs Migrant Workers? Labour Shortages, Immigration, and Public Policy'* Oxford University Press, pp.15-52.

Becker, G. (1964, 1993, 3rd ed.). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*, Chicago: Chicago University Press.

BIS (2009), *The UK Strategic Investment Fund: Interim Report*, London: Department for Business, Innovation and Skills.

Blomstrom, M. and Kokko, A. (2003), The Economics of Foreign Direct Investment Incentives, NBER Working Paper w9489.

Borjas, J. (1994), The Economics of Immigration, *Journal of Economic Literature*, 22, pp. 1667-1717.

Borjas, J. (1995), The Economic Benefits from Immigration, *Journal of Economic Perspectives,* 9(2), pp.3-29.

Borjas, J. (2009), Immigration in High-Skill Labor Markets: The Impact of Foreign Students on the Earnings of Doctorates, *in Science and Engineering Careers in the United States*, edited by Freeman, R. and Goroff, D., University of Chicago Press.

Bresnahan, T. F., E. Brynjolfsson and L.M. Hitt (2002), Information Technology, Workplace Organization, and the Demand for Skilled Labor: Firm-Level Evidence, *Quarterly Journal of Economics*, Vol. 117, No. 1, 339 – 376.

Chun, H. (2003) Information technology and the demand for educated workers: disentangling the impacts of adoption versus use, *The Review of Economics and Statistics*, 85 (1), 1-8.

Cohen, W. and Levinthal, D. (1989): Innovation and learning: two faces of R&D, *Economic Journal*, vol. 107, 139-149.

Dustmann, C., Frattini, T. and Preston, I. (2008), The effect of immigration along the distribution of wages, Discussion Paper 03/08, Centre for Research and Analysis of Migration, University College London.

Epstein, G Kunze, A and Ward, M. (2009), High-Skilled Migration And The Exertion Of Effort By The Local Population, *Scottish Journal of Political Economy*, 56(3), pp. 332-352.

Farndale, E., Scullion, H. and Sparrow, P. (2010), The Role of the Corporate HR function in Global Talent Management, *Journal of World Business,* 45(2), pp.161-168.

Freeman, R. (1971), *The Labor Market for College-Trained Manpower*, Cambridge, MA.: Harvard University Press.

Freeman, R. (1976), A cobweb model of the supply and starting salary of new engineers, *Industrial and Labor Relations Review*, January: 236-248.

Frenz, M and Ietto-Gillies, G. (2009), The impact on innovation performance of different sources of knowledge. Evidence from the UK Community Innovation Survey, *Research Policy* 38(7): 1125-1135.

Green, F. and Zhu, Y. (2010) Overqualification, job dissatisfaction and increasing dispersion in the returns to graduate education, *Oxford Economic Papers*, 62(4), 715-739.

Green, F., Felstead, A., Mayhew, K. and Pack, A. (2000) The Impact of Training on Labour Mobility: Individual and Firm-Level Evidence From Britain, *British Journal of Industrial Relations*, 38 (2): 261-275.

Lazear, E. (1999), Globalisation and the Market for Team-Mates, *Economic Journal,* 109(454), pp. C15-40.

Levin, S. Grant, C. Black, A. Stephan, P. (2004), Differential Employment Patterns for Citizens and Non-Citizens in Science and Engineering in the United States: Minting and Competitive Effects, *Growth and Change,* 35(4), pp. 456-475.

Harris, R. and Robinson, C. (2004), 'Productivity impacts and spillovers from foreign ownership in the United Kingdom,' *National Institute Economic Review*, No.187, pp58-75.

HM Treasury / BIS (2010), *The Path to Strong, Sustainable and Balanced Growth*, London: HM Treasury and Department for Business, Innovation and Skills.

Huber, P., Landesmann, M., Robinson, C. and Stehrer, R., (2010), Migrants' Skills and Productivity: A European Perspective, *National Institute Economic Review*, July.

Hunt, J. and Gauthier-Loiselle, M. (2010), How much does Immigration Boost Innovation?, *American Economic Journal: Macroeconomics,* 2, pp.31-56.

Jones, A. (2003), *Management Consultancy and Banking in an Era of Globalization*, Palgrave Macmillan.

Jorgenson, D., Ho, M. and Stiroh, K. (2005), Productivity: Information Technology and the American Growth Resurgence, Cambridge, MA: MIT Press.

Kerr, W. and Lincoln, W. (2010), The Supply Side of Innovation: H-1B Visa Reforms and US Ethnic Invention, Journal of Labor Economics, 28(3), pp.473-508.

Kremer, M. (1993) "The O-Ring theory of economic development," Quarterly Journal of Economics 108 (1993):551-575.

Kirby, S. and Riley, R. (2008), The external returns to education: UK evidence using repeated cross-sections, *Labour Economics*, 15, pp. 619-630.

Le, T. (2008), 'Brain Drain' or 'Brain Circulation': Evidence from OECD's International Migration and R&D Spillovers, *Scottish Journal of Political Economy*, 55(5). pp.618-636.

Luthra, R. (2009), High Skilled Temporary Immigrants in a Segmented Labor Market: A Study of H-1Bs, *Journal of Ethnic and Migration Studies* 35(2), pp.227-250.

MAC (2008), *Identifying skilled occupations where migration can sensibly fill labour shortages*, London: Migration Advisory Committee (MAC).

MAC (2010a), *Skilled, Shortage, Sensible: Review of Methodology*, London: Migration Advisory Committee (MAC).

MAC (2010b), *Limits on Migration,* , London: Migration Advisory Committee (MAC).

Machin, S. (2003) Wage inequality since 1975, in R. Dickens, P. Gregg and J. Wadsworth (eds), *The Labour Market under New Labour*, Palgrave Macmillan, Basingstoke.

Mason, G., Bishop, K. and C. Robinson (2009), *Business growth and innovation: the wider impact of rapidly-growing firms in UK city-regions*, Research Report BGI/36, London: National Endowment for Science, Technology and the Arts (NESTA).

Millar, J. and Salt, J. (2007), In Whose Interests? IT Migration in an Interconnected World Economy, *Population, Space and Place,* 13, pp.41-58.

Millar, J. and Salt, J. (2008), Portfolios of Mobility: the Movement of Expertise in Transnational Corporations in Two Sectors - Aerospace and Extractive Industries, *Global Networks, 8*(1), pp.25-50.

Niebuhr, A. (2010), Migration and Innovation: Does Cultural Diversity Matter for Regional R&D Activity?, *Papers in Regional Science,* 89(3), pp.563-585.

OECD (2010), International Migration Outlook.
http://www.oecd-ilibrary.org.gate2.library.lse.ac.uk/social-issues-migration-health/international-migration-outlook_1999124x

Ottaviano, G. and Peri G. (2006), The Economic Value of Cultural Diversity: Evidence from US Cities, *Journal of Economic Geography,* 6, pp.9-44.

Partridge, J. (2008). "Essays on Immigration, Innovation and Trade", Thesis Paper for Degree of Doctor of Philosophy, department of Bio-resource Policy, Business and Economics, University of Saskatchewan. Available on line at http://library2.usask.ca/theses/available/etd-06062008-035343/unrestricted/PartridgeETD.pdf

Paserman, D. (2008), Do High-Skill Immigrants Raise Productivity? Evidence from Israeli manufacturing Firms, 1990-1999, IZA Discussion Paper N. 3572.

Peri, G. (2005), International Migrations: Some Comparisons and Lessons for the European Union, Working Paper 636, University of California, Davis, Department of Economics.

Peri, G. (2009), The Effect of Immigration on Productivity: Evidence from U.S. States, NBER Working Paper 15507, Cambridge, Mass: National Bureau of Economic Research.

Peri, G. (2011) The Effect of Immigration on Productivity: Evidence from U.S. States, Forthcoming, *Review of Economics and Statistics.*

Peri, G. and Requena, F. (2010) "The Trade Creation Effect of Immigrants: evidence from the Remarkable Case of Spain", *Canadian Journal of Economics*, Volume 49, 1433-1459.

Peri, G. and Sparber, C. (2011) "Highly-Educated Immigrants and Native Occupational Choice", *Industrial Relations*, forthcoming.

Prais, S. (1995), *Productivity, Education and Training,* Cambridge: Cambridge University Press.

Roy, A. D. (1951), Some thoughts on the distribution of earnings, *Oxford Economic Papers* (New Series) 3, 135–146.

Svaleryd, H. & Vlachos, J., 2005, Financial markets, the pattern of industrial specialization and comparative advantage: Evidence from OECD countries, *European Economic Review*, Elsevier, vol. 49(1): 113-144.

Solow, R.. (1956). "A Contribution to the Theory of Economic Growth". *Quarterly Journal of Economics* (The MIT Press) 70 (1): 65–94

SQW (2010), *Immigration and employers' incentives and behaviour*, Report to Migration Advisory Committee (MAC).

Stevens, M. (1994) A theoretical model of on-the-job training with imperfect competition, *Oxford Economic Papers*, 46, 537-562.

UKCES (2010), *A theoretical review of skill shortages and skill needs*, UK Commission on Employment and Skills, Evidence Report 20, May 2010.

Yamaguchi, S. (2010) Tasks and Heterogeneous Human Capital, McMaster University, June 2010

Wagner, D. Head, K. and Ries, J. (2002), Immigration and the Trade of Provinces, *Scottish Journal of Political Economy*, 49(5), pp. 507-525.

Walker, I. and Zhu, Y. (2008) The college wage premium and the expansion of higher education in the UK, *Scandinavian Journal of Economics*, 110, 695-709.

Williams, A. (2007), Listen to me, learn with me: international migration and knowledge transfer, *British Journal of Industrial Relations*, 45(2): 361-382.

Zahra, S. and George, G. (2002) Absorptive capacity: A review, reconceptualisation, and extension, *The Academy of Management Review*, 27(2): pp. 185-203