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Expats and the firms they work in

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Content

Résumé

This report investigates the role of firms in generating skills mobility. Combining Danish firm- and individual-level register data, we explore firms' use of foreign highly skilled labour in Denmark in two different analyses. We refer to foreign employees working in a job within one of the first three major International Standard Classification of Occupations (ISCO) groups (i.e. managers, professionals, technicians and associate professionals) as expats, and the firms that employ them as expat firms.

The first analysis explores the relationship between skill flows and production. We compare production characteristics for firms recruiting skilled workers from abroad to firms that do not recruit such workers. Moreover, we examine how firms use highly skilled international workers relative to native workers within the firms. The main findings are as follows:

- The number of expats in Denmark is increasing, and a main driver of this development is the increasing recruitment of expats by large expat firms – i.e. firms with 250 employees or more.

- The number of expat firms – i.e. firms employing one or more expats – is also increasing. The global economic crisis of 2008 reduced the number of firms in Denmark in general, but the number of expat firms was less affected by the crisis.

- Expat firms are more likely to export or import than are non-expat firms within the same industry. Thus, expat firms have a wider global reach than does the average firm within the same industry. Expat firms are also more capital-intensive and R&D-intensive than non-expat firms in the same industry. Thus, expat firms require investments and knowledge in order to compete in their markets.

- Expat firms are characterized by a generally higher level of cross-country skills mobility, including both recruitment of expats from abroad and emigration of their native workers.

- Firms recruit expats in order to supplement skills rather than to substitute highly skilled labour within the firms. Expats perform more analytical tasks than do the natives who do not emigrate i.e. 'stayers' within expat firms. They are also more likely to perform communicative tasks and non-routine tasks than are stayers.

- The Danish public debate focuses mostly on the question of labour and skills shortages, but the reasons for companies to recruit expats are more complicated. We need more research to establish whether this supplementation is primarily to make up for shortages within the national workforce, to increase productivity, to internalize complementary knowledge or to enhance firms' innovative capacity.

The second analysis in this report is a comparison of small and large firms that recruit expats. We have very little systematic evidence for why and how small firms recruit skills from abroad; this report is a first and innovative attempt to

address this gap in the literature and to explore the role that small firms play in global skills mobility. We differentiate between large companies with 250 employees or more and small companies with more than 10 but fewer than 250 employees. The main findings are as follows:

- An increasing number of small firms in Denmark recruits expats. They play a role in the growing number of expats moving to Denmark, though large firms mainly drive the upward trend.

- Compared to large firms, small firms are equally if not more likely to recruit directly from abroad. Small expat firms recruit slightly more workers from other EU/EEA countries, whereas large firms recruit slightly more expats from countries outside the EU/EEA. Overall, small expat firms appear to benefit from having their own recruiting channels and networks when recruiting.

- Small expat firms also have a larger global reach, and are more capital- and R&D-intensive than are small firms in general within their industry. They share these characteristics with the large expat firms, though to a lesser degree.

- Small expat firms use their expats' skills differently than do large expat firms. They perform analytical and communicative work, but to a lesser degree than expats in large firms do. This difference probably reflects less task specialization in small firms.

- Both natives and expats in large firms earn a slightly higher hourly wage than do natives in small firms in Denmark working in jobs requiring similar skills. This difference is not surprising given the general size-wage premium for working in large firms found across countries and sectors.

- Most expats work in large firms; in our analysis we find a difference of only about 1 per cent in the hourly wage level between foreign expats and natives working in large firms in jobs with similar task requirements. However, the hourly wage of expats in small firms is about 5 per cent lower than the hourly wage of natives in similar jobs in small firms.

- We do not observe a systematic wage differential between expats and non-expats. The estimated wage differential depends on firm size and industry, and it is important to note that – even within such high-dimensional fixed effects models – the unexplained wage differential could still be due to factors not observed in register data, such as education, total work experience and differences in tasks even within narrowly defined occupations.

1. Introduction

Global skills mobility into and within OECD countries is a phenomenon on the rise, in part because of a general increase in migration to OECD countries, but also because of a growing tendency towards international inter-firm mobility (OECD 2017: 9–10; Nathan 2014; Recchi 2009). The tendency for Danish companies to recruit skilled workers from abroad has also increased over the years (Rambøll 2018; DEA 2016c; DEA 2016d). From previous studies, we know that the migration of highly skilled workers to Denmark contributes positively to the funding of the Danish welfare state, and is generally a net economic gain for Denmark (Jacobsen et al. 2011; DEA 2016b). Furthermore, highly skilled mobile workers (both foreigners and Danes) appear to earn as much as or slightly more than non-mobile Danish labour (DEA 2016a).

The Danish debate on firms' recruitment of skills from abroad has focused on current and future labour shortages. However, firms recruit skilled labour from abroad for many different reasons, including to supplement skills shortages within the national workforce, to increase productivity, to internalize complementary knowledge and enhance innovative capacity or simply to cut costs (Hunt and Gauthier-Loiselle 2010; Kerr et al. 2015: 153; Nathan 2014).

Firms are undoubtedly important actors in generating skills mobility, but research on how firms use skills across borders relative to their national workforce is scarce. Most quantitative models of global skills mobility focus on individual incentives for mobility and treat policies as gatekeepers of skill flows (Kerr et al. 2015: 148; Kerr et al. 2016: 84). In this report, we take a different approach by combining firm- and individual-level data, which enables us to focus on firms using foreign highly skilled labour in Denmark.

The report is organized into two sections. First, to understand firms' strategic use of skilled foreign labour, we look at a number of production characteristics for firms recruiting skilled workers from abroad compared to firms that do not recruit such workers. Moreover, we examine how firms use highly skilled international workers relative to native workers within their firms.

Second, we compare small and large firms recruiting highly skilled workers. Large multinational companies are most visible in their efforts to restructure and outsource parts of their companies and to take advantage of intra-firm skills mobility, and therefore have been the focus of the limited research on firms and global skills mobility (Tzeng 1995; Peixoto 2001; Kennedy 2005; Millar and Salt 2008; Tucker 2017). These studies have emphasized large multinational firms as actors in producing company-internal labour markets and various portfolios of mobility. Small firms do not appear to play the same role in initiating skills flows, although for various reasons they are equally dependent on foreign skills in order to be successful in business. However, we have very little systematic evidence for why and how small firms recruit skills from abroad. This report is a first and innovative attempt to address this gap in the literature and to explore the role that small firms play in global skills mobility.

From survey results on highly skilled labour working in Denmark, we know that about half of highly skilled workers work in private companies, and that these companies are often large, with more than 500 employees (Oxford

Research 2014). However, small companies dominate the Danish business structure. In 2014, 86 per cent of the total 35,219 companies had fewer than 20 employees (DST 2016a, DST 2016b). The top thousand large companies employed more than 50 per cent of all employees, but made up only 1 per cent of all companies in Denmark (DST 2016a). Accordingly, in the second section of this report, we focus on the small firms that successfully attract highly skilled mobile foreign labour and compare their firm characteristics to large firms that similarly recruit expats. We differentiate between large companies with 250 employees or more and small companies with more than 10 but fewer than 250 employees.

The analysis presented in this report provides novel insights into foreign highly skilled workers and the firms in which they work. Drawing on longitudinal registers from Denmark, we constructed a panel data set containing all workers in Denmark and the firms that employed them over the period 2003 to 2014. In addition, we drew on survey data gathered from a random sample of 'expats' living and working in Denmark in 2014 (Oxford Research 2014).

Throughout this report, we refer to the foreign highly skilled labour coming to Denmark as 'expats' and the firms that employ them as 'expat firms'. In its broadest sense, the term 'expat' refers to an individual who temporarily or permanently resides in a country other than his or her native country for at least three months. However, the term also implies a group of foreigners who are well educated, well paid and rather successful in their new host country. The mobile foreign labour recruited by the firms covered in this report are professionals applying their highest skills level in their jobs in Denmark. These international mobile workers are of particular interest in the global competition for talent and search of innovative potential (Mahroum 2000; Favell 2008; Shachar 2006; Habti and Sabour 2010; Alaminos and Santacreu 2010; Silvanto and Ryan 2014; OECD 2017).

In the next section, we offer a brief literature review of research on global skills mobility. We combine models of skills migration from labour economics and the broader migration literature. Furthermore, we look at the scarce literature on the role of firms in generating global skills mobility and formulate the specific assumptions that we explore in this report. We combine the literature on global skills mobility with strands of management literature offering insights into companies' strategic considerations for recruiting skills from abroad. In Section 3, we present the data and methods used. We then report the findings in Sections 4 and 5. We complete each of these two sections with a conclusion and discussion findings.

2. Global skills mobility and the role of the firm

2.1 Models of global skills mobility

Theoretical models of global mobility have emphasized factors that influence the individual or household decision to migrate, and only recently have introduced the firm as a main actor generating global labour mobility (Kerr et al. 2015: 148; Kerr et al. 2016: 84).

Since the early 1990s, models of global labour mobility have become increasingly complex, combining economic and sociocultural variables. The traditional focus was on different combinations of push and pull factors emphasizing macroeconomic incentives (such as supply and demand for labour) or microeconomic factors affecting the individual's cost–benefit analysis (Portes and Böröcz 1989; Massey et al. 1993: 443; Mahroum 2000; Verwiebe et al. 2010; Silvanto and Ryan 2014; Kerr et al. 2015: 148; Kerr et al. 2016: 84).

Today's research considers social networks to be an almost equally important factor in the likelihood of mobility, choice of destination and success of mobility for the individual worker (Massey et al. 1993; Recchi 2009; Kennedy 2005; Stephens 2015; Verwiebe et al. 2017). Research has also demonstrated that mobility is often a collective decision, with family relations and opinions playing an important role in an individual's likelihood to move across borders (Mincer 1978; Ackers 2004).

With respect to highly skilled labour mobility, research has added geographic location and agglomeration effects to the models explaining global skills mobility: in other words, some locations give better access to financial and physical capital, technology and so forth, which can enhance highly skilled workers' productivity (Kerr et al. 2016: 92; Kerr et al. 2017). Thus, highly skilled workers are drawn to locations with groups of other highly skilled workers. This finding is backed by surveys showing that professional and personal development is a very important factor in highly skilled individuals' incentives to become move across borders (Pearson and Morrell 2002; Ackers 2005: 103; Khoo 2014: 7).

Furthermore, studies have argued that migration policy – and in a European context, regional European integration – is fundamental for producing a transnational labour market and opportunities for skilled labour migration (Tzeng 1995; Favell 2008; Boyd 2014; Cerna 2010, 2014; Kofman 2013; Verwiebe 2014: 210, 212; Verwiebe et al. 2017; Kerr et al. 2016). In addition, the need to distinguish between different professions and professional developments (Iredale 2001: 15; Ackers 2005: 102), and between different types of jobs (Mahroum 2001: 29), has proven to be important if we are to understand the dynamics of how highly skilled mobile workers act within transnational labour markets.

The latter insights imply a role of the firm and its recruitment needs, but without including the firm as an actual factor in understanding skills mobility across borders (Kerr et al. 2016: 153). Nevertheless, studies on skills mobility have acknowledged that changes in global production and multinational companies' efforts to relocate and offshore production are important in generating skills mobility (Salt 1992; Iredale 2001; Peixoto 2001; Kennedy 2005; Millar and Salt 2008; Salt and Wood 2014; Hansen 2016). These studies highlight the need to integrate economic and social factors measured at the individual level with organizational factors measured at the firm level in order to understand skills mobility across borders, but their empirical evidence mainly build on qualitative case studies and survey material. However, recently a strand of literature in labour economics is exploring skills mobility by using firm data in addition to individual data drawn from registers and surveys (Hunt and

Gauthier-Loiselle 2010; Kerr et al. 2014; Kerr et al. 2015; Kerr et al. 2016; Foged and Peri 2016; Kerr et al. 2017). In this descriptive report, we follow this line of thinking and set firm characteristics and the interrelation between the firm and the individual highly skilled worker at the centre of our analysis, also by using high-quality register data combining individual and firm characteristics.

This approach also implies that the firm is a central actor in generating skills mobility, and thus calls for a better understanding of why firms recruit skills from abroad and how they use those skills within their production. Though we have no ambition to build a theoretical model explaining the role of firms in generating skills mobility, we strive in the next section to offer insights into why firms recruit foreign skilled labour and how they apply this labour within their production. Drawing from insights of previous studies, we formulate a number of key assumptions in the next section, which we explore further in this report.

2.2 The firm as driver of skills mobility and our assumptions

Large multinational firms generate internal labour markets and organizational careers (Peixoto 2001; Iredale 2001; Millar and Salt 2008). Human resource management literature differentiates between 'self-initiated expatriation', where mobile workers actively choose their mobility, and 'assigned expatriation', where companies post workers abroad for shorter or longer periods of time (Andresen et al. 2014). However, in this study we focus on skills mobility that is driven by firms regardless of whether it comes in the form of posting labour or recruitment of company-external labour. In this regard, empirical research has shown that the global mobility of the individual skilled worker within multinational corporations (MNCs) is dependent not only on management decisions but also on a number of structural factors related to the firms' production and market conditions (Peixoto 2001; Kennedy 2005; Millar and Salt 2008; Hansen 2016; Tucker 2017). These factors form the basis of our main assumptions about the determinants of firms' recruitment of foreign skills.

When it comes to production conditions, the firms' global activity – i.e. whether it is oriented towards *export or domestic* markets – matters. Research has indicated that manufacturing firms and firms with a high degree of exports generate more high-skilled labour mobility than do service firms and firms oriented towards the domestic market (Peixoto 2001: 1043). Based on this finding, we use the data to explore the first assumption, which we formulate as follows:

1. Firms with expats are more likely to have an international or global reach as measured by their international trading activities.

Furthermore, the *capital and knowledge intensiveness* of the firm and the reliance on implementation of new technology generate more foreign skills mobility than does reliance on older, established technology (Peixoto 2001). One main stimulus driving employers' need for global labour is the need for so-called 'supplementary resources', meaning access to specialized talent from

abroad in order to cover skills shortages at home (Minbaeva and Michailova 2004; Millar and Salt 2008: 28; Salt 1992; Ozgen et al. 2014: 380). The literature has implied that especially capital- and knowledge-intensive firms – i.e. firms with, for instance, a high capital–labour ratio and high R&D spending – such as those in science, engineering and IT, rely on their ability to recruit globally in order to compensate for skills shortages and enhance their innovative capacity (Benson-Rea and Rawlinson 2003: 61–62; Ozgen et al. 2014). Accordingly, our second assumption to explore in the data is the following:

2. Firms with expats are likely to be capital- and R&D-intensive.

A body of research within management studies deals with the recruitment of knowledge workers as one way to enhance a firm's technological capability and foster technological change or innovations. The recruitment of skills could encourage isomorphism through knowledge transfer and imitation (DiMaggio and Powell 1983; Tzabbar 2009). Or, formulated slightly differently: MNCs continue to rely on the expatriation of trusted employees to share knowledge and build trust across borders even when skills are available abroad (Minbaeva and Michailova 2004; Kennedy 2005: 180–183). The firm's market position also generates variance in intra-firm skills mobility. Early entry into a market entails limited skills movement; but in the actual establishment phase of a new company or production site, intra-firm skills mobility is highly intensified until local skills are established (Peixoto 2001: 1043; Hansen 2016). To extend the global reach of the company and reproduce corporate culture, MNCs create mobile elite cadres of management and technically proficient staff in order to mediate knowledge and build social networks (Millar and Salt 2008: 28).

Another strand of management research has been preoccupied with whether skills mobility and cultural diversity produce innovative capacity (Ozgen et al. 2014; Tzabbar 2009). The research has viewed skills recruitment as a part of the firms' technological portfolio (Tzabbar 2009: 873). The talent sought by firms applying this strategy are employees working at the technical level, and recruitment is about acquiring or assimilating knowledge from other firms or regions but from within the same industry (ibid.: 875). Adding support to this approach is a study on US data, which found that within firms skilled immigrants specialize in occupations demanding technical and analytical skills, whereas native workers specialize in occupations requiring interactive and communicative skills (Peri and Sparber 2011). However, for skills recruitment in itself to produce innovation, it is dependent on alignment with other internal resources of the firm (Tzabbar 2009: 890; Ozgen et al. 2014).

Thus, depending on a firm's production and position in the market, it recruits for different skills, which in broad terms can be differentiated as mobility of management skills, technical skills or sociocultural (i.e. communicative) skills (Peixoto 2001; Millar and Salt 2008). These insights lead us to the third, fourth and fifth assumptions about intra-firm skills mobility and the task content that mobile labour performs:

3. Expats are a way to import knowledge. Likewise, expat firms may need to export knowledge – that is, send native employees abroad.

4. Expat firms engage in skills mobility. Their mobile workers perform more analytical, communicative and non-routine tasks.

5. Mobile workers (expats) perform specialized and high-skilled tasks within their host firms that non-migrating employees are unable to perform. This tendency is reflected in their job type and wage level.

All of the above-referenced research focuses either on national aggregate data on all firms or on qualitative data from large multinational firms. The literature on recruitment of foreign skills to small firms (or small and medium-sized firms, the so-called SMEs) is scarce and focused on talent management in general (Krishnan and Scullion 2016). Small firms differ from large firms with respect to institutional, resource and economic contexts. They tend to be more unstable in their structural form and management process, and have a higher degree of informality in their recruitment practices, attracting skills from different talent pools (ibid.: 432). Because recruitment of talent is risky and costly, small firms are likely to develop strategies for reducing cost and risk. Such efforts could include a focus on short-term recruitment so as not to bind resources, and/or recruitment through larger, more established companies within their industry (Somaya et al. 2008; Stokes et al. 2016). This observation leads us to a sixth assumption to explore:

6. Recruiting expats from abroad is costly and dependent on networks and knowledge of the candidate expats' skills. Small and large expat firms recruit differently.

Nevertheless, as with large firms, small firms can enhance innovation and growth strategies by attracting talent from larger and more established firms (Krishnan and Scullion 2016: 434). Furthermore, recruitment from competitors, clients and collaborators can have benefits for small supplier firms in terms of enhancing market opportunities (Somaya et al. 2008). Thus, we add one more assumption to explore:

7. Small and large expat firms might have different recruitment patterns, but they demand similar skills.

The above-mentioned seven assumptions infer a relationship between firms' use of expats' skills and certain traits of the expat firms. For instance, by stating that expat firms are likely to have a global reach and be capital- and knowledge-intensive, we imply that trade relations and capital and knowledge intensity come before the strategy of recruiting expats. However, we cannot draw conclusions about causality from our analysis, but simply confirm or reject the idea that a relationship exists. In the next section, we describe the data and methods used to explore the above-mentioned seven assumptions.

3. Methods and data

3.1 Data and definition of variables

The analysis presented in this report relies mainly on a panel data set for the period 2003 to 2014, which was compiled from individual- and firm-level register data from Statistics Denmark (DST). Table 1 lists the variables and registers from which the data were drawn.

Table 1: Overview of variables and registers

Variables	Registers
Worker-level variables	
Age (alder)	BEF
Experience (erhver*)	IDAP
Hourly wage	BFL
Earnings (lonind)	IND
Union (fagfkdb)	IND
Immigration status (ie_type)	BEF
Education (hfaudd)	UDDA
Permit type (kategori)	OPHG
Arrival period	VNDS
Marital status (cvist)	BEF
Gender (koen)	BEF
Occupation code*	AKM
Firm-level variables	
Export (gf_eksp)	FIRM
Import (gf_import)	FIRM
Employment (gf_anestte)	FIRM
Capital	FIRE
Sales (gf_oms)	FIRE
Industry code (db07)	FIRM
R and D spending (U_total)	FUI
R and D workers (p_total)	FUI
Task content**	O*NET

*We had to rely on multiple variables due to data break. ** O*NET is an external database (outside of DST) that contains information on the skill requirements of occupations. O*NET is constructed and maintained by the O*NET Resource Center, sponsored by the U.S. Department of Labor. We merged this to the four-digit occupation codes and rescaled the task variables.

The construction of panel data over a period of eleven years enables us to analyse time trends. On account of a change in the way DST has recorded occupation codes since 2003, we compiled data from 2003 to 2014. For the years following, the updating of registers was not complete at the time of data analysis; for this reason, we did not draw on data that are more recent.

In addition to the panel data, we also draw on survey data from *The Expat Study 2014* (Oxford Research 2014). The original intention was to combine register and survey data, which would entail a reproduction of the population selection criteria from the survey conducted in 2014 prior to our research. However, we decided to use a slightly different set of population criteria in our research, compiling the panel data from registers in order to secure a better selection of highly skilled expats. Thus, we have not integrated the two data sets combined. We report descriptive analysis using the panel data, and simply add information separately from the survey data combined with a few registers but using a different sampling approach to the expat population.

From the survey data, we focus on questions shedding light on expats' experiences prior to arriving in Denmark, as well as their views on living and working in Denmark since their arrival. Both the information about experiences prior to arrival in Denmark and about the subjective experiences are for good reason not registered in Statistics Denmark. Table 2 provides an overview of the survey questions, which we explore in this report.

Table 2: Overview of survey variables and questions used (based on The Expat Study 2014, Oxford Research 2014)

Variables	Original survey question and N
Expats' experience before arriving and working in Denmark	
Experience as expat	Have you previously worked or studied abroad? (N=1749)
Work experience	How many years of labour market experience did you have before arriving in Denmark? (N=1748)
Previous education	What is the highest level of education you have completed? (N=1648)
Factors for choosing Denmark	What factors were the most important for you when accepting a job in Denmark? (N=1749)
Recruitment	How did you get your job in Denmark? (N=1749)
Expats' experience after arriving and working in Denmark	
Career opportunities	There are good career opportunities in Denmark: agree/disagree? (N=1662)
Appealing work culture	Danish work culture is appealing (I find Danish work culture appealing: agree/disagree?) (N=1732)
Satisfactory job	I am satisfied with my job (personally and professionally) (N=1745)
Enjoy living in Denmark	Enjoy living in Denmark (I enjoy living in Denmark: agree/disagree?) (N=1749)

Even though the populations are in fact slightly different, we do believe the data complement each other and together shed light on the labour market position and experience of expats in Denmark.

In the next two sections, we describe our approach to selecting the expat population for our panel data, and the approach used in sampling the survey population.

3.2 The expat population selected for the panel data

We define an 'expat' as an individual who is 21 years of age or older, foreign-born and working in Denmark in one of the first three major ISCO groups. The International Standard Classification of Occupations (ISCO) organizes jobs into clearly defined categories according to the tasks and duties undertaken in the job. Major Group 1 is managers, Major Group 2 is professionals and Major Group 3 is technicians and associate professionals. These three occupational codes represent employees with skills at the highest level. To exemplify, Major Group 3, which is the group with the lowest skills level represented in our expat population, includes IT support technicians and pharmaceutical technicians. Because we do not have good-quality ISCO information on individuals working in firms with ten or fewer workers, our population of expats includes only individuals working in firms with more than ten employees. The total expat population in 2014 comes to 63,838 individuals.[1] We work with the total number of the expat population in Denmark each year from 2003 to 2014, which represents the total in- and outflow of expats.

For our population, the median experience with employment in Denmark is seven years. Furthermore, our expat population shares a number of characteristics with their native counterparts employed in jobs with equal skill requirements. There is an almost equal gender distribution: 52 per cent of the expats are female (among their Danish counterparts, 57 per cent are female), and 58 per cent are married (among their Danish counterparts, 60 per cent are married). They are on average 40 years old, which is only three years younger than the average age for their Danish counterparts. The companies where the expats work are on average 24 years old, whereas the companies of similar native workers are on average 25 years old. The expat population is comprised of many different nationalities.[2] In 2014, about 58 per cent were from non-EU/EEA countries. However, the top five nationalities are from Germany, Norway, Sweden, Great Britain and Poland. These countries represent 74 per cent of all EU/EEA citizens within the population, but only 31 per cent of the total population. Furthermore, the vast majority of individuals from other countries are from developing countries. There are practically no refugees or asylum seekers within our population, and only very few family reunifications, confirming that we are dealing with an expat population that arrived in Denmark to work (see Figures 6 and 7).[3]

From 2003 to 2014, there is a clear increase in the population of expats in Denmark. Figure 1 shows the trend in the aggregated population. Thus, even though the number of admissions of expats might vary from year to year, the expat population has been increasing over time.

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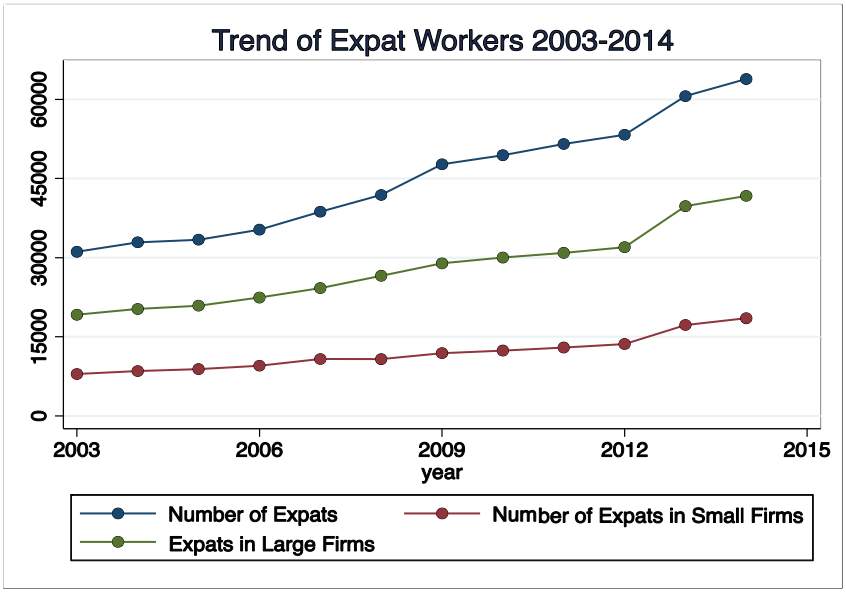
[1] Education from abroad is not available in Danish registers. By using information on the skills content of occupations based on the major ISCO categories, we implicitly define expats as people who migrate for work – i.e. who have a job upon arrival – and we disregard highly skilled individuals who do not work in jobs matching their qualifications.

[2] For more information on the origins of the expats, see Appendix A.

[3] The total number of asylum seekers in our sample is 13 persons. They account for about 0.13 per cent of the total population.

The total number of expats in both large and small firms shows a similar trend, growing at a faster rate as of 2012, following the aftermath of the global financial crisis of 2008. The majority of expats are employed in large firms; these firms are the main drivers of the increasing number of expats to Denmark. However, especially since the global financial crisis, the number of expats in small firms has increased. We discuss this trend further in Section 5, which compares large and small expat firms in more detail.

Figure 1: Trend of expats, 2003–2014, by firm size



The survey data selection of the expat population for *The Expat Study 2014* was different from our approach (Oxford Research 2014). Similar to our sampling approach, the expat population in the survey is defined as foreign-born individuals aged 21 years or older. However, additional sampling criteria are individuals with monthly earnings of DKK 25,000 or more for each of the last five months, as well as individuals who arrived in Denmark after 1 January 2009. Thus, it is essentially the wage criterion, which defines the survey population as highly skilled. As described above, the panel data rely on the skills content of the occupations. Furthermore, the survey population includes only individuals who arrived recently, from 2009 to 2013, thus reducing the number of long-staying expats in the population.

The total population generated by this approach came to 15,218 individuals, from which a randomly drawn sample of 4,000 was to be included in the questionnaire survey. With a response rate of 46.3 per cent, the total sample of respondents was 1,853 expats. For more information on the survey selection, representativeness, contact method and response, see Oxford Research (2014).

3.4 The expat firm

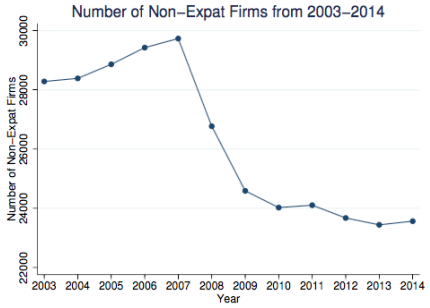
An expat firm according to our definition is a firm with at least one expat employed in a given year. For the period of our analysis, an expat firm in one year could be a non-expat firm the next year if it loses all of its expat workers. A non-expat firm is a firm with no expats employed in a given year.

In 2003, about 15 per cent of all firms (with ten or more employees) employed one or more expats. In 2014, this figure had risen to 25 per cent of all firms. Figures 2 and 3 show the number of expat and non-expat firms for any given year in the whole economy. Figure 2 shows an increase in the number of expat firms of about 52 per cent. There is a clear upward trend in the number of expat firms in the period from 2003 to 2007, followed by a moderate decline probably ensuing from the global financial crisis of 2008. From then on, the upward trend in the number of expat firms picks up again, but at a slower pace up to 2012, when the pace then picks up again, approximating the period prior to the crisis.

Figure 3 shows a growing number of non-expat firms as well up to 2007. However, from 2008 to 2013 the number of non-expat firms declined, falling nearly 17 per cent at the time of the global financial crisis. From 2013 on, the number of non-expat firms seems to stabilize, but at a lower level.

Figure 2: Trend in expat firms

Figure 3: Trend in non-expat firms



The number of expat firms is less affected by the general fluctuations of the economy than are the number of non-expat firms. Furthermore, the number of expat firms is rather steadily increasing.

3.5 Descriptive analysis and normalization within industry

Expats are more dominant in some industries than in others (see Appendix B). In the top six industries to which expats are recruited, we find public administration, including the Foreign Service; scientific research and development; certain parts of the manufacturing industry, including pharmaceuticals, computer and electronic products; some specific service industries, including telecommunications and IT services. Expats working in small firms have a particularly strong showing within the manufacturing of pharmaceutical, computer and electronic products, as well as the service industries telecommunications and IT services.

The overrepresentation of expats in some industries suggests that expat firms are more likely to be present in these industries. Most of the above-mentioned industries are quite capital- and knowledge-intensive. To compensate for the variance in expat firms across industries, an important part of our descriptive analysis has been to normalize the characteristics of the expat firms to other firms within the same industry. For each of the firm characteristics, we compare the firm to the average firm within the same industry using an index. If the

index number is greater than one, the group of firms is more likely to have the trait compared to the average firm within their industry. The index is defined by this formula:

$$x^N{}_{ij} = \frac{x_{ij}}{\overline{X}_J},$$

where $x^N{}_{ij}$ refers to the normalized value of "x" at firm "i" in industry "j" (the index number), where $"x_{ij}"$ refers to the value of "x" in firm "i" and "$\overline{X}_J$" refers to the average value of "x" in industry "j". $x^N{}_{ij} = 1$ if firm i's characteristic (x) is equal to its industry's (j) average.

3.6 Regression analysis and fixed effects on wages

The Copenhagen-based think tank DEA has studied the wage levels of mobile highly skilled labour and non-mobile labour in Denmark (DEA 2016a).[4] For this reason, we decided not to carry out further analysis of wage differences between mobile and non-mobile labour in general.

However, we did carry out a panel regression analysis on the labour income of expats versus natives in small and large firms that controls for fixed effects on job type, industry, age and age square, gender, union membership and marital status. The fixed effects analysis is described in two equations for two panels:

Equation 1 (Panel A):

$$Labour\ income_i = \alpha + \beta\ \text{size}_j + \delta\text{occupation}_i + \eta X_i + \phi industry_j + e_i$$

Equation 2 (Panel B):

$$Labour\ income_i = \alpha + \beta_1 Expat + \beta_2 \text{Size}_j + \beta_3 \text{Expat} * \text{Size}_j + \delta\text{occupation}_i + \eta X_i + \phi industry_j + e_i$$

We use the specification provided in Equation (1) to compare the earning gap between expats working in large and small firms. We prefer the regression to descriptive statistics because the former allows us to control for basic factors, which may influence the earnings level of workers. The dependent variable is the hourly wage.

The first term in the equation stands for the constant term. β is our interest variable; it shows the earning difference between expats working in large and small firms, keeping other things constant. To precisely estimate the size premium, we control for worker characteristics (i.e. age, age square, gender, union membership and marital status). Moreover, we use additional occupation and industry fixed effects so that we can compare workers within four-digit

[4] For further explanation, please see section 4.3, including note 6

ISCO codes working in a given industry based on the six digits Danish industrial classification. The last term is an orthogonal error term. The reader should be aware that this parameter does not show any causal effects. The specification provided in Equation (2) measures the earning gap between expats and native workers in small and large firms. β_1, which is one of our interest variables, measures the earnings gap between the two groups in small firms, whereas β_2 measures the size premium for native workers. β_3 shows the interaction effect between the expat and size variables. Combining the coefficients of the three parameters shows the earning gap between expat and native workers in small and large firms.

We present the results of the regression analysis in Table 14, Section 5.3.

4. Skill flows and production

In the following subsections, we present the results from our descriptive analysis of firms' strategic use of highly skilled foreign labour in general. We look at a number of production characteristics for all expat firms and compare them to non-expat firms. In addition, we look at how expat firms use highly skilled international labour relative to native workers within the same firm.

4.1 Expat firms' global reach

In this section, we focus on the global reach of expat firms compared to firms not recruiting expats. Thus, we explore the first assumption mentioned above, which states that firms with expats are more likely to have an international or global reach as measured by their international trading activities. Our results confirm this assumption.

We measure global reach as the firm's import and export intensity. We define export intensity as the share of exports out of the firm's total sales. Similarly, we define import intensity as the share of imports out of the firm's total sales. Export (or import) intensity ranges from 0 to 1, where 0 means that the firm is not exporting any of its outputs and 0.5 means that half of the firm's output is exported. This measurement can be described mathematically as:

$$Export\ or\ Import\ Intensity = \frac{Export_{jt}\ or\ Import_{jt}}{Turnover_{jt}}$$

where 'j' stands for the firm, and 't' stands for the time period.

Table 3 shows that expat firms are significantly more import- and export-intensive. Expat firms export close to a quarter of their output, whereas non-expat firms export less than 10 per cent of their output. Furthermore, expat firms import 14 per cent of their output, whereas non-expat firms import less than 10 per cent of their output.

When normalized within the industry, we observe the same tendency. Normalized export or import intensity measures the intensity of a given firm compared to other firms in the same industry. If the value of the index is greater than one, the group of firms is more likely to import compared to the average

firm within their industry. From Table 3, we see that expat firms are more likely to export or import than are non-expat firms in the same industry. Thus, expat firms interact much more with markets and firms from abroad and have a wider global reach than does the average firm in their industry.

Table 3: Export and import intensity

	Expat firms (1)	Non-expat firms (2)	t-test
Export intensity	0.23	0.07	***
Normalized exp. intensity	1.90	0.82	***
Import intensity	0.14	0.06	***
Normalized imp. intensity	1.60	0.88	***

Note: Some firms exhibit export and import intensity of above 1. We report this table by capping such values at 1. * p < 0.05, ** p < 0.01 and *** p < 0.001

4.2 Expat firms' capital and knowledge intensity

The second assumption we explore is that firms with expats are likely to be more capital- and R&D-intensive. Our descriptive analysis using panel data also confirms this assumption.

Capital–labour ratio measures the relative share of capital to labour within a firm. However, in the Danish register data, capital can be defined in different ways. In our definition, we used five different types of capital independently.[5] The capital–labour ratio is calculated by dividing the value of capital by the number of employees in the firm, and can be mathematically expressed as:

$$Capital - labor - ratio_{jt} = \frac{Capital_{jt}}{Employment(Labour)_{jt}}$$

where 'j' stands for the firm and 't' stands for the time period.

When normalized within the industry – i.e. measuring the capital intensity of expat firms compared to other firms in the same industry – we see that expat firms are significantly more capital-intensive than non-expat firms (see Table 4).

Furthermore, expat firms are also significantly more knowledge-intensive than non-expat firms. We measure the knowledge intensity of the firms by looking at two indicators. First, we measure the share of native PhDs out of the firm's total employment.

$$Share\ native\ PhDs_{jt} = \frac{Native\ PhDs_{jt}}{Total\ Employment_{jt}}$$

[5] The different definitions of capital included Production plants and machinery, Tangible fixed assets under construction, Land and buildings, Intangible fixed assets and Other equipment and fixtures.

where ‘j’ stands for the firm, and ‘t’ stands for the time period.

Second, we measure the research and development intensity of firms by using their R&D engagement, which is measured by a dummy variable that takes value 1 if a firm employs at least one R&D worker, or 0 otherwise. The R&D dummy can be expressed as:

$$R\ \&\ D_{jt} = \begin{cases} 1, if\ no.of\ R\ and\ D\ workers > 0 \\ 0, otherwise \end{cases}$$

where ‘j’ stands for the firm and ‘t’ stands for the time period.

Both of these measurements are then normalized within the industry, comparing the R&D intensity and share of native PhDs of the expat and non-expat firms. In Table 4, we see that expat firms are not only capital-intensive but also much more R&D-intensive and likely to have more native PhDs.

Table 4: Capital–labour ratio and R&D engagement

	Expat firms (1)	Non-expat firms (2)	t-test
K–L intensity	481.90	338.82	***
Normalized K–L intensity	1.18	0.96	***
R&D intensity	0.08	0.01	***
Normalized R&D intensity	3.30	0.48	***
Share of native PhDs	0.01	0.00	***
Normalized share of native PhDs	2.40	0.65	***

Note: Firms with negative value of capital are dropped. * p < 0.05, ** p < 0.01 and *** p < 0.001.

In sum, expat firms are more capital- and R&D-intensive than non-expat firms are. This finding is true not only as a general tendency across all firms, but also when compared to firms within the same industry.

4.3 Expat firms’ skill flows

In this section, we analyse how expat firms use the native and expat skills they recruit. We compare basic characteristics of expat and non-expat (i.e. native) workers within expat firms.

In the third of the formulated assumptions, we supposed that recruitment of expats is a way to import knowledge, and likewise that expat firms might need to export knowledge – that is, send native employees abroad. We measure this export of knowledge by looking at the share of native workers who emigrate to other countries from Danish firms. We consider emigration of the native workers during the next year, as data is usually collected in November. We

measure the share of native emigrants out of the firms' total employment as follows:

$$Native\ Emigrants_{jt} = \frac{Native\ Emigrants_{(t+1)}}{Total\ Employment_{jt}}$$

where 'j' stands for the firm, and 't' stands for the time period.

Comparing the share of natives who emigrate from expat firms with the share of natives who emigrate from non-expat firms within the same industry, we see that expat firms are more than three times likely to have mobile native workers than are non-expat firms. Expat firms are characterized by a generally higher level of cross-country mobility, including both recruitment of expats from abroad and native workers emigrating.

Table 5: Danish emigrants from expat firms

	Expat firms (1)	Non-expat firms (2)	t-test
Native emigrants	0.23	0.07	***
Normalized emigrant share	1.90	0.82	***

Note: We consider emigrants at time t+1 because the emigration data is collected in November of each year. * p < 0.05, ** p < 0.01 and *** p < 0.001.

Turning to the tasks performed by employees within expat firms, we formulated the fourth assumption that because expat firms in general foster skills mobility, their mobile workers – both expats coming from abroad and native workers emigrating – perform more analytical, communicative and non-routine tasks than non-mobile workers. The descriptive analysis of the panel data also confirms this assumption.

We compared the tasks performed by expats, native emigrants and native stayers who all work within the same occupational groups as our expat selection (i.e. ISCO 1–3). Looking at the percentage of these three groups across ISCO 1–3 in Table 6, we see that expats and native emigrants are more likely to work as professionals (ISCO 2) than are stayers, who are slightly more likely to work as technicians and assistants (ISCO 3).

Table 6 also presents an index for the task content of the jobs for expats, native emigrants and stayers. We see that both expats and native emigrants – i.e. mobile skilled labour – perform more analytical tasks than do stayers within expat firms. They are also more likely to perform more communicative tasks and non-routine tasks than are stayers.

These last results also confirm the fifth assumption that expats perform specialized and high-skilled tasks within their host firms that non-migrating employees are unable to perform. Comparison of relative wage levels for mobile highly skilled labour in Denmark shows that mobile highly skilled labour was paid on average 8 to 11 per cent more than non-mobile Danish

labour (i.e. stayers) (DEA 2016a).[6] Thus, not only does highly skilled mobile labour perform tasks different from those of non-mobile labour, they also appear to earn more.

Table 6: Comparison of stayers, emigrants and expats

	Stayers	Emigrants	Expats	t-test	
	(1)	(2)	(3)	(1) vs (2)	(1) vs (3)
Worker characteristics					
Age	43.14	38.0	40.43	***	***
Female	0.57	0.46	0.47	***	***
Percentage of each group					
Managers	0.07	0.07	0.05		***
Professionals	0.52	0.57	0.61	***	***
Technicians & associates	0.40	0.34	0.34	***	***
Task contents					
Analytical	7.22	7.46	7.46	***	***
Manual	1.14	0.92	1.02	***	***
Communication	7.50	7.70	7.62	***	***
Non-routine	5.46	5.68	5.58	***	***
Routine	2.46	2.31	2.40	***	***
N	8,877,945	42,444	539,750		

* $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$.

4.4 Conclusion and discussion

The number of expats in Denmark is increasing. The main driver of this development is the increasing recruitment of expats by large expat firms. Furthermore, we see a clear increase in the number of expat firms – that is, firms with one or more expats employed. The global economic crisis of 2008 reduced the number of firms in Denmark in general, but the expat firms appear to have been much less affected by the crisis. Moreover, the increasing number of expat firms is not simply the result of a general increase in the total economy and number of firms, because while the number of expat firms has been increasing, the number of non-expat firms has been declining over time (i.e. from around 30,000 to 25,000 in our sample).

Expat firms are more likely to export or import than are non-expat firms in the same industry. Thus, expat firms interact much more with markets and firms from abroad and have a wider global reach than does the average firm in their

[6] The DEA includes expats from ISCO Groups 2 and 3 in their wage analysis (DEA 2016a), as we do for our expat population. One difference from our expat population is that the DEA excludes ISCO Group 1, which are managers. Furthermore, they include expats who arrived in Denmark in the period 2004–2013, whereas our population includes all expats living and working in Denmark in 2003–2014. Despite these differences, we consider the wage regression and fixed effects analysis carried out by DEA to be representative for our population as well. In fact, one would expect our population, which includes high-earning managers and long-term stayers, to give an even better wage comparison result in favour of the expat group.

industry. Expat firms are also more capital-intensive and R&D-intensive than non-expat firms. This is not only true as a general tendency across all firms, but also when compared to firms within the same industry.
These results show that expat firms require investments and knowledge to compete in their market, and the recruitment of expats can be one strategy to improve knowledge of and access to markets, introduce new technology and knowledge in an effort to enhance competitiveness and perhaps even spark innovation within the company. The literature demonstrates that these benefits are important motivations for the recruitment of skills to capital- and knowledge-intensive firms and firms recruiting technical skills from abroad (Benson-Rea and Rawlinson 2003; Tzabbar 2009; Ozgen et al. 2014; Peri and Sparber 2011). In addition, expat firms are characterized by a generally higher level of cross-country skills mobility, including both recruitment of expats from abroad and native workers emigrating. Our results show that both expats and native emigrants – i.e. mobile highly skilled labour – perform more analytical tasks than do stayers within expat firms. They are also more likely to perform communicative tasks and non-routine tasks, but are less likely than stayers to perform manual tasks.

These findings indicate that firms recruit expats to supplement skills rather than to substitute existing highly skilled labour within their firms. More research is needed to establish whether this supplementation is primarily to make up for shortages within the national workforce, to increase productivity, to internalize complementary knowledge or to enhance firms' innovative capacity. The Danish public debate focuses mainly on the question of labour and skills shortages, but the reasons for companies to recruit expats are much more complicated. Furthermore, there is no indication that the recruitment of highly skilled foreign labour is about cutting wage costs.

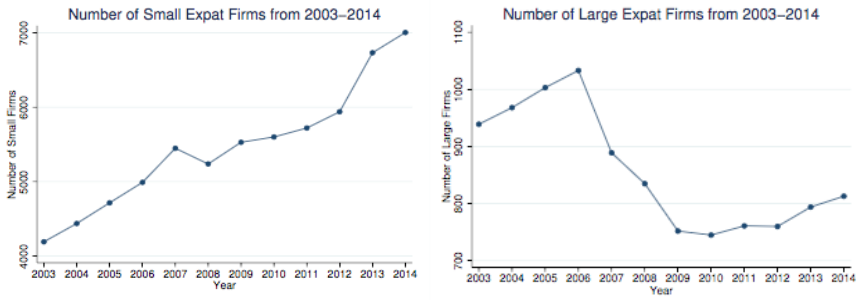
5. Small and large expat firms

The following subsections present our comparison of small and large expat firms. We focus on small firms that successfully attract highly skilled mobile foreign labour and compare their firm characteristics with those of large firms with similar recruitment of expats. As mentioned above, we differentiate between large companies having 250 employees or more and small companies with more than 10 but fewer than 250 employees.

From Figure 1, presented in Section 3.2, we know that large firms recruit the majority of expats. Thus, large firms are the main drivers in the increasing number of expats moving to Denmark. From Figures 4 and 5 – which compare the time trend in the number of small and large expat firms – we see that the number of large firms recruiting expats decreased around the time of the global financial crisis, but from 2012 the number of large firms recruiting expats picked up again, although at a lower level. On the other hand, since 2003 there has been a continuous upward trend in the number of small expat firms, which was only moderately affected by the crisis. The increasing number of small Danish firms recruiting highly skilled labour from abroad has contributed to the upward trend in the number of expats coming to Denmark. From 2003 to 2014,

the number of expats working in small firms more than doubled, with 29 per cent of the expat population working in a small firm in 2014.

Figures 4 and 5: Number of small and large expat firms, 2003–2014



5.1 Small expat firms' global reach

Small expat firms show the same trend in global reach as large expat firms, though to a lesser degree. Again, we define export (or import) intensity as the share of export (or import) out of the firm's total sales. Export (or import) intensity ranges from 0 to 1, where 0 means that the firm is not exporting any of its outputs and 0.5 means that half of the firm's output is exported. Small expat firms export 22 per cent of their total sales, whereas large firms export close to a third. When normalized within the industry, we observe the same tendency. Again, normalized export or import intensity measures the intensity of export/import of a given firm compared to other firms in same industry. If the value of the index is greater than 1, the group of firms is more likely to import compared to the average firm in the same industry. Table 7 shows that small expat firms export and import more than the average firm in their industry, but small expat firms do so to a lesser degree than large expat firms. This result is consistent with the international trade literature, which has demonstrated that larger firms export more (Bernard et al. 1995).

Table 7: Export and import intensity of large and small expat firms

	Small firms (1)	Large firms (2)	t-test
Export intensity	0.22	0.30	***
Normalized exp. intensity	1.71	3.32	***
Import intensity	0.14	0.16	***
Normalized imp. intensity	1.48	2.50	***

Note: Some firms exhibit export and import intensity of above 1. We report this table by capping such values at 1. * $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$.

5.2 Small expat firms' capital and knowledge intensity

With respect to capital and R&D intensity, small expat firms share the same characteristics with large expat firms, though to a lesser degree. When we look

at the normalized capital intensity, we find that small and large expat firms are almost equally capital-intensive relative to the average firm in their industry.

Small expat firms are also more R&D-intensive than the average firm in their industry. However, large expat firms are significantly more R&D-intensive than small expat firms, and, indeed, it is within large expat firms that we find the large R&D departments. In addition, both large and small expat firms have a higher share of native PhDs employed than does the average firm in their industry, though more native PhDs are found in large than in small expat firms.

Table 8: Capital–labour and R&D intensity for small and large expat firms

	Small firms (1)	Large firms (2)	t-test
K–L intensity	477.31	514.95	***
Normalized K–L intensity	1.15	1.41	***
R&D intensity	0.06	0.22	***
Normalized R&D intensity	1.85	11.85	***
Share of native PhDs	0.01	0.01	***
Normalized share of native PhDs	2.19	3.76	***

Note: Firms with negative value of capital are dropped. * $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$.

5.3 Recruitment patterns and small expat firms' skills demands

On the basis of previous research on differences between large firms' and small firms' recruitment practices, our sixth assumption was that, because recruitment from abroad is costly and dependent on networks and knowledge of the candidate expats' skills, small and large expat firms would recruit differently. Small firms could reduce their recruiting costs by recruiting from large expat firms in Denmark with whom they interact. Thus, some small firms may let the large expat firms bear the costs of recruiting from abroad as well as the risk of incorporating the expats into their production.

To explore this assumption, we have traced the employment history of both expat and native highly skilled workers. Table 9 compares the pattern of movement (i.e. the hiring and switching process) for both expats and natives between small and large firms over time.

The majority of employees are 'staying' put in any given year. A smaller group are 'new employees' who were not part of the Danish labour market the year prior. The remaining group of employees are 'switching' between small and large companies within a year. Focusing on the switching pattern, we see no real difference in how expats and natives move between large and small firms.

Table 9: Switching pattern of expat and native workers across small (S) and large (L) firms

	Staying	New employees		Switching				
	All	L	S	S-S	S-L	L-S	L-L	Total
Natives	79.69	4.46	3.36	2.48	1.96	2.02	6.19	100
Expats	71.43	9.91	6.09	2.33	1.91	1.92	6.37	100

Furthermore, we have explored expat firms' hiring patterns for both native workers and expat workers. Table 10 shows the hiring pattern from the firm's perspective. The overwhelming majority of workers hired are native, as one would expect. In addition, the share of expats hired – compared to the total of newly hired employees within a given firm – is slightly higher in small firms. This finding is consistent with our previous finding that the majority of expat workers are in large firms: but could indicate that small expat firms are slightly more internationalized than large expat firms are. Furthermore, among small expat firms the trend to hire expats directly from abroad is stronger than the trend to hire them from other firms in Denmark, when compared to large expat firms. This finding indicates that small firms are capable of recruiting directly from abroad and are not necessarily reliant on larger firms for their expat labour. Thus, there is nothing to indicate that small firms need to recruit expats differently from how they recruit native workers, and we cannot confirm our assumption. Lastly, we also found that large firms are more likely to hire native new graduates than are small firms.

Table 10: Hiring patterns of expat firms

	Small firms	Large firms	t-test
New workers in expat firms			
Expats	8.38	6.76	***
Natives	91.62	93.24	***
Sum	100	100	
New expat workers			
From abroad	5.05	3.95	***
From other firms in Denmark	3.33	2.81	***
New native workers			
New graduates	37.18	40.08	***
From other firms in Denmark	54.44	53.15	***
Sum	100	100	

* $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$

When comparing the first types of permits that expats hired by small and large firms obtain (see Figures 6 and 7), we see only very little difference in expats' route to employment in small and large firms. Large firms on average hire 63 per cent of their expats by means of a work visa, whereas the figure is 54 per cent for small firms. Moreover, large firms hire about 26 per cent of their expats from EU/EEA countries, whereas the figure for small firms is 30 per cent. Thus, small firms recruit slightly more expats from EU countries, whereas large firms recruit slightly more expats from countries outside the EU, but overall the pattern is rather similar.

The fact that there were practically no asylum seekers and very few family reunifications confirms that our selected population for the panel data analysis is in fact highly skilled labour recruited to Denmark, which was the group we targeted.

Figure 6: First permit type of expats hired in small firms

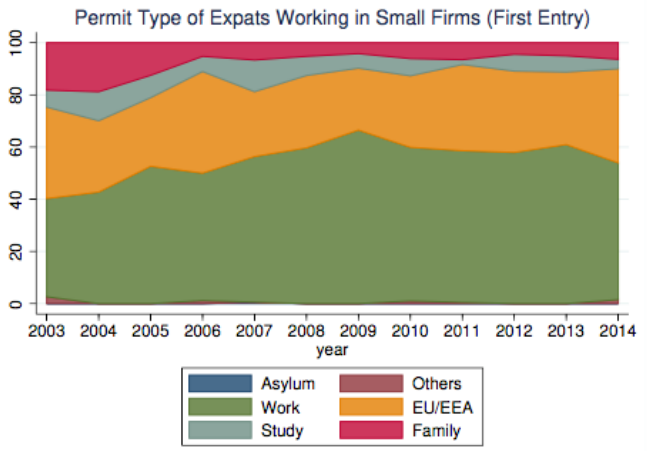
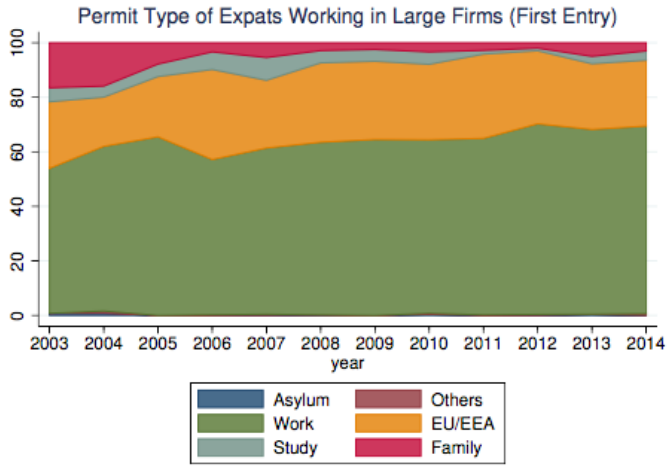


Figure 7: First permit type of expats hired in large firms



To explore the recruitment of expats further, we examined the expats' self-reported experience of recruitment to Denmark in the survey data. In Table 11, we see that expats working in small firms in Denmark are slightly more likely to be attracted by their firm. Furthermore, large firms appear to benefit from their visibility; more of the expats working in large firms sought the firms out themselves.

There is also a slight difference between expats working in small and large firms in the factors considered when choosing to come to work in Denmark. Of the expats working in large companies, 34 per cent were motivated by the opportunity to work for a world-class company, whereas only 21 per cent of the expats working in small firms reported this possibility as a main factor. In addition, whereas 25 per cent of the expats working in small firms reported

higher income as a motivation, this factor was relevant for 18 per cent of the expats working in a large firm. These nuances of recruitment indicate that even though small firms are able to recruit expats directly from abroad, there is less chance of expats actively seeking them out.

Table 11: Expats' self-reported experience before arriving and working in Denmark (based on The Expat Study 2014)

	Firms		
	Small	Large	Sign.
Experience			
Experience as expat	0.68	0.70	
Work experience			
0–5 years	0.58	0.47	***
More than 5 years	0.42	0.53	***
Previous education			
Bachelor or lower	0.51	0.25	***
Masters	0.42	0.46	
PhD	0.07	0.29	***
Factors for choosing Denmark			
To improve my career	0.44	0.49	*
Interesting job	0.43	0.40	
Good work–life balance	0.44	0.38	**
New exposure and personal development	0.37	0.30	**
Working for world-class company	0.21	0.34	***
Higher income	0.25	0.18	***
Recruitment			
Applied myself	0.54	0.70	***
Attracted by the firm	0.17	0.11	***
Other	0.28	0.18	***
	700	1153	

* $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$.

Furthermore, Table 12 show that after arriving and working in Denmark, expats in small or large firms do not appear to have significant differences in experience with working and living in Denmark.

Table 12: Expats' self-reported experience after arriving and working in Denmark (based on The Expat Study 2014)

	Firms		
	Small	Large	Sign.
Denmark offers			
Career opportunities	0.54	0.59	*
Appealing work culture	0.77	0.77	
Satisfactory job	0.80	0.84	*
Enjoy living in Denmark	0.86	0.86	
	700	1153	

* p < 0.05, ** p < 0.01 and *** p<0.001.

In connection with our assumption that small and large firms would recruit differently, we stated in our seventh assumption that small and large firms would demand similar skills. To explore this assumption, we compared both the task content of expats' jobs in small and large firms and their wage levels. Looking at Table 13, we cannot confirm this assumption. The index for task content, which draws from the US O*NET survey approach, shows that expats in small firms carry out analytical and communicative tasks less than expats in large firms. Expats in small firms also perform less manual task. The difference is minor, but still significant due to a large number of observations. However, expats in small firms carry out both routine and non-routine tasks a bit more than expats in large firms, indicating that in small firms, expats probably carry out a broader range of tasks than do expats in large firms. This difference may reflect a narrower degree of knowledge specialization of jobs in small firms.

Similarly, the OECD PIACC survey index, which draws on a survey approach adapted to a European context of proficiency skills, confirms this picture. Expats in small firms use slightly fewer skills in their jobs than do expats in large firms. Most of the differences found between expats in small and large firms are not significant on account of the smaller number of observations, but the results indicate a clear pattern. Among the significant differences found, expats working in large firms have a higher level of computer use in their jobs. Furthermore, expats working in large firms tend to write memos and emails 'more often', use computers to find work-related information and use spreadsheet software. The difference in means measuring these tasks is not large, but indicates a higher degree of skills use. Again, it is likely that these differences reflect a higher level of skills specialization among expats in large firms.

Table 13: Task content of work for expats working in small and large firms

	(1) Small	(2) Large	(3) Significance
O*NET survey			
Analytical	7.07	7.64	***
Manual	0.98	1.04	***
Communicative	7.19	7.78	***
Non-routine	5.63	5.58	***
Routine	2.51	2.36	***
No. of observations O*NET	92919	246942	
PIAAC survey			
Frequency of analytical tasks (scale 1–5)			
Read newspapers or magazines	3.66	3.87	
Read journals or publications	3.20	3.23	
Read diagrams, maps or schematics	2.87	3.16	
Write letters, memos or mails	4.44	4.76	**
Write articles	1.48	1.61	
Frequency of manual tasks (scale 1–5)			
Working physically for long	2.56	2.16	
Using hands or fingers	3.91	3.78	
Frequency of communicative tasks			
Sharing work-related information	4.51	4.56	
Selling	1.66	1.71	
Advising people	3.91	3.73	
Frequency of computer-related tasks (scale 1–5)			
Finding work-related information	4.15	4.62	***
Use spreadsheets software	2.96	3.49	**
Use a word processor	3.97	4.16	
Level of computer use (scale 1–3)	1.94	2.20	***
No. of observations PIAAC	1501	555	

* $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$.

Note: O*NET is the 'Occupational Information Network' database of worker skills, competencies, job requirements and other occupational attributes. The network is under the sponsorship of the U.S. Department of Labor/Employment and Training Administration (USDOL/ETA). PIAAC is the Survey of Adult Skills conducted by the OECD; it measures adults' proficiency in key information-processing skills – literacy, numeracy and problem-solving in technology-rich environments – and gathers information and data on how adults use their skills at work.

When scrutinizing the wage levels of expats working in small and large firms compared to those of natives in the same firms, we found some small differences. Table 14 presents the results of a panel regression analysis on the hourly wages of expats versus natives in small and large firms. We also undertook a similar analysis at sectoral levels, including agriculture (fishery and mining), manufacturing and services. In the analysis we control for other factors that could influence wage levels, such as job type, industry, age, gender, union membership and marital status. We do not control for work experience or formal education, as we do not have register data on these aspects.

Table 14: Comparison of earnings between natives and expats in small and large firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Small firms			Large firms		Obs
Sector	Natives	Expats	Dif.	Natives	Expats	Dif.	
All	-	-4.98%	-4.98% ***	4.88%	3.89%	-0.99% ***	5215105
Primary	-	-0.42%	-0.42%	4.45%	7.33%	2.88% ***	68260
Secondary	-	-3.56%	-3.56% ***	7.65%	7.76%	0.11%	444901
Tertiary	-	-5.28%	-5.28% ***	4.34%	2.94%	-1.39% ***	4702687

$*p < 0.1$, $**$ $p < 0.05$ and $***$ $p < 0.01$.

Note: Each table entry is the parameter estimate or the combination of parameter estimates measuring the wage differential (in per cent) between the group listed in the columns and natives in small firms. The estimates are obtained from regressions controlling for age, age square, gender, marital status and union membership. In addition, we applied four-digit occupation fixed effects (ISCO codes) and six-digit industry fixed effects based on the Danish Industrial Classification (DB07). See more in Appendix C.

Table 14 shows that expats and natives working in large firms earn about 4 to 5 per cent more than native workers in small firms. This finding corresponds with the general trend of a size-wage premium for employees working in large firms (Brown and Medoff 1989; Troske 1999; Gibson and Stillman 2009).

Comparing expats and natives within similarly sized firms, we see that the hourly wage difference between native and expat workers in large firms is about 1 per cent, which is a very small difference. The hourly wage of expat workers in small firms is nearly 5 per cent lower than that of their native counterparts working in small firms. This difference in hourly wages is also rather small, and omitted factors could possibly account for this difference. Actual work experience of expats, formal education and language proficiency are important determinants of wages and have not been included in our panel regression analysis. However, we do have information on some of these variables from the survey data dealing with the group of expats who arrived after 2009. Expats employed in small firms have less work experience than do expats in large firms (see Table 11 in Section 5.3). In addition, 75 percent of the expats in large firms hold a masters or a PhD degree, but only 49 percent of the expats in small firms have a similar high education.

This could indicate that experience and formal skills might explain some of the wage difference found between expats and native workers in small firms and very likely contributes to the higher earnings of expats in large versus small firms.

5.4 Conclusion and discussion

A growing number of small firms recruits expats. Although these firms play a role in increasing the number of expats moving to Denmark, large firms mainly

drive the upward trend. Only 29 per cent of the expat population worked in small firms in 2014. However, small firms are equally if not more likely than large firms to recruit directly from abroad. Small expat firms recruit slightly more workers from other EU/EEA countries, whereas large firms recruit slightly more expats from countries outside the EU/EEA. Overall, small expat firms appear to have their own recruiting channels and networks for recruiting.

The capability of small expat firms to recruit directly from abroad may follow from the fact that small expat firms have a larger global reach, and are more capital- and R&D-intensive, than small firms in general within their industry. Small expat firms share these characteristics with large expat firms, though to a lesser degree. Thus, by recruiting expats from abroad, small firms engage – like large firms – in strategies to improve knowledge of and access to markets, as well as to introduce new technology and knowledge in an effort to enhance competitiveness and innovation within the company.

However, small expat firms use their expats' skills differently than do large expat firms. Expats in small expat firms tend to carry out tasks that are less analytical and communicative, but more manual and routine, than those of expats in large firms. At the same time, expats in small firms are more likely to carry out non-routine tasks, thus complicating the image of expats carrying out less skilled tasks in small firms. Taken together, these findings might reflect that jobs in small firms are less specialized, and that expats in small firms carry out multiple functions to a greater extent than do expats in large firms.

The different use of expats' skills in small firms is also reflected in their wage levels. Expats and natives working in large firms earn about 4 to 5 per cent more than native workers in jobs requiring similar skills in small firms. This finding is not surprising given previous evidence of a general size-wage premium to the advantage of workers in large firms (Brown and Medoff 1989; Troske 1999; Gibson and Stillman 2009). There are various possible explanations for this inequality in wage levels found across countries (Troske 1999). Several explanations point to differences in the skill levels of employees and managers, with employees and managers in large firms being the most skilled (Brown and Medoff 1989; Troske 1999).

Small expat firms may share the traits of having a global reach, being capital- and knowledge-intensive and requiring skills and investments to improve competitiveness with large expat firms, but they carry these traits to a lesser degree, perhaps attracting less skilled workers. Results from *The Expat Study 2014* (see Table 11 in Section 5.3), which provides expats' self-reported work experience, show that expats in large firms have more work experience and higher formal educational level than do expats employed in small firms.

However, some researchers have challenged the skills explanation, arguing that it is more likely that large firms pay more because they generate more productive workers, or they simply benefit from an enhanced market position relative to more vulnerable small firms (Gibson and Stillman 2009). Small firms are likely to be more vulnerable to failings of the markets and long-term investments. Accordingly, they may refrain from committing too many resources to salaries.

The Expat Study 2014 survey data seem to support the idea that expats in large firms might be more productive. Thus, survey data show that expats in large firms are more ambitious. Expats in large firms were more often motivated to come to Denmark to improve their career and working in a world-class company than were expats in small firms. Differently, expats in small firms more often choose to come to Denmark to improve their work-life balance, for personal development, higher income or an interesting job than did expats in large firms.

Furthermore, our analysis show that the difference in hourly wages between expats and natives in large firms is very small. However, expats in small firms earn 5 per cent less than natives working in similar jobs in small firms. Various other factors possibly explaining these outcomes – including the actual work experience of expats, formal education and language proficiency – have not been included in our panel regression analysis. Nevertheless, the mentioned self- reported difference in experience and education between expats in large and small firms might indicate that formal skills and experience could be an explanation for the wage difference of expats in small firms relative to their Danish counterparts. In addition, it is possible that some expats in small firms benefit from paid accommodation or stock options, but such considerations are not part of our analysis.

References

Ackers L (2004) Managing relationships in peripatetic careers: Scientific mobility in the European Union. *Women's Studies International Forum* 27, 189–201.

Ackers L (2005) Moving people and knowledge: Scientific mobility in the European Union. *International Migration* 43 (5), 99–131.

Alaminos A and Santacreu O (2010) Hidden migrations: Spanish highly skilled migration in the European Union. *International Journal of Contemporary Sociology*. Special Issue. 47 (1), 81–96.

Andresen M, Bergdolt F, Margenfeld J and Dickmann M (2014) Addressing international mobility confusion: Developing definitions and differentiations for self-initiated and assigned expatriates as well as migrants. *The International Journal of Human Resource Management* 25 (16) 2295–2318.

Benson-Rea M and Rawlinson S (2003) Highly skilled and business migrants: Information processes and settlement outcomes. *International Migration* 41 (2), 59–79.

Bernard AB, Jensen JB and Lawrence RZ (1995) Exporters, jobs, and wages in US manufacturing 1976–1987. *Brookings papers on economic activity. Microeconomics*, 1995, 67–119.

Boyd M (2014) Recruiting high skill labour in North America: Policies, outcomes and futures. *International Migration* 52 (3), 40–54.

Brown C and Medoff J (1989) The employer size-wage effect. *The Journal of Political Economy* 97 (5), 1027–1059.

Cerna L (2010) Policies and practices of highly skilled migration in times of the economic crisis. *International Migration Papers* no. 99. International Labour Organisation (ILO).

Cerna L (2014) Attracting high-skilled immigrants: Policies in comparative perspective. *International Migration* 52 (3), 69–84.

DEA (2016a) Kvaliteten af ind- og udvandring af højtkvalificeret arbejdskraft i Danmark. *DEA*, København, https://dea.nu/publikationer/kvaliteten-udvandring-hoejtkvalificeret-arbejdskraft-danmark.

DEA (2016b) Er højtuddannede indvandrere en god forretning for Danmark? En registerbaseret cost-benefit analyse af højtuddannede indvandrer. *DEA*, København, https://dea.nu/sites/dea.nu/files/er_hoejtuddannede_indvandrere_en_god_forretning_for_danmark_0.pdf.

DEA (2016c) Brain drain eller brain gain? Arbejdskraftvandringer til og fra Danmark. *DEA*, København, https://dea.nu/publikationer/brain-drain-brain-gain-arbejdskraftvandringer-danmark.

DEA (2016d) Danske virksomheders internationale rekrutteringsbehov. En opsamling af virksomhedscases. *DEA.* København, https://dea.nu/sites/dea.nu/files/danske_virksomheders_internationale_rekrutteringsbehov_1.pdf.

DiMaggio PJ and Powell WW (1983) The Iron Cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review* 48 (2), 147–160.

DST (2016a) De tusind største virksomheder beskæftiger 50 pct. *Nyt fra Danmarks Statistik* nr. 399, 21. september

DST (2016b) Hvornår er små virksomheder små? *DST Analyse* 2016:18, 31. oktober

Favell A (2008) The new face of East–West migration in Europe. *Journal of Ethnic and Migration Studies* 34 (5), 701–716.

Foged M and Peri G (2016) Immigrants and native workers: New analysis using longitudinal employer–employee data. *American Economic Journal: Applied Economics* 8 (2), 1–34.

Gibson J and Stillman S (2009) Why do big firms pay higher wages. Evidence from an international database. *The Review of Economics and Statistics* 91 (1), 218–226.

Habti D and Sabour M (2010) Migration of highly skilled persons and circulation of competences in the Euro-Mediterranean space. *International Journal of Contemporary Sociology*. Special Issue. 47 (1), 7–18.

Hansen NW (2016) International company restructuring and the effects on high-skilled employees in lead companies. *Competition & Change*, 20 (4), 237–254.

Hunt J and Gauthier-Loiselle M (2010) How much does immigration boost innovation? *American Economic Journal: Macroeconomics* 2, 31–56.

Iredale R (2001) The migration of professionals: Theories and typologies. *International Migration* 39 (5), 7–26.

Jacobsen R H, Junge M and Skaksen J R (2011) Højtuddannede indvandreres bidrag til det danske samfund CEBR rapport, November 2011.

Kennedy P (2005) Joining, constructing and benefiting from the global workplace: Transnational professionals in the building-design industry. *The Sociological Review* 53 (1), 172–197.

Kerr SP, Kerr WR and Lincoln WF (2015) Skilled immigration and the employment structures of US firms. *Journal of Labor Economics* 33 (3), 147–186.

Kerr SP, Kerr WR and Lincoln WF (2014) Firms and the economics of skilled immigration. *NBER Working Paper series. Working Paper 20069.* Cambridge, US, National Bureau of Economic Research.

Kerr SP, Kerr W, Özden C and Parsons C (2016) Global talent flows. *Journal of Economic Perspectives* 30 (4), 83–106.

Kerr SP, Kerr W, Özden C and Parsons C (2017) High-skilled migration and agglomeration. *Annual Review of Economics* 9, 201–234.

Khoo S (2014) Attracting and retaining globally mobile skilled migrants: Policy challenges based on Australian research. *International Migration* 52 (2), 20–30.

Kofman, E (2013) Toward a gendered evaluation of (highly) skilled immigration policies in Europe. *International Migration* 52, 116–128.

Krishnan and Scullion (2016) Talent management and dynamic view of talent in small and medium enterprises. *Human Resource Management Review* 27, 431–441.

Mahroum S (2001) Europe and the immigration of highly skilled labour. *International Migration* 39 (5), 27–43.

Mahroum S (2000) Highly skilled globetrotters: Mapping the international migration of human capital. *R&D Management* 30 (1), 23–31.

Massey DS, Arango J, Hugo G, Kouaouci A, Pellegrino A and Taylor JE (1993) Theories of international migration: A review and appraisal. *Population and Development Review* 19 (3), 431–466.

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), 25–50.

Minbaeva DB and Michailova S (2004) Knowledge transfer and expatriation in multinational corporations: The role of disseminative capacity. *Employee Relations* 25 (6), 663–679.

Mincer J (1978) Family migration decisions. *Journal of Political Economy* 86 (5), 749–773.

Nathan M (2014) The wider economic impacts of high-skilled migrants: A survey of the literature for receiving countries. *IZA Journal of Migration* 3 (4), 1–20.

OECD (2017) Recent developments in international migration movements and policies. *International Migration Outlook*. http://www.oecd.org/migration/international-migration-outlook-1999124x.htm.

Oxford Research (2014) *The Expat Study 2014*. Copenhagen, Denmark http://www.google.dk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiR8auMz8jYAhVMDewKHSqMCpEQFggnMAA&url=http%3A%2F%2Fbm.dk%2F~%2Fmedia%2FBEM%2FFiles%2FDokumenter%2FPressemeddelelser%2F2014%2FTheExpatStudy2014%2520pdf.ashx&usg=AOvVaw0z433gI3PZfldsbxMmV071.

Ozgen C, Peters C, Niebuhr A, Nijkamp P, Poot J (2014) Does cultural diversity of migrant employees affect innovation? *International Migration Review* 48 (1), 377–416.

Pearson R and Morrell J (2002) Knowledge migrants: The motivation and experience of professionals in the UK on work permits. URN 02/1291, *European Commission*, November 2002.

Peixoto J (2001) The international mobility of highly skilled workers in transnational corporations: The macro and micro factors of the organizational migration of cadres. *International Migration Review* 35 (4), 1030–1053.

Peri G and Sparber C (2011) Highly educated immigrants and native occupational choice. *Industrial Relations. A Journal of Economy and Society* 50 (3), 385–411.

Portes, A and Böröcz, J (1989) Contemporary immigration: Theoretical perspectives on its determinants and modes of incorporation. *International Migration Review* 23 (3), 606–630.

Rambøll (2018) Virksomhedssurvey om brug af udenlandsk arbejdskraft. *Rapport til Udlændinge og Integrationsministeriet & Beskæftigelsesministeriet.* København: Rambøll.

Recchi, E (2009) Cross-state mobility in the EU: Trends, puzzles, consequences. *European Societies* 10 (2), 197–224.

Salt J (1992) The future of international labor migration. *The International Migration Review* 26 (4), 1077–1111.

Salt J and Wood P (2014) Staffing UK university campuses overseas: Lessons from MNE practice. *Journal of Studies in International Education.* 18 (1), 84–97.

Shachar A (2006) The race for talent: Highly skilled migrants and competitive immigration regimes. *New York University Law Review* 81 (1), 148–233.

Silvanto S and Ryan J (2014) Relocation branding: A strategic framework for attracting talent from abroad. *Journal of Global Mobility* 2 (1), 102–120.

Somaya D, Williamson IO and Lorinkova N (2008) Gone but not lost: The different performance impacts of employee mobility between co-operators versus competitors. *Academy of Management Journal* 51 (5), 936–953.

Stephens, S (2015) The global financial crisis and migration: The experience of Irish graduates. *Journal of Global Mobility* 3 (1), 83–99.

Stokes P, Liu Y, Smith S, Leidner S, Moore N and Rowland C (2016) Managing talent across advanced and emerging economies: HR issues and challenges in a Sino-German strategic collaboration. *The International Journal of Human Resource Management* 27 (20), 2310–2338.

Troske KR (1999) Evidence on the employer size-wage premium from worker establishment matched data. *The Review of Economics and Statistics* 81 (1), 15–26.

Tucker E (2017) Migrant workers and fissured workforces: CS Wind and the dilemmas of organizing intra-company transfers in Canada. *Economic and Industrial Democracy.* 1–25.

Tzabbar, D (2009) When does scientist recruitment affect technological repositioning? *Academy of Management Journal*, 52 (5), 873–896.

Tzeng R (1995) International labor migration through multinational enterprise. *International Migration Review* Special Issue 29 (1), 139–154.

Verwiebe R (2014) Why do Europeans migrate to Berlin? Social-structural differences for Italian, British, French and Polish nationals in the period between 1980 and 2002. *International Migration* 52 (4), 209–230.

Verwiebe R, Mau S, Seidel N and Kathmann T (2010) Skilled German migrants and their motives for migration within Europe. *International Migration and Integration* 11, 273–293.

Verwiebe R, Reinprecht C, Haindorfer R and Weisboeck L (2017) How to succeed in a transnational labor market: Job search and wages among Hungarian, Slovak and Czech Commuters in Austria. *International Migration Review* 51 (1), 251–286.

Appendices

A. Origins of expat population

Origins of expat population by region and level of development

Year	EU/EEA	Non-EU/EEA		All
		Developed	Developing	
2003	10836	2172	18111	31119
2004	11647	2317	18950	32914
2005	12110	2322	18972	33404
2006	13316	2409	19576	35301
2007	14937	2628	21142	38707
2008	16624	2789	22471	41884
2009	19068	3163	25463	47694
2010	19915	3256	26251	49422
2011	21194	3358	26988	51540
2012	22154	3439	27699	53292
2013	25055	3955	31603	60613
2014	26600	3972	33281	63853

Top ten origin countries of expat workers in Denmark

All		Small firms		Large firms	
1 Germany	6200	Germany	1912	Germany	3997
2 Norway	3677	Sweden	1048	Norway	2380
3 Sweden	3631	Norway	1033	Sweden	2365
4 Great Britain	3112	Great Britain	995	Poland	2022
5 Poland	3060	Poland	859	Iran	1991
6 Iran	2666	Bosnia Herceg.	655	Great Britain	1834
7 Bosnia Herceg.	2403	India	612	Bosnia Herceg.	1701
8 Turkey	1987	United States	609	Turkey	1423
9 United States	1914	Iran	570	China	1293
10 China	1814	Iceland	507	United States	1168

B. Share of expats in each industry by size

Industry (two-digit NACE)	Share of expat firms		
	All	Small	Large
Public administration and defence, compulsory social security	0.83	0.18	0.64
Manufacturing of coke and refined petroleum products	0.73	0.08	0.65
Scientific research and development	0.72	0.61	0.1
Manufacturing of pharmaceuticals, medicinal, chemical and botanical products	0.64	0.41	0.23
Telecommunications	0.53	0.43	0.11
Manufacturing of computer, electronic and optical products	0.5	0.44	0.07
IT and other information services	0.5	0.47	0.03
Education	0.46	0.43	0.04
Manufacturing of chemicals	0.43	0.34	0.09
Publishing, audiovisual and broadcasting activities	0.36	0.3	0.06
Financial insurance activities	0.34	0.24	0.1
Consultancy, including legal, accounting, management, architecture, engineering activities	0.33	0.31	0.03
Other professional, scientific and technical activities	0.33	0.32	0.01
Human health services	0.32	0.32	0.01
Manufacturing of electrical equipment	0.32	0.26	0.06
Manufacturing of machinery and equipment	0.29	0.24	0.05
Residential care and social work activities	0.28	0.27	0.01
Mining and quarrying	0.26	0.21	0.05
Electricity, gas, steam and air-conditioning supply	0.24	0.16	0.07
Manufacturing of transport equipment	0.23	0.18	0.05
Manufacturing of rubber, plastic and non-metallic mineral products	0.22	0.17	0.05
Administrative and support activities	0.21	0.18	0.03
Arts, entertainment and recreation	0.18	0.17	0.01
Manufacturing of textiles, apparel, leather and related products	0.17	0.16	0.01
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	0.16	0.16	–
Other services	0.15	0.14	0.01
Other manufacturing, and repair and installation of machinery and equipment	0.15	0.13	0.02
Activities of extraterritorial organizations and bodies	0.14	0.13	0.01
Wholesale and retail trade, repair of motor vehicles and motorcycles	0.14	0.13	0.01
Transport and storage	0.13	0.11	0.03
Water supply and sewerage, waste management and remediation	0.13	0.11	0.02
Manufacturing of metal, except machinery and equipment	0.12	0.11	0.02
Manufacturing of wood and paper products and printing	0.12	0.1	0.02
Real estate activities	0.11	0.09	0.02
Manufacturing of food products, beverages and tobacco products	0.1	0.07	0.03
Accommodation and food service activities	0.09	0.09	0.01
Construction	0.04	0.03	0.01
Agriculture, forestry and fishing	0.02	0.02	–

C. Wage regression and fixed effects analysis

Comparison of earnings of expat workers in small and large firms

	log (hourly wage)		
(1)	(2)	(3)	
Size	0.1048***	0.1086***	0.0380***
	(0.0027)	(0.0025)	(0.0034)
age	0.1158***	0.1088***	0.1025***
	(0.0008)	(0.0007)	(0.0007)
Age Sq.	-0.0013***	-0.0011***	-0.0011***
	(0.0000)	(0.0000)	(0.0000)
Female	-0.2756***	-0.1267***	-0.1169***
	(0.0024)	(0.0022)	(0.0021)
Union	-0.0212***	0.0255***	0.0416***
	(0.0025)	(0.0022)	(0.0022)
Married	0.0599***	0.0294***	0.0228***
	(0.0026)	(0.0022)	(0.0021)
cons	7.8537***	7.6536***	7.7761***
	(0.0169)	(0.0598)	(0.1676)
Occupation FE	No	Yes	Yes
Industry FE	No	No	Yes
adj. R^2	0.133	0.418	0.481
N	230570	230553	230553

Note: Size a is a dummy variable which takes 1 if the firm is large (i.e. > 250 employees), 0 otherwise. The occupation fixed effects are at the four-digit ISCO level. The industry fixed effects are based on the Danish industrial classification DB07. The data covers the period from 2008 to 2014. The hourly wage variable is calculated by dividing monthly earnings with the monthly working hours of workers as reported in the BFL register.