Intra-European labour migration and deteriorating employment relations in Danish Cleaning and Agriculture

Industrial relations under pressure from EU8/2 labour inflows?

Introduction

The Nordic welfare states have been characterised by egalitarian social policies, compressed wage structures and a high degree of coordination between strong labour market actors and the state (Dølvik, 2013a). The lower wage gap between sectors meant, that there were no strong labour market segmentation with entire sectors more or less only employing labour migrants. But Intra-European migration mainly from the EU8/2-countries\(^1\) might challenge this. Somewhat surprisingly and contrary to previous experiences with EU’s southern enlargement, there have been high inflows of EU8/2-workers. In the five years following the 2004 enlargement more EU8/2-workers arrived in Denmark than the Danish Ministry of Finance had estimated would arrive before 2030 (Hansen and Hansen, 2009: 13), and since then inflows have only increased. This inflow of migrant labour is used by some employers to bypass national institutionalised class compromises, through creating non-regulated work sites with EU8/2-workers within the regulated national labour market (Lillie, 2010). This challenges employment relations with deteriorating working conditions especially for labour migrants, but also wages and working conditions of native workers

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\(^1\) The analysis includes workers from the eight Eastern and Central European countries accessed in 2004 and Bulgaria and Romania who joined in 2007. Malta and Cyprus are omitted since they only represented 34 and 27 migrants, respectively, in 2012 in Denmark. The remaining ten newcomers will be referred to as EU8/2.
becomes more exposed and low-skilled native workers are potentially being replaced by EU8/2-workers, as well as the power balance in industrial relations might be altered as seen in other European countries (see e.g. Dølvik, 2013b; Dølvik and Visser, 2009; Lillie and Greer, 2007; Lillie and Sippola, 2011; Woolfson et al., 2013). EU8/2 labour migration in Denmark and the Nordic countries has been the subject of significant research. In Denmark the majority of this research has been done by the Employment Relations Research Centre (FAOS) at Copenhagen University (for some of the most important studies see Andersen and Felbo-Kolding, 2013; Arnholtz and Hansen, 2013; Friberg and Eldring, 2013; Friberg et al., 2014; Hansen and Andersen, 2008; Hansen and Hansen, 2009).

Construction is highly affected by intra-European labour migration, also in Denmark, hence much research has scrutinised this sector (e.g. Eldring et al., 2012; Hansen and Andersen, 2008; Kahmann, 2006; Lillie and Greer, 2007). This article broadens the attention to two more rarely examined sectors; the agricultural sector and the cleaning industry. Both have higher shares of EU8/2-workers than construction, and together they employ more than 40 % of all EU8/2-workers in Denmark. But the dynamic in these sectors seems somewhat different than in construction, where EU8/2-workers appears to be complementing native workers, thus performing different tasks (Andersen and Felbo-Kolding, 2013) whereas the case studies show how the use of EU8/2-workers more often, partly through the creation of unregulated work spaces, leads to native workers being substituted in cleaning and agriculture hence the higher share of EU8/2-workers.

Despite the low status of these two sectors and especially cleaning traditionally serving as a labour market entrance, the workers and their union have over the years secured comparatively high wage levels typically at a hourly rate of 130-135 Danish krones (17-18 euros) in the collective agreements,
but this might be changing. So far only few studies have examined impacts in these sectors (e.g. Wills, 2009 although with a different focus). This article tries to fill some of this gap by investigating these two sectors and thus contribute to the growing literature that emphasizes labour migration’s increasing impact on various institutional settings (Friberg et al., 2014; Woolfson et al., 2013) as well as different sectors (Lillie and Greer, 2007; Lillie and Sippola, 2011). The overall research question is accordingly; how are working conditions and industrial relations in agriculture and cleaning affected by EU8/2 labour migration?

The article is structured as follows; first the Nordic and Danish industrial relations model is discussed followed by some more theoretical perspectives on the political economy of labour migration especially emphasising the role of labour unions and employers. Next section discusses how subcontracting is used as one of the main mechanism through which labour migration affects working conditions and industrial relations by bypassing the Danish IR-system and creating low-regulated sub-labour market mainly employing EU8/2-workers. Then the article’s methodological approach is discussed. Thereafter the article continues in three sections; first section presents and discusses statistics on the increased inflow of EU8/2-workers in Denmark since 2004. Then the case studies findings are presented, demonstrating how EU8/2 labour inflow is increasing tensions on wages and working conditions as well employers’ organisations and not least unions in agriculture and cleaning. Besides summarising the results, the concluding section discusses the wider potential outcome of labour migration in Denmark and the Nordic countries.

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2 Danish studies include Korsby (2011) and Lisborg (2011) on human trafficking and labour migrants in cleaning respectively agriculture and Jensen et al. (2007) on migration, wages and employment in Danish farming.
Labour migration and industrial relations – creating non-regulated spaces

European integration is increasingly impacting national labour markets, but the most important aspect seems to be the free movement of labour in the enlarged European Union, thus making labour migration possible in the first place. Labour migration is mostly driven by the demand for labour in the receiving countries (Piore, 1979; Sassen, 1988), but is obviously also affected by supply side dynamics (Meardi, 2012; Trondsted and Joona, 2013) e.g. the vast wage differences in the enlarged European Union (Dølvik, 2013b). But due to the strong coordination of industrial relations in Denmark and the Nordic countries there have not been entire industries mainly employing migrant workers as described by Piore (1979).

Nordic and Danish industrial relations

Industrial relations and labour market regulation in the Nordic countries are in many ways still different from the rest of Europe (Amable, 2003; Crouch, 2012). Once termed the social-democratic model (Esping-Andersen, 1985) these countries still have high levels of unionisation, high collective bargaining coverage, strong coordination between relative equal social partners and low levels of state interference (Dølvik, 2013a; Andersen et al., 2014). Even though there are also differences between the countries (e.g. lower unionisation rates and the use of extension of collective bargaining in Norway cf. Andersen et al. (2014: 31-36) these countries still share many features of labour market regulation (Crouch, 2012) especially comparatively high levels of unionisation and powerful unions, which distinguishes the Nordic countries from the liberal and conservative regimes (Dølvik, 2013a; Esping-Andersen, 1990; Korpi, 1983). So the Danish case studies findings could serve as a ‘crucial case’
(Gerring, 2007: 115-122), that might also have implications for the other Nordic countries. If the highly regulated Danish labour market cannot prevent exploitation of migrant labour and undercutting of working conditions, less regulated labour markets will most likely not be able to do so either.

The high Danish unionisation rates of 67 % (Ibsen et al., 2012: 77) and a collective bargaining coverage rate of 83 % (DA, 2013: 242) have, despite sectorial differences, resulted in relative high wage levels and low wage gaps, including modest inter-sectorial wage gaps. Since there is no law-based minimum wages, erga omnes or other extension mechanism of collectively bargained wages in Denmark, wages are formed through collective bargaining between unions and employers’ associations, typically combined with local negotiations. Employers without collective agreements usually follow terms and wages set in the sectorial collective agreements but due to the lack of law-based minimum wages lower wage levels are in principle possible. If this happens unions will usually try to force employers into complying with collective agreements through industrial action, typically a blockade or at first a blockade warning. However unions do not have the necessary resources to control or even locate all minor and remote work-sites where employers are trying to use non-regulated employment (Interview local union representative 2), and if there are no union members in the work site industrial action becomes much more difficult.

Subcontracting EU8/2-workers: Bypassing collective bargaining

Often the employment of EU8/2-workers at below-average wage and working conditions is used to surpass national labour market regulation (Dølvik and Visser, 2009; Lillie, 2010) and this is also the
case in Denmark. Following the discussion on the Posted Workers Directive and the Laval-quartet rulings posted workers were seen as the main issue of intra-European labour migration. But in the sectors analysed posting is not the main issue. Since there is no minimum wage firms can pay very low wages, which makes posting less attractive in the first place. By 2013 only 13 % of the registered EU8/2-workers in Denmark were posted or self-employed, and more than 60 % of those were in construction, where half of all EU8/2-workers are posted. Less than 2 % in cleaning are posted. Posting is more common in agriculture, although still low with 11 % posted workers, often working on time-bounded tasks like foresting or berry-picking.

Like most EU15 countries Denmark opted for a transitional agreement for labour market access where EU8/2-workers had to document that they would be working on wage and working standards set in the collective agreements before obtaining a Danish work permit (Hansen and Hansen, 2009: 91). But since the end of the transitional agreement on May 1st 2009 it has been up to the unions to push for collective agreements, and make sure the terms set in the collective agreements are followed, which is very demanding in certain sectors (Andersen et al., 2014: 98).

Problems in the two sectors studied generally arise when employers bypass collective agreements and create non-regulated work spaces through widespread subcontracting e.g. to small Danish-based firms, but also foreign companies without collective agreements (cf. Andersen et al., 2014: 97). This strategy has been used by larger cleaning firms, denying responsibility for employment relations at the subcontractors. In the case studies it seems evident that subcontracting EU8/2-workers, especially in cleaning but also in agriculture, is often used mainly to circumvent collective agreements

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3 Own calculations based on NLMA-data.
4 For an overview of cases in cleaning see: [http://www.fagbladet3f.dk/temaer/beskidt/](http://www.fagbladet3f.dk/temaer/beskidt/)
especially in minor companies. European research has shown that externalizations or outsourcing of activities often lead to corrosion of employment relations and is used to circumvent already existing labour regulation (Flecker, 2009: 253; Holst, 2014; Lillie, 2010; Lillie and Greer, 2007; Marchington et al., 2005).

Both agricultural and cleaning have below average collective bargaining coverage. 83 % of all employees in Denmark are covered by a collective agreement (DA, 2013: 242). In agriculture it is only around 50 %, while two thirds are covered in the general service sector.⁵

EU8/2-workers employed by companies who are members of an employers association and/or covered by collective agreements and shop steward/union representative have significantly higher wages and in Denmark this also includes agency workers who are usually covered by collective bargaining (Andersen and Felbo-Kolding, 2013: 150–151; Hansen and Andersen, 2008; Hansen and Hansen, 2009: 94).

**Unions, employers and labour migration**

Menz (2005) found in a study of intra-European labour mobility in the 1990’s that the strength of organised labour was an important determinant in reducing down-ward wage pressure. This supports the argument that institutional settings, especially collective bargaining coverage, are important for how migrants are treated, but also how migrants impact national labour markets (Friberg et al., 2014). Accordingly we expect migrants to have better wages and working conditions in the Nordic countries (Friberg et al., 2014). Migrant workers e.g. in UK and Germany seem to have more

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⁵ Unpublished survey data from Ibsen et al. (2012).
precarious conditions than in Denmark, although this article also finds exploitative practices of labour migrants in Denmark.

Much literature on labour migration has treated employers as uniformly supporting free movement of labour, but recently Afonso (2012) has emphasised conflicting preferences among employers, reflecting previous work by Korpi (2006). Korpi distinguishes between employers as protagonist, antagonist or consenters towards general social policy (where Afonso discusses regulation of migrant wages), where consenting often reflects employers not being able to fulfil their first-order preferences. So employers, with first-order preferences for low regulation of labour relations e.g. migrant wages, might consent on regulation because of the threat of more far-reaching legislation or because of public outcries like media attention.

Unions have traditionally been sceptical towards labour migration since they feared that additional labour supply would put pressure on wage levels (Goldthorpe, 1984) and unions have had difficulties adjusting to the challenges of post-industrial societies (Ebbinghaus, 2006). Despite traditional doctrines of trans-national solidarity unions have in practice remained focused mainly on national members’ interests (Krings, 2009: 50), and unions have even been criticised for being ethnocentric (Lillie and Sippola, 2011; McGovern, 2007). However, there are large national differences in union approaches reflecting institutions and political-economic conditions (Krings, 2009: 52) such as range of migrant labour, level of collective bargaining coverage, labour demand, and not least union strength.

Many unions, once it became clear they could not stem immigration, have changed strategy now pushing for equal working conditions and wages for all employees, regardless of status, thereby trying
to reduce the phenomenon of 'social dumping' (Krings, 2009: 50). Danish unions, including 3F the main industrial union for low-skilled workers, including agriculture and the service industry, embrace this strategy and are not opposing labour migration, as long migrants are working on ‘Danish conditions’ understood as the terms set in the collective agreements.

_method_

While much economic research (see Barrell et al., 2010 for an overview) shows no major impact of labour migration on overall wage and employment levels, sociological and institutional research have recently identified impacts and changes in the Nordic countries (see e.g. Eldring et al., 2012; Hardy et al., 2012; Lillie and Sippola, 2011). This divergence is most likely explained by different levels of aggregation (Arnholtz and Hansen, 2013). Analysis at high aggregation levels, like cross-country analyses (e.g. Kahanec and Zimmermann, 2010), often find no negative, if any, impact of labour migration. However, at this level of aggregation sectorial as well as institutional and regulatory impacts are often ignored (Eldring and Schulten, 2012: 235). Therefore further country and sector case studies are needed to strengthen our knowledge on the dynamic interaction between migration, labour markets and societal changes, but also cross-national variations of labour migration.

This article analyses two sectors that have often been neglected in the literature. It combines a case study research design with descriptive statistical data on labour migration from Eastern and Central Europe based on government register data like wage data and firm level registration (see the next section for the full description of the statistical data from the Danish National Labour Market
Authority; hereafter NLMA). The NLMA-data was combined with sectorial labour market statistics on employment etc. from Statistics Denmark.

The case study evidence has been collected through public documents, media coverage, existing literature etc. within the Danish agriculture and general cleaning sectors. Finally seventeen in-depth interviews have been conducted. These include eight interviews with national and local union representatives (including a Polish-speaking union worker) and two representatives from employers’ organizations as well as interviews with management and HR-managers and a Romanian cleaning supervisor in a larger cleaning company. Representatives from construction, transport and the confederate level union (both 3F and LO) were also interviewed. The semi-open interviews, which in general lasted between one and one-and-a-half hour emphasized the interviewees factual understanding of institutional and organizational issues rather than personal experiences, although personal experiences obviously also shapes the understanding. The questions asked mainly focused on the institutional impact of EU8/2 labour migrants in the affected sectors including industrial relations, working conditions, employment patterns etc. Afterwards the content of the interviews formed the basis for the qualitative data in the article. Since labour migration is a highly salient political issue interviewees might perceive the research interviews as part of the political game (Lillie and Sippola, 2011: 294–95). So in order to validate interview data as well as general arguments made in the article the interview data has been tested against other available sources.

While not including any EU8/2-workers in the interviews was a deliberate choice in the research design, this is obviously problematic for understanding the incentives and perceptions of the labour

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6 The data can be accessed via www.jobindsats.dk
migrants themselves and how this contributes to the institutional and organisational changes but this important aspect lies beyond the scope and intentions of this article. Other Nordic and Danish research has taken the labour migrants as the starting point of enquiry (see e.g. Friberg and Tyldum, 2007; Hansen and Hansen, 2009), and future research should also seek to incorporate the migrant workers in a more comprehensive manner.

The unexpected inflow of EU8/2-workers

As shown in Figure 1 the numbers of EU8/2-workers in Denmark have skyrocketed since 2004, but were brought to a halt by the crisis, while increasing significantly again since 2010. The actual figures are most likely higher due to non-registered workers. Despite some uncertainty due to different data sources and changes in registration the overall tendency in Figure 1 is very clear and established in the literature on labour migrants in Denmark (Andersen and Felbo-Kolding, 2013). Before the EU enlargement there were around 10,000 EU8/2-workers in Denmark and basically no posted workers. By 2013 more than 80,000 EU8/2 citizens worked in Denmark. Even though the number of EU8/2-workers has increased significantly the overall share of employment is moderate at around 3 %.

Figure 1: EU8/2-workers in Denmark 2004-2013.

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Improved Danish data on intra-European labour migration

Establishing exact numbers of migrants is difficult, especially since significant shares might not be registered. Reliable European figures on labour migration are very limited, so the Danish official data on migrant inflows, which has improved greatly in recent years, are very useful (see e.g. Andersen and Felbo-Kolding, 2013; Arnholtz and Hansen, 2013). The official statistics from the NLMA were improved in 2008 and again in 2011 due to mandatory registration of foreign companies and workers as well as the merging of several data sources by Danish authorities. Although statistics have been improved

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*No posted workers included in 2004-2007 figures

**Change in data due to mandatory registration

Sources: 2004-2007: (Malchow-Møller et al., 2009); 2008-2013: NLMA-data.

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8 The combined data sources are four different registers; of non-nationals; general person-register (CPR) and company register (CVR) and the ICT-based wage register (see www.jobindsats.dk)
only EU8/2-workers registered by Danish authorities are reported. All foreign companies and self-employed workers are required to register with Danish authorities either to ‘Registret for Udenlandske Tjenesteydere’ [Register for Foreign Service providers] (RUT) or tax authorities, but fines for not registering are modest. According to a joint operation by Danish Working Environment Authority, tax authorities and the police 21 % of the foreign companies examined were not legally registered. While these operations were targeted worksites where unregistered workers were most likely encountered, it confirms some EU8/2-workers are still not registered in Denmark, making the official figures too low.

Data presented here refer to the number of workers rather than full-time equivalents. The temporary nature of much migrant work, discrepancies between official and unofficial hours, some EU8/2-workers combining registered and non-registered work and many EU8/2-workers working less hours than they actually want to (Hansen and Hansen, 2009: 68; see cleaning section below) makes the number of EU8/2-workers more relevant than fulltime equivalents. When measured in fulltime equivalents numbers are roughly halved. Finally a majority of EU8/2-workers report living in Denmark (Andersen and Felbo-Kolding, 2013: 44-45).

**Sectorial and national composition of labour migrants**

Like in other receiving countries the EU8/2-workers are highly concentrated within certain economic sectors. EU8/2-workers constitute 24 % of the agriculture workforce (and 48 % of all employees if all

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EU8/2-workers are assumed to be employees) and 15 % in the broad overall cleaning category. However if we make the reasonable assumption that all EU8/2-workers are employed in general cleaning (see below) the share is 35-40 %. By contrast EU8/2-workers only constitute 8 % in construction. 89 % of all EU8/2-workers in Denmark are working in agriculture, construction, certain parts of manufacturing, transportation, hotels and restaurants and cleaning. EU8/2-workers’ employment levels equals those of natives, unlike those of non-EU migrants (Andersen, 2012) and 68 % are male, which might also reflect that work is the main motive for migration (Hansen and Hansen, 2009).

As regards nationality, Poles constitute by far the largest group in Denmark (43.3 %), followed by Romanians (18.1 %), Lithuanians (17.4 %), Bulgarians (6.2 %) and Latvians (5.8 %) as shown in Table 1. However the composition is changing; Poles are less dominant than previously (even though absolute numbers are still growing), while shares of Romanians, Lithuanians and Bulgarians are increasing. The same tendency is reported at European level, with EU2 migration growing faster than EU8 migration while Polish migration has slowed, revealing signs of increasing return migration (Galgóczi et al., 2012), due to higher wages and improving living conditions in Poland. Poland’s PPP ratio compared to EU27 average has risen from 48 % in 2001 to 62 % in 2010 (Kaczmarczyk, 2012: 180).

Table 1 EU8/2-workers in Denmark 2013

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>35,396</td>
</tr>
<tr>
<td>Romania</td>
<td>15,463</td>
</tr>
</tbody>
</table>

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10 Category DB-07 code N (includes other occupations).
11 Statistics in this section is own calculations based on 2013 NLMA-data and sectorial employment data from Statistics Denmark (RAS-data).
<table>
<thead>
<tr>
<th>Country</th>
<th>2012 (people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithuania</td>
<td>14,247</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>5,083</td>
</tr>
<tr>
<td>Latvia</td>
<td>4,706</td>
</tr>
<tr>
<td>Hungary</td>
<td>2,821</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1,838</td>
</tr>
<tr>
<td>Estonia</td>
<td>950</td>
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<tr>
<td>Czech Republic</td>
<td>950</td>
</tr>
<tr>
<td>Slovenia</td>
<td>275</td>
</tr>
</tbody>
</table>

Sources: National Labour Market Authority

The sector concentration varies with nationalities. For the three largest groups; Romanians, Poles and Lithuanians, there are marked differences, as shown in Figure 2. Romanians mostly work in agriculture (25 %) and cleaning (24 %), as do Lithuanians (31 % and 21 % respectively). Poles more often work in construction (21 %) and manufacturing (16 %), even though cleaning (17 %) remains significant. Apparently Poles who formed the first wave of migrants, are moving into e.g. manufacturing, leaving less attractive work in agriculture to Romanians and Lithuanians, this was also confirmed in the interview data. Similar trends are observed elsewhere, e.g. cheaper Bulgarian and Romanian workers are replacing Polish workers in the German subcontracted slaughterhouse industry (Refslund, 2012).

**Figure 2 Differences in sectorial composition 2012.**
Migration flows during the crisis

A central question in labour migration research is how business cycles, especially economic downturns like the current affects migration flows. The inflow after 2004 occurred in a strong economic upturn with labour shortages in many EU15 countries, especially within construction. It was anticipated that inflows would be highly sensitive to economic cycles (see e.g. Bauer and Zimmermann, 1999), but the recent developments suggest intra-European migration is less affected by economic fluctuations than global migration which was significantly reduced by the crisis (Tilly, 2011: 680–81). The number of EU8/2-workers only declined slightly at the onset of the crisis, even though Denmark experienced enduring low growth and high unemployment until 2013, especially for low-skilled workers.
As anticipated by Piore (1979: 59-60) an increasing share of labour migrants appear to be settling in the Nordic countries (Andersen and Felbo-Kolding, 2013: 44-45; Friberg and Eldring, 2013: 12; Andersen et al., 2014: 96). This disconfirms to some extent popular beliefs of EU8/2 labour migration as highly geographically mobile and circular.

The next sections present the case study results and then employers’ as well as unions’ strategies are discussed before the overall implications of the case studies are summarized.

**Case studies: EU8/2-workers in Danish agriculture and cleaning**

Especially the cleaning industry has traditionally been a labour market entrance for migrants and refugees, combing low skills and language requirements with tough physical work. In 2010 nearly 40% of the employees in general cleaning had a foreign background (DI, 2012: 19). But despite this workers in these industries still had decent working conditions and wages in Denmark. Figure 3 shows the wage difference between agriculture and the broader service sector and manufacturing. As shown in figure 3 have agricultural wages converged significantly since 1970, while wages in ‘other services’ have remained at large at the same level as manufacturing. This reflects the Nordic IR-models traditional ability to create a high wage floor (Andersen et al., 2014; Dølvik, 2013a) especially for low-skilled jobs in industries that typically are low-wage areas with much precarious employment.

**Figure 3: Wage difference between manufacturing and the sectors analysed 1970-2007.**
But both sectors are increasingly cost-competitive and face strong pressure to reduce costs, with international competition increasing in agriculture while the cleaning industry has seen extensive outsourcing of public cleaning which has profoundly affected the industry (cf. Hermann and Flecker, 2012) thus increasing incentives to employ EU8/2-workers to reduce costs. EU8/2-workers have nearly doubled since 2008 in both sectors as shown in Figure 4.

**Figure 4 EU8/2-workers in agriculture and cleaning.**
Sources: National Labour Market Authority (www.jobindsats.dk). 2008 figures are most likely underestimated since 19% of overall EU8/2 employment was not-specified activity compared to 7% in 2012. This slightly moderates the increase. *Change in data due to mandatory registration **Includes travel agencies and other operational service that does not employ any significant numbers of EU8/2-workers.

Sidestepping collective agreements, often through the use of EU8/2-workers, combined with increasing cost pressure, might in the long term lead to larger wage gaps between different sectors (Andersen et al., 2014). The case studies reports tendencies towards weaker wage growth in the analysed sectors, and the same is found in cleaning in Figure 5 thus distorting the stable wage dispersion. Statistics on recent wage development in agriculture is omitted due to uncertainty, mainly due to low numbers of employees in the firms (statistics only available for companies with >10 employees) and difficulties in determining working time. So if these more weakly organized sectors
experiences growing wage gaps vis-á-vis the manufacturing sector, this could undermine the tradition of high wage floors in the Danish labour market, or create wage restriction pressure in other sectors (Dølvik, 2013b; Dølvik and Visser, 2009).

**Figure 5 Wage index cleaning and manufacturing 2000-2012 (2000=100).**

Source: Statistics Denmark wage statistics (SLON40 and LON04). Cleaning category (N) also includes travel agencies.

The high flexibility of the Danish labour market with easy access to lay-offs creates low incentives for non-standard employment, which has remained at rather low levels (Madsen, 2013). However migrant workers more often have non-standard employment (Friberg et al., 2014; Madsen, 2013), and EU8/2-workers are highly overrepresented among temporary workers (Stuvøy and Andersen, 2013). Non-standard employment means that migrant workers more often find themselves in precarious employment (Friberg and Eldring, 2013; Friberg et al., 2014). They work too many hours compared with the actual pay (Friberg et al., 2013: 114-116), as has often been reported in
construction (Interview local union representative 1), they have problems with payment (Friberg et al., 2014: 44) and often miss non-wage benefits like paid leave and pensions, and they are often not eligible for social benefits like unemployment benefits (Hansen and Hansen, 2009). Problems with working conditions are often worse in smaller companies, whereas bigger companies in general have better conditions (Interviews, several employer representatives and labour representatives; cf. Hansen and Andersen, 2008: 73). But there are vast differences between firms (both intra- and inter-sectorial); some are complying fully with collective agreements while others opt out of the collective agreements to gain competitive advantages (Stuvøy and Andersen, 2013: 260).

Cleaning; Outsourcing and subcontracting migrants

The Danish industrial system has created a comparatively egalitarian wage structure (Dølvik, 2013a), which has been especially important in the public sector that to some extent served as a buffer for low-skilled labour (Hermann and Flecker, 2012). Historically cleaning workers enjoyed stable working and wage conditions but the recent wave of outsourcing and especially the marketization of public cleaning has led to sharp declines in working conditions and wages (Hermann and Flecker, 2012; Wills, 2009). Also much cleaning previously conducted in-house in manufacturing and typically covered by the manufacturing collective agreement has been reorganised to other suppliers often with lower wages. Virtually all Danish municipalities have outsourced public cleaning of e.g. schools, administrative buildings, libraries etc. to private operators, due to a strong emphasis on cost reductions and budget restraints. This has led to a marked increase in subcontracted workers which
have been the major cause of the contemporary problems in the sector (Korsby, 2011: 21; Interview national union representative cleaning; cf. Wills, 2009 for a description of the UK development).

Outsourcing of cleaning has strongly affected working conditions in the industry (cf. Hermann and Flecker, 2012), because public employers were traditionally setting industry standards through collective agreements (Corby and White, 1999), in contrast to the private sector where union representation was much weaker. With the majority of cleaning now in private companies, there is no such benchmark, and workers are more exposed to market negotiation of wages and working conditions. Some of the previously public cleaning is now done by subcontracted EU8/2-workers without collective agreements at very low wages,\textsuperscript{12} so the state or at least local authorities have paved the way for this erosion of working conditions through outsourcing.

In a large municipality studied for this article public school cleaning was outsourced to reduce costs. Working hours were changed from usual 7-15 to 5-7 in the morning followed by hours in the afternoon to increase efficiency by cleaning when no school children are present. In the 1980s and 1990s KAD (the female workers union that covered cleaners, now merged into 3F) had a political agenda to make cleaning more recognised as a profession thus raising the working conditions. They campaigned somewhat successfully for ‘Decent cleaning’, which meant among other things ‘visible cleaning’ to give cleaning workers a human face in e.g. schools and other public institutions. These improvements in working conditions are compromised by the subcontracting practices. The changed working hours also increased unpaid transport. Overall widespread outsourcing has led to deterioration of collective agreements and working conditions in the industry. Much of the

\textsuperscript{12} For an overview of cleaning cases see: http://www.fagbladet3f.dk/temaer/beskidt/
outsourced work is now done by subcontracted or agency companies often employing EU8/2-workers, so outsourcing has increased inflow of migrant workers. Many of the agency companies pay below the wage level agreed in the collective agreements (Stuvøy and Andersen, 2013: 258-59) and many cleaning companies tries to avoid entering collective agreements (Andersen et al., 2014: 97). Typically the public task giver (e.g. a municipality) outsources to a private company, but the work is often subcontracted to other companies, and the municipalities are often not controlling these. The work is sometimes even further subcontracted in chains of companies to blur employment relations for unions and public task givers. Some of these subcontracting companies use undocumented, mainly Romanian workers (Interview local union representative 5).

Nearly all 19,600 EU8/2-workers in the cleaning sector are employed in the sub-category ‘general cleaning’ (Interviews: Employers’ organization representative 2; National union representative cleaning), which basically is all not-specialised cleaning. If measured in fulltime equivalents, the EU8/2-workers only amount to 6400 workers, reflecting that the majority is working part time filling in hours, often only few hours a week. The difference between employed and fulltime equivalents is only 20 % for native workers compared with nearly 70 % for EU8/2-workers.13

Cleaning workers often have precarious working conditions, atypical work hours and isolated and minor work sites including private homes (Gavanas, 2010: 31–32). Subcontracting of migrant workers has made the work even more precarious (Wills, 2009), especially when conducted in private homes (Friberg et al., 2014: 45) and subcontracting is often used to circumvent collective agreements (Stuvøy and Andersen, 2013: 247). Also wages have been compromised because of the absent of collective

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13 Own calculations based on Statistics Denmark (Statistikbanken).
agreements, which leaves EU8/2-workers free to accept very low wages with examples of hourly wages around 40-50 Danish kr. (Korsby, 2011: 49) compared with the collective agreed hourly wage above 130 Danish kr.\(^\text{14}\) There are repeatedly media reports on migrants working and living under very poor conditions also facing problems with housing and transportation and even examples of coercive work and slave-like conditions has been reported also in interviews (Interviews national union representative cleaning; local union representative 5). At least three court cases have involved labour migrants in cleaning and two persons have been sentenced two and two-and-a-half year in prison for exploiting nine Romanian workers.\(^\text{15}\)

3F have actively and rather successfully worked to put this on the media agenda, which together with organisational attention has dampened the problems. Some companies actually inform 3F about potential problems with wages, subcontracted workers etc. (Interview national union representative cleaning). Collective agreement coverage is also on the rise because of the attention,\(^\text{16}\) with several municipalities adding social clauses to their outsourcing contracts restraining subcontractors. But the problems are far from solved; there are e.g. still problems with fake identification papers, making it difficult for companies to check the workers’ identity and legal status (Interview national union representative cleaning).

Overall sector union representatives fear that ‘...if the flow of Eastern Europeans continues, then I don’t think that there will be any Danish cleaning workers left in the long run.’ (Interview local union representative 3). Outsourcing of previous public cleaning, but also of private cleaning e.g. in

\(^{14}\) Wage statistics 3F homepage.

\(^{15}\) See [http://www.fagbladet3f.dk/temaer/beskidt/30361c2075e64910a1a9857221e1f946-20140326-renoeringsbosser-idoemt-faengsel-for-at-udnytte-rumaener](http://www.fagbladet3f.dk/temaer/beskidt/30361c2075e64910a1a9857221e1f946-20140326-renoeringsbosser-idoemt-faengsel-for-at-udnytte-rumaener) and [http://www.e-pages.dk/3f/1351/34](http://www.e-pages.dk/3f/1351/34) (pages 34-39).

\(^{16}\) Mail correspondence (National union representative cleaning).
manufacturing, combined with some employers, particularly sub-contracting companies, using the inflow of poorly organised EU8/2-workers to circumvent collective agreements, has made cleaning workers (both natives and EU8/2-workers) more vulnerable.

The agricultural sector

Denmark is historically an agricultural country and remains one of the world’s leading exporters of pig meat. The agricultural cluster accounts for nearly a quarter of overall goods exports and 15 % of overall exports. In the last 15-20 years the sector has seen major changes in labour composition. By 1993 there were only 2 % immigrants in farming (Jensen et al., 2007: 7); while in 2013 24 % were EU8/2-workers in the agricultural sector being doubled since 2008.\textsuperscript{17} This happened despite declining primary sector employment, which was reduced from 140.000 in 1993 to 69.600 in 2012,\textsuperscript{18} which is mainly explained by rapid centralization and productivity gains that also dramatically increased farm sizes (Jensen et al., 2007: 10). Traditionally there were many self-employed, small- and medium scale farmers and today there are still more part-time farms than fulltime.

In 2004 Poles were the largest group, but since shares of Romanians and Lithuanians have increased, so in 2013 there are around 4600 Romanians and 5000 Poles as well as Lithuanians.\textsuperscript{19} The increase could, according to Andersen and Felbo-Kolding (2013: 180), potentially be explained by lower wage expectations of especially Romanians. EU8/2-workers are often employed with pig farming,

\textsuperscript{17} Andersen and Felbo-Kolding (2013: 55) reports 27 % of farming employment. Figures here include horticulture (with many EU8/2-workers) and fishery (fewer EU8/2-workers). Own calculations based on NLMA-data and employment data (Statistics Denmark).
\textsuperscript{18} Statistics Denmark (RAS2). Available at www.statistikbanken.dk
\textsuperscript{19} Source: NLMA-data.
horticulture and forestry, while only few work with traditional crop farming (Jensen et al., 2007: 13; Interview employers’ organization representative 1).

EU8/2-workers constitute the majority of the workforce in several agricultural companies especially within forestry and in 8% of the companies employing EU8/2-workers they account for more than 90% of the workforce (Andersen and Felbo-Kolding, 2013: 85). This is, according to interviewed union workers (Interviews local and national union representative agriculture) because employers are replacing Danish workers with cheaper Eastern European labour; while employers state they can’t get the Danish labour needed (Interview employers’ organization representative 1; Stuvøy and Andersen, 2013). But from the scope and speed of the replacement of native workers with EU8/2-workers, it seems evident that wages and working conditions have an important role in this process.

Agriculture has traditionally been rather loosely organised compared with the overall Danish labour market (Andersen and Felbo-Kolding, 2013: 180) and agricultural workers traditionally identified themselves more as farmers than rural workers. Many of the current problems in the sector stems from the general lack of organisation and collective agreements. Andersen and Felbo-Kolding (2013: 179-181) reports that employers in agriculture very often use EU8/2-workers (40% of the companies within the last year) and frequently use time-limited employment of EU8/2-workers (58%), and the lowest paid tenth of the EU8/2-workers in agriculture is the lowest paid among all industries with an hourly average of 85 kr. (compared to the hourly average minimum in the collective agreements of at least 125 kr.). 3F has reported several incidents with even lower wages down to 30 kr. /hour. Several of these incidents have (at least to some extent) been acknowledge by the employers who all

20 See e.g. http://www.fagbladet3f.dk/nyheder/fagligt/2001d3c05b7644bfae2ccf7cebf71f40-20131111-firma-udlejer-starbejdere-til-30-kroner-i-timen
together had paid 18 million kr. in compensation in agriculture alone for underpayment between 2008 and 2013. At the same time agricultural employers are trying harder than other employers to integrate EU8/2-workers through language education and training, which shows agricultural employers perceive the EU8/2-workers as a more permanent work force (Andersen and Felbo-Kolding, 2013: 181).

The frequent use of temporary or posted EU8/2-workers often working below the collective agreements terms (Stuvøy and Andersen, 2013) and low levels of collective bargaining has led to several examples of precarious working conditions in agriculture. Workers experiencing these conditions are typically working on time-limited, specific tasks like berry-picking and cutting Christmas trees. This challenges the already weak industrial relations in Danish agriculture increasing pressure on migrant workers as well as natives, unions and organised employers. As stated by one regional union representative; ‘Hell broke loose after 2009’ (interview local union representative 2).

**Danish unions and EU8/2-workers**

Union strategy towards labour migration could include pushing for more state regulation (e.g. to reduce inflows or introducing minimum wages), trying to force employers into collective bargaining, or trying to organise the migrants (Kahmann, 2006). Danish unions have, except for supporting the transitional restrictions 2004-2009, embarked only on the latter two. The Danish IR-system is based on very limited state action and unions generally oppose state intervention (Andersen et al., 2014). But the urge to include EU8/2-workers in Danish collective bargaining is not merely altruistic, but an

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21 [http://www.fagbladet3f.dk/nyheder/fagligt/7079778b05a24a8db3b2b7a507ca502d-20130422-loendumping-for-18-millioner-kroner-paa-det-groenne-omraade](http://www.fagbladet3f.dk/nyheder/fagligt/7079778b05a24a8db3b2b7a507ca502d-20130422-loendumping-for-18-millioner-kroner-paa-det-groenne-omraade)
attempt by unions to reduce downward pressure on wages and working conditions (Friberg et al., 2013: 46). But unions have as shown severe problems in negotiating collective agreements with some of the companies employing EU8/2-workers as well as continuous problems with organising EU8/2-workers.

The Danish unionisation rate is 67 % (Ibsen et al., 2012: 77), whereas estimates of EU8/2-workers’ unionisation rate in Denmark is 10-20 % at the highest (Andersen and Arnholtz, 2013). This is despite rather serious efforts by 3F and other Danish unions to organise EU8/2-workers e.g. by employing Polish-speaking organisers. The EU8/2-workers are not per se opposing unions (Eldring et al., 2012: 33; Hansen and Hansen, 2009). But they are significantly less likely than Danish workers to be union members, partly because of the temporary nature of their work (Piore, 1979: 109-110) and especially when in temporary employment (Stuvøy and Andersen, 2013: 266). According to interviewed union workers EU8/2-workers have lower incentives to organise and low knowledge on how the rather complex Danish labour market works (Interview local union representatives; 1, 3 and 4). When EU8/2-workers have good conditions and are covered by collective agreements, they do not see the reason for joining a union and often think it is too expensive (Interview local union representative 1). They often only contact the union ex-post when having problems with pay or working conditions, and often without being union members (Interview local union representative 3 and 4). Since wages are much higher, up to eightfold, compared with their home country, incentives to engage in industrial conflicts is very low.

EU8/2-workers have different perceptions of unions than natives. Poles e.g. have more negative perceptions of unions (Interview local union representative 1; see also Greer et al., 2013: 13). EU8/2-
workers are also more compliant towards employers and supervisors than Danes (Pedersen and Thomsen, 2011: 54). This, combined with antagonistic behaviour of some employers towards organised labour, makes organisation really difficult. EU8/2-workers unionising or even contacting unions have been fired or threatened with dismissal (Interview local union representative 1; local union representative 2). Often EU8/2-workers are separated from other workers and thus union personnel.

Comparative research show the Danish collective agreement based IR system creates less wage gap between natives and EU8/2-workers than the Norwegian law-based minimum wage (Friberg et al., 2014). But the stronger Danish unions can be rather aggressive towards employers and more often embark on industrial action than their peers in Norway and UK so they also appear more aggressive to migrants. This explains the somewhat better enrolment rates of the weaker Norwegian and UK unions, which appear more appealing to migrants through an activist and inclusive approach (Eldring et al., 2012: 33; Mailand and Larsen, 2011: 60). Danish unions have a controlling role vis-à-vis the industrial relations, which also makes it difficult to gain the trust of and hence organise the immigrants (Andersen et al., 2014: 98). Often there is an inherent conflict with unions targeting companies employing EU8/2-workers e.g. firms without collective agreements (Mailand and Larsen, 2011: 39). But until now only few large-scale explicit industrial conflicts have involved labour migrants or foreign firms.

The very low unionisation rates of EU8/2-workers are problematic for Danish unions, and might impair the functionality of the Danish labour market (Arnholtz and Hansen, 2013). The associational strength of the labour market organisations is a necessary prerequisite to secure collective
agreements in the work place. Lower unionisation rates also lead to scarcer resources at local union offices. Paradoxically the strength of Danish unions could be pushing labour migrants away while securing them better conditions than other regimes.

**Danish employers: Ambivalent and partly divided**

As mentioned in the introduction employers might have different strategies and preferences depending on their market position and sector but are also affected by union strength (Afonso, 2012) with employers facing strong unions could be forced to consent on their second-order preferences (Korpi, 2006). Afonso (2012) argues theoretically we would expect employers in non-tradable sectors, especially when confronted by strong unions, to support wage regulation to prevent ‘unfair’ competition from outsiders paying lower wages. On the other hand Afonso argues that employers in tradable sectors are likely to prefer no or less regulation, since they can take advantage of cheaper labour. But this pattern is not found in Denmark.

Several employers, especially minor subcontractors in the non-tradable cleaning sector, despite facing comparatively strong unions, are trying to take full advantage of the free movement of labour and thus fiercely try to avoid regulation of migrant wages. On the other hand employers who follow the non-formal but yet highly institutionalised Danish wage system feel they encounter unfair competition (Interview employer cleaning). This has led to disputes between employers whether to take advantage of the circumstances or stick to ‘fair working conditions’ and leaves Danish employers’ associations divided or at least ambivalent (cf. Andersen and Felbo-Kolding, 2013). This is not in line with Afonso’s (2012) assumption of uniform sectorial employer interests.
The Danish Service Sector’s Employer’s Organization (SBA) saw members terminate membership following this debate (Interview employers’ organization representative 2). Since then SBA encourages minimising the use of subcontracted workers and has published guidelines stating:

‘It is not illegal or wrong to use subcontractors [...] But they must be applied in an ethical manner. [...] SBA takes a strong position against companies in the industry managing such business models [...] or opposed to the collective agreements, so that it is detrimental to competition as well as the industry’s image.’

Some employers argue they feel pressured to employ EU8/2-workers on conditions well below those set in collective bargaining to remain competitive (Andersen et al., 2014: 100). The same discussion is reflected among agricultural employers e.g. in horticulture (Interview local union representative 2; employers’ organization representative 1).

The main divide between employers is thus not between sectors but rather between employers in the same sector. Most often the large companies are ‘rule-followers’, since they are easier targeted in industrial actions by unions, whereas smaller companies and especially subcontractors often have below average conditions. The public discourse that underpaying migrant labour and thus undercutting Danish wages is unacceptable seems rather robust. So employers facing negative publicity, in particular media attention sometimes consents on a collective agreement to avoid problems.

**Outcome: Deteriorating working conditions through non-regulated work**

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The case studies shows how some employers use labour migration to push towards weaker collective bargaining and lower wages by employing EU8/2-workers below the wage level set in collective agreements (cf. Dølvik, 2013b; Friberg et al., 2014). Overall this leads to deteriorating working and wage conditions with workers experiencing pressure on wage levels, working hours and conditions e.g. work pace and planning of hours (cf. Stuvøy and Andersen, 2014: 257), and could potentially result in future labour market segmentation as well as significant replacement of low-skilled natives in the affected sectors.

Despite many similarities between the two sectors there are also differences. Subcontracting to companies not covered by collective agreements is widely use in both sectors, while the use of posted workers is more common in agriculture. In cleaning widespread outsourcing of public cleaning has intensified this process, hence contributing to the destabilization of working and employment conditions (Hermann and Flecker, 2012).

Despite being low-wage sectors both agriculture and cleaning traditionally provided decent working and wage conditions for both migrants and natives, due to the low wage gap in the Danish labour market. So despite large shares of migrants especially in cleaning neither cleaning nor agriculture have been ‘pure’ segmented labour market, with migrants filling in positions that natives do not what, as described by Piore (1979).

The increased pressure has led to native workers lowering their wage claims e.g. in the cleaning sector, where union members are accepting wages much lower than previously due to fiercer job competition (Interview local union representative 3 and 4). This might lead to concession bargaining
and e.g. the dominant metal industry union fear these wage pressures might spread (Interview metal workers union representative 1).

EU8/2-workers have on average lower wages and more precarious working conditions than natives (Andersen and Felbo-Kolding, 2013; Arnholtz and Hansen, 2013; Friberg and Eldring, 2013; Friberg et al., 2014; Hansen and Andersen, 2008; Hansen and Hansen, 2009), which supports evidence of some labour market segmentation. In a recent survey among employers Andersen and Felbo-Kolding (2013: 11) found the wage difference between EU8/2-workers and natives to be 19 % in farming, and this is most likely underestimated. Native workers might consent on dualised pay agreements being paid at ‘normal levels’, while Eastern European workers are paid at lower rates. The Danish workers are in return accordingly granted some sort of job and wage security for not involving the union and sometimes even leaving the union (interview local union representative 2). EU8/2-workers are often paid the minimum rate set in sectorial collective agreements, without any local negotiations (Stuvøy and Andersen, 2013: 264). But Friberg et al. (2014: 43) finds Polish workers in Copenhagen earn on average 85 % of the natives, which supports the argument that there is not a ‘pure’ segmentation effect with very low migrant wages.

Impacts of labour migration are typically unequally distributed, with low-skilled workers and other vulnerable groups e.g. immigrants already in the country more often experiencing adverse effects of the increased supply of low-skilled labour (Eldring and Schulten, 2012: 238–39; Krings, 2009: 54).

Jensen and colleagues (2007: 25) found EU8/2-workers were replacing low-skilled Danish workers in the agricultural industry and this seems to continue. Whether replacement takes place depends on if migrants are complementing or substituting native workers, which is disputed (see e.g. Borjas et al.,
2008), but obviously also job content. But it seems clear that there are substitution effects in the sectors analysed where native and migrant labour very often perform the same type of work. Overall employment rates for natives with only primary education declined from 61.2 to 56.7 % between 2009 and 2012 (Statistics Denmark, 2013), while employment for EU8/2-workers increased in the same period despite the crisis. Replacement might lead to short-term unemployment and adjustment costs for natives. But it might also result in medium- and long-term lower employment rates for workers with only primary education employment. But this depends on whether the migrants stay in Denmark and if they move into more skill intense jobs; many of e.g. the Poles are overqualified for low-skill work (Arnholtz and Hansen, 2013).

**Conclusion and further perspectives**

While EU8/2-workers account for only 3 % of total Danish employment this article has identified more profound impacts in agricultural and the cleaning industry, where EU8/2-workers now represent significant shares of the employment. While both sectors have had below average wages the wage gap has been moderate but this might be changing. Despite internal disputes and ambivalence among employers intra-European labour migration is used by some employers to undermine wage levels, working hours, working conditions (e.g. work pace) and especially collective agreements coverage. Extensive use of subcontracted workers in both sectors as well as posted workers in agriculture results in large numbers of EU8/2-workers working significantly below the de facto minimum wages negotiated in collective agreements, thus creating low or unregulated work spaces where the institutionalised labour market regulation is not applied. The widespread outsourcing of public
cleaning has widely enhanced this in the cleaning industry. There are continuously media reports of very dire working conditions for some EU8/2-workers as well as other concerns like e.g. housing problems. This increases the risk of an ‘Eastern European proletariat’, which to some degree already has happened, working in low-status jobs and with pay and working conditions significantly below average.

But also native workers are increasingly affected by the declining working conditions and wages. There might be a replacement effect where especially marginal low-skilled native workers are being replaced by EU8/2-workers, who are willing to work at wage levels and working conditions native Danes won’t accept.

The EU8/2-workers have significant lower unionisation rates than natives which pressurises in particular unions but also employer’s organizations and could alter the balance in the Danish labour market model, which is based on the strength of the labour market organisations.

Intra-European labour migration is thus challenging the Danish IR-system in the sectors analysed, but it has so far not lead to significant disruptions of the model, neither at the national level or in the affected sectors. But the long-run outcome is still to be seen and it could be a drift away from the agreement-based model towards a less regulated labour market or towards more state interference.

To what extent does labour migration affect the welfare state in the Nordic countries?

This article has shown how intra-European labour migration is challenging the highly regulated Danish labour market. It causes down-ward wage pressure which might also put strains on welfare benefits, in particular unemployment benefits, especially following the current emphasis on work-fare and
'make work pay' in Danish politics (Goul Andersen, 2011). If unemployment benefits are higher than low-end wages it would create downward pressure on benefits (or wages). When EU8/2-workers work at low wages and often not full-time, and meanwhile according to EU legislation could be entitled to social benefits in the hosting country, employers can basically pass the cost of the low wages on to the state, which renders some problematic incentives (Brochmann and Grødem, 2013: 71).

This raises questions on how intra-European labour migration in the future will intersect with the generous Danish and Nordic welfare states. Based on evidence in this article, there seems to be two paths emerging; either an undermining of the traditional Nordic labour market regulation which could lead to more state and legislative intervention, or a reconfiguration to accommodate the challenges. The former has to some extent happened in Norway with increased legislative action (Eldring and Schulten, 2012: 243–47), although from a different starting point (lower unionisation rates and organizational strength) than in Denmark. Although there are advocates in the Danish debate for more legislation and political initiatives are discussed (Madsen, 2013: 18-19), for now it does not seem like a plausible development. Since the labour market organisations are trying to solve the issues within the framework of the voluntary IR-system, without state intervention, this point to a reconfiguration. But this might only last as long as outcomes are not highly contested within the political system or as long as employers are not opting out of the established system.

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References


Hansen JA and Andersen SK (2008) Østeuropæiske arbejdere i bygge- og anlægsbranchen. FAOS Research report 92, Copenhagen, FAOS.


[http://eid.sagepub.com/content/early/2013/08/29/0143831X13494249.abstract](http://eid.sagepub.com/content/early/2013/08/29/0143831X13494249.abstract)