

Job Market (In)Flexibility

Petri Böckerman

Tuomas Kosonen

Terhi Maczulskij

Henri Keränen



Job Market (In)Flexibility

Petri Böckerman – Tuomas Kosonen –
Terhi Maczulskij – Henri Keränen

ISBN 978-952-209-158-1 (pdf)

ISSN 2242-6914 (pdf)

Julkaisija:

Palkansaajien tutkimuslaitos

Pitkäsillanranta 3 A, 00530 Helsinki

www.labour.fi

ABSTRACT

In this report we examine factors related to the flexibility of Finnish labor market and relate what previous literature has found on the effects of these factors on employment and flexibility of the labor markets. The factors related to labor market flexibility we describe in our own data are how compressed wage distributions are in selected low wage sectors, and within country migration of the Finnish labor force, especially following unemployment. The literature survey attempts to focus on most recent and most reliable studies capable of revealing the causal effect of EPL, minimum wages and factors related to mobility on employment and other labor market flexibility related outcomes.

Comparing Finnish EPL to other countries, we find that the Finnish EPL does not seem particularly strict at least according to written rules. Our literature survey does not find systematic and large negative employment effects from stricter EPL or higher minimum wages. We do find some studies that indicate other negative labor market effects, especially a negative effect on employment flows.

We study in our own data how binding collectively agreed wages appear by looking at the relative distance of actual wages from worker-specific and industry-specific minimum wages in four selected low wage industries. We find that wages are relatively compressed in especially cleaning industry. On within country migration our results suggest that out-migration is on average larger from regions with high unemployment and that more than 90% of the unemployed do not migrate to another region. According to our results, the event of being displaced due to a plant closure induces more migration within country. We also show that the income development is not favorable for migrant immediately after the migration.

Acknowledgement: We are grateful for the Finnish Economy Policy Council for providing funding for the study.

TIIVISTELMÄ

Tässä tutkimuksessa käsitellään Suomen työmarkkinoiden joustoihin liittyviä tekijöitä ja katsastetaan mitä tuloksia aiempi kansainvälinen tutkimus on esittänyt tästä aiheesta. Tutkimme myös omassa aineistossa työmarkkinoiden joustoihin liittyen miten keskittyneitä palkat ovat minimipalkkojen ympärille neljällä valitsemallamme matalapalkka-alalla ja kuinka työttömyys on yhteydessä Suomessa muuttamiseen paikkakunnalta toiselle. Kirjallisuuskatsaus puolestaan keskittyy mahdollisimman viimeaikaiseen ja laadukkaaseen tutkimukseen, joka pystyy paljastamaan työntekijöitä turvaavan lainsäädännön ja minimipalkkojen sekä muuton kausaalisen vaikutuksen työllisyyteen ja työmarkkinoiden joustoihin liittyviin tekijöihin.

Kun Suomen työntekijöitä suojaavan lainsäädännön tiukkuutta verrataan muihin maihin, ei Suomen lainsäädäntö vaikuta erityisen tiukalta, ainakaan kirjoitettuja sääntöjä verrattaessa. Sen lisäksi kirjallisuuskatsauksessa havaitaan, että uusimmat ja parhaimmat tutkimukset löytävät hyvin niukasti näyttöä siitä, että tiukempi työntekijöitä suojaava lainsäädäntö tai minimipalkat aiheuttaisivat suuria negatiivisia työllisyysvaikutuksia. Sen sijaan kirjallisuudessa on joitain tuloksia jotka viittaavat muihin negatiivisiin työmarkkinavaikutuksiin, erityisesti työllisyysvirtoihin.

Tutkimme omassa aineistossamme miten sitovilta minimipalkat vaikuttavat. Tutkimme palkkojen etäisyyttä henkilökohtaisesta ja alakohtaisesta pienimmästä mahdollisesta palkasta neljällä valitsemallamme matalapalkka-alalla. Havaitsemme, että palkat ovat erityisen keskittyneitä näille pienimmille mahdollisille palkoille erityisesti siivousalalla. Maahanmuutosta havaitsemme, että alueelta poismuutto on keskimäärin suurempaa alueilla, joissa on korkeampi työttömyys, ja toisaalta että yli 90 % työttömistä ei muuta pois alueelta, jossa sijaitsevat. Tuloksemme myös osoittavat, että työpaikan menettäminen toimipaikan sulkemisen tai pienenemisen takia lisää työttömäksi joutuneiden muuttohalukkuutta. Muuttaneiden tulokehitys näyttäytyy aineistossamme keskimäärin negatiivisena heti muuttamisen jälkeen.

Kiitokset: Olemme kiitollisia Talouspolitiikan arviointineuvostolle tutkimuksen rahoittamisesta.

CONTENTS

1. INTRODUCTION	6
2. INSTITUTIONS	8
2.1. Employment Protection Legislation	8
2.2. Minimum wages	10
3. EMPLOYMENT PROTECTION LEGISLATION AND MINIMUM WAGES IN ECONOMIC THEORIES	14
4. EMPIRICAL LITERATURE OF EMPLOYMENT PROTECTION LEGISLATION AND MINIMUM WAGES ON THE FUNCTIONING OF THE LABOR MARKET	16
4.1. Employment Protection Legislation literature	16
4.2. Minimum wage literature	18
4.3. Empirical literature on mobility	22
5. HOW BINDING ARE MINIMUM WAGES IN FINLAND?	24
6. EMPIRICAL ANALYSIS OF THE MOBILITY OF WORKERS IN THE FINNISH LABOR MARKETS	29
6.1. Data and variables	29
6.2. Sample construction	30
6.3. Descriptive evidence	30
7. REGRESSION ANALYSIS OF MOBILITY IN THE FINNISH LABOR MARKETS	36
7.1. Empirical strategy	36
7.2. Empirical results	37
8. EXTENSIONS – INCOME AFTER MIGRATION	39
9. CONCLUSIONS	43
REFERENCES	45
APPENDIX	49

1. INTRODUCTION

The Finnish economy has been in a more or less low growth environment since the economic crisis started in late 2008. One particular worry is the high unemployment rate, which was 9.4% in 2015 (**STATISTICS FINLAND** 2016). An official policy goal of the Finnish Government is to increase the number of employees by 110,000 by the end of its term. In the public discussion of this topic, an often-mentioned measure to increase employment is transforming labor markets to be more flexible. More-specific measures include reducing minimum wages for workers whose productivity is low, making employment protection legislation (EPL) less strict and inducing the unemployed to search for jobs, e.g., from wider geographical areas with more job opportunities. The economic situation in Finland and the desire for these types of policies create a motivation to survey previous research on the effectiveness of the mentioned policies and to describe factors related to the flexibility of the Finnish labor markets.

In this report we examine factors related to the flexibility of Finnish labor market and relate what previous literature has found on the effects of these factors on employment and flexibility of the labor markets. The factors related to labor market flexibility we describe in our own data are how compressed wage distributions are in selected low wage sectors, and within country migration of the Finnish labor force, especially following unemployment. The literature survey attempts to focus on most recent and most reliable studies capable of revealing the causal effect of EPL, minimum wages and factors related to mobility on employment and other labor market flexibility related outcomes.

Minimum wages and EPL exist to redistribute income to low wage workers and to protect weak employees against stronger employers. For example, if some group of workers earn very low wages that is not enough to support these workers, forcing the firms to pay higher salaries through minimum wages would benefit the workers and give them higher income. Similarly, if EPL prevents employers to fire workers, for example, after being sick for couple of days, workers might feel more secure about keeping their jobs even after a negative event has affected them. Thus, the aim of minimum wages and EPL is to do good for the workers. At the same time too extreme versions of both minimum wage and EPL have been criticized of ending up harming the economy and the workers they were supposed to help with it. Whether they result in negative or positive outcomes depends on many factors. One is how binding the minimum wages are or how strict EPL is. Another is how the economy responds to binding minimum wages or relatively strict EPL. The usual suspect is that high minimum wage or strict EPL reduce employment by increasing costs for firms to have many workers, and costs to lay off workers they temporarily need. However, after a closer scrutiny theory models exist, where for example high minimum wages have positive employment effects. Thus, we need empirical results that are capable of revealing the causal effect of higher minimum wages or stricter EPL on employment to be able to confirm the common intuition about their negative effect.

Comparing Finnish EPL to other countries does not indicate that the Finnish EPL would be particularly strict at least according to written rules. Finnish wage bargaining system means that wages are collectively agreed by sector and the agreed wages take characteristics of worker, like work-experience into account. Thus they differ from nation or state wide minimum wages in many other countries. At the same time the collective agreement system could lead wages to be less flexible, as we find that some 90% of workforce is covered by collective agreements.

Our literature survey does not find systematic and large negative employment effects from stricter EPL or higher minimum wages. In the best-quality studies the effect of minimum wages hikes on employment is zero. We do find some studies that indicate other negative labor market effects. The most robust finding seems to be on employment flows. Following stricter EPL or higher minimum wages firms reduce both hiring and firing of workers. This in turn could make labor markets more inflexible.

We study in our own data how binding collectively agreed wages seem to be. We look at the relative distance of actual wages in a large micro-data from worker-specific and industry-specific minimum wages in four selected low wage industries. We find that wages are relatively compressed in especially cleaning industry. This suggests that minimum wages in Finland are binding at least in some low wage industries.

The motivation to study within country migration is that in some regions in Finland the unemployment rates are much higher than in some other regions. According to a basic economic model we survey, the unemployed in a high unemployment region should follow incentives and migrate to a different region for higher chances of finding a new job. If the migration of the unemployed seems to be rather low, for a reason or other, it would seem that the labor markets are not as flexible as they might ideally be. In the analysis we define as an exogenous unemployment events those where displacement due to plant closure or downsizing of a plant led to a person being unemployed. We study to what extent displacements led unemployed to move to a different region within Finland. Finally, we describe how the incomes and wages of the migrants develop several years after the migration.

Our results suggest that out-migration is on average larger from regions with high unemployment. This relationship is not as strong with in-migration and unemployment. We also describe that more than 90% of the unemployed stay in the same region and do not migrate. Utilizing plant closures as more exogenous unemployment event reveals that unemployment does induce individuals to migrate more often. We also describe that the income development is not favorable for migrant immediately after the migration, which could be explained the fact that migrants do not immediately find work after migration. Those who men who find work from private sector seem to have a positive wage development following migration.

The report proceeds as follows. Section 2 presents institutions in Finland and elsewhere, section 3 presents economic theories on the EPL, minimum wages and inter-region migration, section 4 presents an empirical literature survey and section 5 the concentration of Finnish wages at minimum wages in specific sectors. Section 6 presents labor force mobility description, section 7 the analysis that relates loss of employment on mobility, and section 8 describes the income and wage development following migration. Section 9 concludes the study. Appendix presents additional description and results.

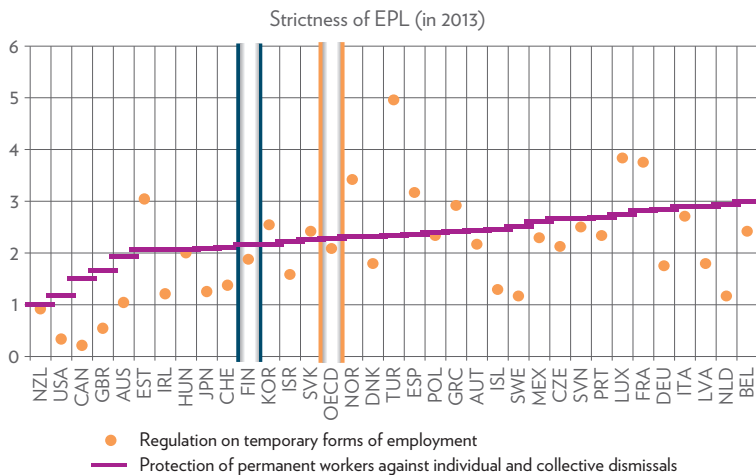
2. INSTITUTIONS

In this section, we present how Employment Protection Legislation (EPL) and minimum wages are set in different countries. The purpose is to provide an idea of how Finnish institutions compare to other countries.

2.1. Employment Protection Legislation

According to OECD indicators of Employment Protection Legislation (EPL), in Finland, both the level of regulation temporary contracts and the protection of permanent workers against individual and collective dismissals of individuals are below the OECD mean (see Figure 1). We acknowledge that measuring the strictness of EPL is tricky and that the OECD index is not a perfect measure of the effective strictness of EPL. It has been argued that the indicator mostly considers only the EPL legislation and not fully the extent to which the laws are enforced or to what extent collective bargaining agreements impose additional strictness. However, the most recent version of the OECD index (the one that is used in the figure) considers some of the enforcement issues and is more systematic in its treatment of collective bargaining (VENN, 2009). According to VENN (2009), collective bargaining agreements do not meaningfully add to the strictness of EPL in Finland and have only a small effect on the OECD indicator in countries in which collective bargaining agreements are judged to add to the strictness of EPL (e.g., Denmark, Iceland or Italy).

Figure 1. OECD indicators of EPL for the year 2013 (higher value implies that the country's EPL is comparatively stricter).



Source: OECD.

VENN (2009) lists exemptions from EPL for specific groups among OECD countries. Typical exempted groups are the self-employed, maritime workers, domestic workers, family members in family businesses, diplomats, political office-holders, entertainers, sportspeople, police or civil servants. These groups are excluded from coverage or are subject to different rules for hiring and firing than is the general workforce. Moreover, many countries have a firm-size cut-off in which firms smaller than the cut-off size have less strict EPL rules than do larger firms. For example, smaller firms can discharge workers more easily. The main motivation for these size cut-offs is that policymakers do not want to discourage hiring in the small firms. We have included these exemptions as gathered by **VENN** (2009) in their entirety as table [A1 and A2] in the Appendix. In Finland, firms with fewer than 20 employees (covering 27% of employees) need not take part in consultations with employees. This exemption effectively reduces the delay after notification before firing can occur. Similarly, Denmark, Belgium, Switzerland, Germany, Hungary and the Czech Republic exempt firms with fewer than 20 employees from requirements on collective dismissals. In other countries, there are various other policies aimed at helping smaller firms, and the threshold determining the set of those firms varies. In Australia, for example, firms with 100 employees or fewer are exempt from unfair dismissal laws, affecting more than half of the workforce, and in Germany, firms with 10 workers or fewer are exempt from regular EPL altogether with the exception of discriminatory or arbitrary dismissals, affecting roughly one-fifth of the German workforce (**VENN**, 2009). Thus, although the EPL rules overall are not very strict in Finland in international comparison, Finnish EPL has less exemptions for small firms than some other OECD countries with otherwise similar strictness of EPL.

Exemptions to EPL other than those for small firms are rarer (**VENN**, 2009). The appendix includes Table X from **VENN** (2009), which lists these exemptions. In Finland, as in many other countries, one exemption is related to workers who reach their retirement age. Similar to, e.g., Sweden, employees have the legal right to remain employed until the age of 67. An employment relationship of a worker who turns 68 years old can be terminated without a notice period, although employer and employee can agree to a fixed-term continuation. As seen from the table in the appendix, in some countries other than Finland, the exemptions are instead aimed at young workers or workers who are seeking a way back to work, for example, through active labor market programs.

Overall, the Finnish EPL cannot be characterized as excessively strict in the international context. For instance, severance payments are not set by law. According to the OECD indicators of EPL, Anglo-Saxon countries have more flexible labor markets; however, Sweden and Germany have stricter protection of permanent workers. Regulation of temporary employment is, conversely, stricter in Finland than in Sweden or Germany, although Finland is below the OECD average on both measures. Thus, if Finnish labor markets are found excessively inflexible in an international comparison, strict EPL alone cannot have caused that evaluation.

2.2. Minimum wages

In developed countries, most employers and employees are bound by some form of minimum wage that keeps them from agreeing to a contract paying the employee less than the set minimum. In most countries, minimum wages are set by law either at the local (China) or at the national (the UK) level or in some countries at both levels (the US). These minimum wages can be set by legislation as in the United States and in most European countries or by collective labor bargaining as in Finland and Sweden. Although legislatively set minimum wages cover all workers with possible variation in the minimum wage rate for different types of workers, collectively bargained minimum wages are industry specific and by default cover only the members of the negotiating parties (namely trade unions and the corresponding businesses) unless the agreement is extended to cover all workers in the industry. Moreover, the minimum wages set by collective bargaining are more specific because they often consider the experience of individual workers or the difficulty of the job. Table 1 provides examples of exceptions to the standard levels of statutory minimum wages. These examples show that the exceptions are mostly related to age; most exceptions are for young workers.

Table 1. Exceptions to statutory minimum wages in selected countries.

Australia¹	The federal minimum wage that applies to workers who are not covered by an industrial award or agreement has special rates for young workers, apprentices, trainees and workers with disabilities.
Belgium	Workers 16 years old and younger can be paid 70% of the standard minimum wage. For 17 year-olds, the special rate is 76%. Workers who are 19.5 years old or older and have 6 months of seniority must be paid at least 103%, and workers over 20 years of age with 12 months of seniority at least 104% of the standard minimum wage. The standard minimum wage applies to 18 year olds (Eurofound, 2016).
Czech Republic	Special rate of minimum wage for workers with disabilities (Eurofound, 2016).
France	Workers under the age of 18 with less than six months of experience in their sector can be paid 80% of the standard minimum wage if they are 15 or 16 years old and 90% of the standard minimum wage if they are 17 years old. In addition, workers under the age of 16 can be paid 80% of the standard minimum wage during summer holidays (Eurofound, 2016).
Germany²	The statutory minimum wage that took effect in January 2015 does not apply to minors, to long-term unemployed during the first six months of their employment or to certain interns.
Greece	Special rate for those under 25 years of age for as long as the Fiscal adjustment program is in effect (Eurofound, 2016).
Hungary	Higher minimum wage for workers in jobs requiring at least a secondary level education. Conversely, public works programs pay less than the standard minimum wage (Eurofound, 2016).
Ireland	Workers younger than 18 years can be paid 70% of the standard minimum wage. Employees aged 18 or older who are in their first year of employment since turning 18 can be paid 80% of the standard minimum wage, and employees who are in the second year of employment since turning 18 can be paid 90% of the standard minimum wage. (Eurofound, 2016).
Latvia	The standard monthly minimum wage is not adjusted for working time, leading to differences in hourly minimum wages that depend upon statutory working time, which can be different in different occupations (Eurofound, 2016).

Luxembourg	The standard minimum wage applies to workers aged 18 years and over. Skilled (qualified) workers must be paid at least 120% of the standard minimum wage, whereas workers aged 17–18 must be paid at least 80%, and workers aged 15–17 at least 75% of the standard minimum wage (Eurofound, 2016).
Malta³	Sectoral minimum wages when applicable. Otherwise, the national minimum wage in 2016 is €168.01 per week for workers 18 years and older, €161.23 for workers aged 17 years and €158.39 for workers under 17 years of age.
Netherlands	Special rates for the following groups (Eurofound, 2016): 22 years old: 85% of the standard minimum wage 21 years old: 72.5% 20 years old: 61.5% 19 years old: 52.5% 18 years old: 45.5% 17 years old: 39.5% 16 years old: 34.5% 15 years old: 30%
New Zealand⁴	Starting-out minimum wage (80% of the standard minimum wage) applies to workers aged 16–17 years with less than 6 months of continuous service with their current employer and to workers aged 18–19 who have received social security benefits for 6 months or more and have not completed 6 months of continuous employment with an employer since they started being paid benefits. In addition, 16–19-year-olds who must undertake industry training for at least 40 credits a year to be qualified can be paid the starting-out minimum wage. Workers over the age of 20 who must do at least 60 credits a year in an approved industry training program to become qualified can be paid the training minimum wage (also 80% of the standard minimum wage).
Poland	Workers can be paid only 80% of the standard minimum wage in their first year of employment (Eurofound, 2016).
United Kingdom⁵	Minimum wage rates as of October 2016: Workers aged 25 or over (The National Living Wage): £7.20 Ages 21 to 24: £6.95 Ages 18 to 20: £5.55 Age under 18: £4.00 Apprentice: £3.40
United States⁶	Various exceptions exist to the federal minimum wage under the Fair Labor Standards Act that sets the federal minimum wage. For example, workers under the age of 20 can be paid wages below the federal minimum wage for the first 90 calendar days after their initial employment. There are exceptions also to tipped employees, students and workers with disabilities. If individual states have higher levels of minimum wage, the higher level applies.

1 Source: <https://www.fairwork.gov.au/how-we-will-help/templates-and-guides/fact-sheets/minimum-workplace-entitlements/minimum-wages>

2 Source: http://www.bmas.de/SharedDocs/Downloads/DE/PDF-Publikationen/brochure-the-minimum-wage-act-in-detail.pdf?__blob=publicationFile&v=2

3 Source: <https://dier.gov.mt/en/Employment-Conditions/Wages/Pages/National-Minimum-Wage.aspx>

4 Source: <https://www.employment.govt.nz/hours-and-wages/pay/minimum-wage/different-types-of-minimum-wage-rates/>

5 Source: <https://www.gov.uk/national-minimum-wage-rates>

6 Source: <https://www.dol.gov/whd/minwage/q-a.htm>

Finland, similar to other Nordic countries relying on collective wage bargaining, lacks statutory minimum wages but instead has a large set of different minimum wages. The minimum wages are sector- and individual specific by considering attributes of the worker

or the job. For instance, minimum wages can depend upon the education, experience or skills of the individual worker, on the difficulty of the job or on where the job is located.¹ This heterogeneity in minimum wages is in stark contrast to countries in which minimum wages are set by law, although there are also exceptions to statutory minimum wages as mentioned earlier. In some sense, the lowest possible minimum wage within a sector is the one that is binding, because firms in principle could lay off more-experienced workers and instead hire inexperienced workers to avoid paying too high wages. Under the collective agreements, they still must pay at least the minimum wage for that sector. In practice, laying off workers at will is not possible (due to EPL), and thus there are limitations on the firms' ability to use this strategy.

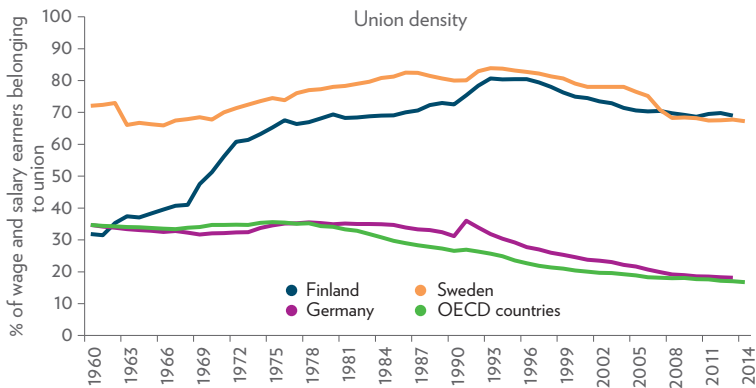
In Finland, collective bargaining agreements are extended to cover all workers in the sector if the agreements are deemed sufficiently representative. This conclusion is drawn if the initial agreement covers at least roughly one-half of the workers in the sector, which typically is true because Finland has a high unionization rate (see Figure 2). However, some sectors (such as for example telemarketing) exist in which there are no binding agreements. Because of extensions to collective bargaining agreements, roughly 90% of Finnish workers are currently covered by some form of collective bargaining agreement, according to **VISSER** (2016). In comparison to other countries, the coverage in Sweden is roughly similar to that of Finland, whereas in Germany, the coverage is lower, below 60%.

Because of the combination of some workers having high minimum wages through experience and wide coverage of minimum wages, minimum wages could be viewed as a factor that could make Finnish labor markets inflexible. We still must know how binding the minimum wages appear in some selected low-wage sector to claim that minimum wages induce labor market inflexibility. We examine the wage distributions relative to minimum wages in Finland in Section 4.

In many European countries, exemptions to collective agreements can be made at the local level in the form of derogation clauses. **KEUNE** (2011) examines decentralization of this type in Austria, Belgium, Germany, Italy, France, Spain and Ireland. He finds that derogation clauses only have a significant role in the German labor market. In Germany, an increasing amount of negotiation and regulation has been transferred from the industry level to the establishment level since the mid-1980s; currently, it is commonplace that the so-called opening clauses are included in industry-level collective bargaining agreements (**ELLGUTH ET AL.**, 2014). In the sample used by **ELLGUTH ET AL.** (2014) of German establishments that were under industry level collective agreements in 2005–2007, 31% had the opportunity to apply for opening clauses, and nearly half of those establishments that were eligible did apply for them during the sample period. The increased popularity of opening clauses has been accompanied by an overall decrease in the coverage of collective bargaining (**BISPINCK AND SCHULTEN**, 2011).

¹ Some agreements set a higher minimum wage for workers in certain areas, for example in the Helsinki region, to compensate for the higher costs of living that these workers face.

Figure 2. Union density in Finland, Sweden, Germany and OECD countries.



Source: OECD.

The German opening clauses vary in their content from sector to sector. **BISPINCK AND SCHULTEN** (2011) identify basic pay, bonuses and working time as subjects that might be covered by opening clauses; however, in some cases, the clauses are more general and do not specify the content or scope of the deviations made from the collective agreements. In addition, the use of opening clauses is usually restricted. Some opening clauses can be applied only when the company faces economic difficulties, but occasionally they can be used for wider purposes such as, for example, to improve competitiveness (**BISPINCK AND SCHULTEN**, 2011). **BISPINCK AND SCHULTEN** (2011) report that in 2010, 58% of establishments with more than 20 employees applied opening clauses. Of these firms, 33% introduced variable working time arrangements, 18% extended working time, 7% temporarily reduced working time, 16% reduced starter rates, 14% reduced or suspended annual bonuses, 13% postponed agreed pay increases, 6% reduced basic pay and 9% cut holiday leave pay.

Partly because of the example set by Germany, there have been calls to make the Finnish wage bargaining process more decentralized (**ANDERSEN ET AL.**, 2015). In Finland, wage negotiations have historically been based on centrally negotiated agreements, meaning that the negotiations on wages and terms of work have often (but not always) been performed at the highest confederation level. Moreover, the government has often been involved in the negotiations (the so-called tripartite co-operation model), creating a link between the wage setting and tax and social policy (**KIANDER ET AL.**, 2011). The centrally negotiated agreements have not been legally binding on member trade unions or employer federations, but central agreements have been subject to their approval, and the central agreement has acted as a strong guideline for them (**SAURAMO**, 2012). For a more comprehensive overview of the Finnish system of collective agreements, see **ASPLUND** (2007) or **SAURAMO** (2012).

3. EMPLOYMENT PROTECTION LEGISLATION AND MINIMUM WAGES IN ECONOMIC THEORIES

A model based on perfect competition in the labor market predicts that introducing a minimum wage increases unemployment if the minimum wage is higher than the market clearing flexible wage rate. In this framework unemployment is the excess supply of labor when markets fail to clear. Although the direction of impact of introducing a minimum wage into a model of perfectly competitive economy, the magnitude of impact remains an empirical question. For example, if the demand is rather inelastic in the product markets where a firm demanding labor is operating, an increase in costs through higher minimum wages does not necessarily lead to large negative employment effects. Instead, because of the inelastic demand firms could increase the prices of their end products, and absorb the higher costs without losing revenue. Of course, in this case customers end up paying the minimum wage, as analyzed by **MACURDY** (2015). This result would require also low substitutability between capital and labor, but empirically could be relevant in many labor intensive service sectors, for instance.

In models where employers have monopsony power the effects of minimum wage are ambiguous (**CAHUC AND ZYLBERBERG**, 2004). In a very simple monopsony model firms face an upward sloping labor supply curve like in competitive model, but due to market power they employ workers with a lower wage than the marginal productivity of workers. This gives rise to the extra profits for the monopsony. A minimum wage that increases wage level towards, but not beyond, market wage increases employment in this model, because the higher wage attracts more labor supply. Thus, minimum wages have a positive effect on employment assuming that the level of minimum wage is at most the wage that would clear the competitive labor market. This result rests on simplistic assumptions and as a consequence is not very realistic, but it gives an idea how minimum wages could have a positive effect on employment in some theory models, also when the assumptions are more realistic.

Much of the more recent theoretical labor market literature builds on the search theory where unemployment is a result of frictions in the process of job reallocation (see, for example, **MORTENSEN AND PISSARIDES**, 1999) rather than on the simple supply and demand model. In a textbook job search model minimum wages tend to have a negative employment effect unless job search effort by prospective employees is endogenous (see, for example, **CAHUC AND ZYLBERBERG**, 2004). Employment effects could be ambiguous when a higher minimum wage increases job search effort of the unemployed. The search effort effect could offset the otherwise negative employment effect caused by minimum wages. The offsetting occurs when the elasticity of job search effort with respect to expected

wage is large enough. Given the examples of monopsony power and endogenous job search, theory can explain both negative and positive employment effects.

From a theoretical standpoint, the effects of EPL on aggregate employment are also ambiguous. The effects of firing costs are a useful example of this. In a standard searching and matching model, the short-term effects of an increase (decrease) in firing costs leads to a decrease (increase) in both job destruction and job creation simultaneously (**CAHUC AND ZYLBERBERG**, 2004). In the model, higher firing costs mean that firms are less likely to fire workers when facing productivity shocks (labour hoarding). At the same time hiring is decreased in the model as higher firing costs mean that the expected profit from each new hire is decreased. The same reasoning implies that stricter (looser) EPL is associated with lower (higher) job turnover as both job destruction and creation move to the same direction. In addition to the potential effects on employment stock and labor market flows, EPL alters the relative standing of economic agents as more stringent EPL typically favors insiders who already have a job as their jobs are more secure, and is harmful to outsiders whose probability of getting a job decreases. Additionally, an important distinction in labor contracts is between permanent open-ended contracts and temporary fixed-term contracts and often these two are treated somewhat differently by EPL which creates dualism in the labor market. In summary, economic theories predict that stricter EPL could reduce labor turnover, and favor incumbent job holders. These in turn could make labor markets less flexible as in any given time there are less job seekers and less available job openings available.

An additional factor that could make labor markets less flexible is labor mobility. Labor demand and supply are unbalanced if unemployed do not want to or cannot move to where labor is demanded. Thus, within-country migration has been viewed as a key mechanism that equilibrates the regional labor markets (see **MUELLER**, 1982). Already **HICKS** (1932) stressed the role of regional wage differences. In standard theories people move from low-wage regions to high-wage regions until the regional wage differences disappear. Regional differences in employment prospects are equally important as drivers of within-country migration. Unemployment is also an indicator that conveys information about job opportunities that influences the expected income in different locations (**PISSARIDES AND MCMASTER**, 1990). The standard view implies that persons migrate from high unemployment regions to low unemployment regions. At the individual level this implies that the propensity to move to other geographical location within country should be significantly higher for the unemployed. Thus, according to standard theories the equilibrating effect of migration flows should depend on regional differences in both earnings and unemployment. People might not respond to these migration incentives according to the standard theories for number of reasons. For example, imperfectly functioning housing markets could lead to a situation where high housing prices or restricted supply of housing prevents unemployed to move to where the jobs are. Also high preferences to region of origin could lead to the unemployed wanting to live in the region of origin as unemployed rather than living somewhere else as employed. Studying labor force mobility within Finland allows to gauge at significance of the unemployment in migration responses, but not to separate out different frictions that might prevent people from moving to another region.

4. EMPIRICAL LITERATURE OF EMPLOYMENT PROTECTION LEGISLATION AND MINIMUM WAGES ON THE FUNCTIONING OF THE LABOR MARKET

In this section, we review the most relevant and credible studies that consider the employment effects of EPL and minimum wages, and the relationship between labor mobility and frictions in the labor market. Many of the most notable studies, particularly in the minimum wage literature, study the employment effects with US data. Because the employment effects have been found to depend upon a wider set of labor market institutions (**BOOCKMANN**, 2010) and because our objective is to draw conclusions to the current Finnish case, we cover studies from multiple countries including the scarce literature that can be found from Finland or Sweden. Earlier reviews of the minimum wage literature include **BROWN ET AL.** (1982), **BROWN** (1999) and **NEUMARK AND WASCHER** (2006). The EPL literature has been reviewed by **SKEDINGER** (2011) and **BOERI, CAHUC AND ZYLBERBERG** (2015); the latter also reviewed the minimum wage literature.

4.1. Employment Protection Legislation literature

We survey below the literature on the effects of employment protection legislation (EPL) on employment and other measures of the labor markets. We weight our survey toward both newer studies that tend to have better microeconomic quality and studies from countries that are somewhat relevant to Finland.

In his literature review, **SKEDINGER** (2011) surveys among other EPL studies some older studies on the effect of EPL on aggregate employment that used aggregated data. The results of these studies are inconclusive. Studies relying on micro-data and utilizing exogenous changes in legislation provide more-reliable results. From a quasi-experiment setting created by the differences in the adoption of wrongful discharge protections, **AUTOR ET AL.** (2006) find that the protections reduced US state employment rates, with the initial effect being largest on female and less-educated workers, who change their jobs more often. The evidence provided by **KUGLER ET AL.** (2002) shows that a reform relaxing EPL for certain workers had a positive employment effect. At least some of the earlier literature that finds negative employment effects from stricter EPL measures might be of less than perfect econometric quality and thus present spurious regression results. An example of the significance of different pre-treatment trends (albeit from a less developed country) is provided by **BESLEY AND BURGESS** (2004), who study EPL reforms in India. Their

results without state-specific trends suggest that more regulation has a negative effect on employment. When adding state-specific linear time trends, the regression coefficients go to zero. We conclude that the overall employment effects of stricter EPL are negative in some papers, but the better-done estimates are relatively small.

Stricter EPL might still appear to be more associated with the employment of some groups than with that of other groups. To study this issue, **KAHN** (2007) uses data from 1994-1998 International Adult Literacy Surveys on Canada, Finland, Italy, the Netherlands, Switzerland, the UK and the US to estimate the associations between EPL and non-employment and permanent employment. He finds that more stringent EPL is disproportionately associated with the relative employment probabilities of youths and immigrants and that among those employed, it increases the incidence of temporary employment in these same groups. **KAHN** (2007) also finds that high collective bargaining coverage is positively associated with the gaps in permanent employment between immigrants and natives and between youth and prime-aged.

Although the employment effects of a stricter EPL did not appear large, job flow could still be reduced through simultaneously less hiring and firing of workers. A 1990 reform in Italy increased dismissal costs for small firms (i.e., firms with fewer than 15 employees), whereas the costs remained the same for large firms. **KUGLER AND PICA** (2008) utilize this reform and estimate that the probabilities of both hires and fires decreased in small firms relative to larger firms due to the reform, implying a causal effect from increased EPL on reduced job flows. Similarly, von **BELOW AND SKOGMAN THOURSIE** (2010) find that in Sweden, lay-offs increased in small firms relative to large firms when EPL was relaxed in the former. **BOERI AND GARIBALDI** (2006) in turn examine the effects of EPL on hiring. They find that reforms that increase flexibility only on new hires tend to lead to an initial rise in employment because new workers are easier to hire but that this effect is not sustained in the long term because new employees are also easier to fire. With data from multiple European countries, **KAHN** (2010) finds similarly that reforms that make it easier to hire temporary workers do not increase employment but increase the incidence of temporary jobs.

BEHAGHEL ET AL. (2008) study a reform in France that relaxed a tax on firing workers aged 50 and above by removing the tax for people who were hired after their 50th birthday. They find that this reform increased hires of older workers. **BLANCHARD AND PORTUGAL** (2001) compare the labor markets of the US and Portugal. Both countries had experienced similar rates of unemployment, but **BLANCHARD AND PORTUGAL** (2001) argue that the difference in the relative volume of hiring and separations can be explained by the difference in the strictness of EPL that leads Portugal to have smaller relative job flows. Overall, empirical studies largely support the theoretical prediction that increased EPL suppresses gross job flows.

4.2. Minimum wage literature

Minimum wages affect the economy on multiple fronts. We survey here the results of minimum wages on these fronts, with particular focus on the effect on employment. As noted above, the bulk of the evidence comes from the United States, but we also survey here the more reliable papers found from some other countries that could resemble Finland more than they do the USA.

Minimum wages potentially affect wage distribution by increasing wages at the lower end of a wage distribution and thus affecting income inequality. The main purpose for the existence of minimum wages is to reduce income inequality. **AUTOR ET AL.** (2016) show that the decline in the real value of US minimum wages has indeed contributed to lower tail inequality. Interestingly, the effect of minimum wages appears to extend to further up the wage distribution, where the minimum wage is not binding, implying spillover effects, although this result is not as conclusive. The opponents of higher minimum wages usually list as the largest cost of minimum wages the negative effect on employment. Thus, we focus below on surveying what evidence has been found supporting the negative employment effect.

The issue remains controversial. In 2013, when the IGM Economic Experts Panel asked top economists their views on whether raising the US federal minimum wage would make it noticeably more difficult for low-skilled workers to find employment, the respondents were almost evenly divided in their opinion.² This division suggests that the evidence is not conclusive and that there indeed are studies that support either view.

Most of the empirical minimum wage research comes from the US and focuses on young workers or low-wage industries most directly affected by the minimum wages. The old consensus view from the empirical studies summarized by **BROWN ET AL.** (1982) suggested that minimum wage hikes have a small negative effect on teenage employment.³ The famous study of **CARD AND KRUEGER** (1994) ran counter to this consensus view by showing evidence of a positive employment effect in the fast-food restaurants of New Jersey following a minimum wage hike. More recently, the debate on the effect of minimum wages on employment has continued as an active exchange. For example, **NEUMARK AND WASCHER** (2000) obtained a result indicating negative employment effects by using a sample from payroll data, but **CARD AND KRUEGER** (2000) still obtain estimates that do not show a negative employment effect with a more representative sample of payroll data.⁴ Similarly, **NEUMARK AND WASCHER** (2006) argue in their minimum wage literature

² Thirty-four percent of the respondents agreed with the notion of negative employment effects, whereas 32% disagreed. Twenty-four percent were uncertain, and 3% had no opinion (http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_br0IEq5a9E77NMV).

³ **BROWN** (1999) finds that the range of estimates move toward zero when the newer studies from the 1980s are included.

⁴ The difference in the results could also be partly explained by the different measures of employment, because **NEUMARK AND WASCHER** (2000) consider working hours converted to full-time employees, and **CARD AND KRUEGER** (2000) the actual number of employees as their preferred measure of employment.

review for a negative employment effect, but the literature survey by **DOUCOULIAGOS AND STANLEY** (2009) indicates no negative employment effects.

The econometric quality of the most recent US studies has been increasing. The newest literature indicates that it is important to control for state-specific time trends and otherwise examine whether employment in different states would develop in a similar manner in the absence of the minimum wage changes. If this approach is not followed, one could have derived a negative employment effect between the states even in the absence of any minimum wage changes; thus, the negative employment development would not have been caused by the minimum wages but by other underlying factors. **DUBE ET AL.** (2010) analyze all discontinuities in minimum wages across county borders from 1990 to 2006. They find no evidence for employment effects from the changes in minimum wages. Similarly, **ALLEGRETTO ET AL.** (2011) find that one obtains no employment effects when employment trends are accounted for. In a more recent study, **DUBE ET AL.** (2016) find that whereas minimum wages do not have a negative effect on (teenage) employment stock, they affect employment flows negatively. Moreover, **MEER AND WEST** (2016) argue that although minimum wages do not affect aggregate employment (stock) negatively, they still appear to have a negative effect on the creation of new jobs in growing establishments. These two opposing results can exist at the same time because the growth rate of new jobs at growing new firms is a small part of the total stock of jobs. This last observation is interesting because it indicates that, over a longer period, high minimum wages could make labor markets slightly more inflexible, although one would not find any immediate negative effect on aggregate employment. These recent papers present the current standing of the US minimum wage literature.

The effect of minimum wages on aggregate employment in the US appears rather negligible according to the most recent studies. **BOOCKMANN** (2010) and **DOLADO ET AL.** (1996) suggest that the employment effects could vary depending upon the country of study, although the econometric quality could also vary in different studies performed in different countries. **BOOCKMANN** (2010) particularly stresses the fact that minimum wages interact with other labor market institutions. More concretely, stricter employment protection is positively and wage bargaining coordination negatively associated with the employment effects of minimum wages. Because Finnish labor markets differ in these aspects from the US, we survey the evidence from other countries that could better represent the effects of minimum wages in Finland.

ABOWD ET AL. (1999) study the effects of changes in the real minimum wage in France and the US. In the 1980s, minimum wages increased both nominally and in real terms in France, whereas nominal minimum wages remained constant and real minimum wages decreased in most states in the US. They find greater negative correlation between employment of young workers and real minimum wages in France than in the US. **KRAMARZ AND PHILIPPON** (2001) find similar results for France when they study the effects of changes in total labor costs on employment of low-wage workers in the 1990s. In addition, these studies might be subject to problems with pre-existing employment trends that have nothing to do with minimum wages.

Some non-US studies exist that attempt to utilize more exogenous variation in minimum wages across different groups of individuals. The United Kingdom introduced a national minimum wage in 1999. **STEWART** (2004) studies the introduction and the subsequent rate increases in the following years by comparing those initially earning less than the new minimum wage with those earning just above the new minimum wage. He finds no significant employment effects at the extensive margin. When examining the adjustment at the intensive margin, **STEWART AND SWAFFIELD** (2008) find evidence in support of reduced working hours of low-wage workers.

Another natural experiment comes from Portugal, in which minimum wages for workers aged 18-19 were raised sharply (by roughly 50% nominally and 35% in real terms) in 1987 due to the abolition of a special lower minimum wage for this group. **PORTUGAL AND CARDOSO** (2006) examine both the hires and separations of teenage workers following this change in policy. They find that whereas the minimum wage hike led to a fall in hiring, it also led to fewer separations, which compensated for the negative effect at the hiring margin. Similarly, New Zealand had a reform in the early 2000s that raised the minimum wage of 18-19-year-olds by 69% and 16-17-year-olds by 41%. **HYSLOP AND STILLMAN** (2007) find that the reform did not have immediate adverse employment effects.⁵

The literature provides scant evidence on employment effects of minimum wages for Finland or other countries in which minimum wages are the result of collective bargaining. **BÖCKERMAN AND UUSITALO** (2009) study a temporary exemption to the collectively agreed minimum wages in the Finnish retail trade sector. Firms could pay lower wages than the standard minimum wage for two years in the early 1990s to workers below the age of 25. They find no significant effect on employment and only a small effect on actual wages during the reform.

SKEDINGER (2006) examines changes in collectively bargained minimum wages in the Swedish hotel and catering industry between 1979 and 1999 and studies their effects on the hiring and separations of workers. His treatment group is those affected by minimum wage hikes, and the control group is those earning slightly higher wages. He finds that minimum wage hikes tend to increase separations, whereas the evidence with respect to hiring is less conclusive. The study has some problems with the treatment, and control groups do not always appear comparable even in the absence of minimum wage hikes. **SKEDINGER** (2015) in turn studies increases in collectively agreed minimum wages of manual workers in the Swedish retail sector and finds an increase in separations of those workers who are directly affected by the minimum wage, whereas separations decline for those who are initially paid slightly more than the new minimum. He also finds that one group of workers is substituted for another group of workers in the retail sector, something that is not found by **DUBE ET AL.** (2016) in the US when they examine restaurants. The methodology is similar between the two studies of Skedinger, as are the potential problems with the methodology.

⁵ **HYSLOP AND STILLMAN** (2007) find weak evidence of a negative employment effect in the years following the reform, although they mention that further increases in the minimum wages might affect this result.

In an earlier chapter, we touched on German labor market institutions and the fact that many German collective agreements have opening clauses that permit the employers and employees to agree to flexibilities in terms of employment, including minimum wages. **BRÄNDLE AND HEINBACH** (2010) is the only empirical study we found on the effects of opening clauses on job flows in German establishments. Their method compares those firms utilizing opening clauses with firms not utilizing them. This methodology is problematic because firms that benefit from opening clauses can self-select into using them, which would thus lead to positive employment effects when comparing the two groups even in the absence of opening clauses. Utilizing this methodology, they find that the existence of opening clauses significantly lowers job destruction, but they find no effect on job creation. Thus, they find a significantly negative effect on job reallocation and a significantly positive effect on job growth. The results suggest that opening clauses do save jobs (job destruction is smaller) but that firms do not hire more workers in anticipation of increased flexibility (job creation is not increased). Based on a literature survey, **DUSTMANN ET AL.** (2014) argue that both lower coverage and opening clauses played a role in increasing wage flexibility in Germany, which, according to them, has been the most important factor behind the relative success of the German economy since the early 2000s.

The coverage of the collective labor agreements is a key factor in determining how binding the minimum wages set by collective bargaining effectively are. Collective agreements are commonly extended to cover whole industries even when not all firms are parties in the initial agreement. For example, collective agreements in Finland are extended if they are deemed sufficiently representative; given the high trade union density, this conclusion is typically drawn. Additionally, on this topic, it was challenging to find empirical studies that could prove causal relationships. Collective bargaining extensions in Portugal are studied by **MARTINS** (2014), who finds them to be associated with employment negatively, particularly in small firms, which typically are less likely to be represented in negotiations over collective labor agreements. Similar findings are reported in **HIJZEN AND MARTINS** (2016).⁶ The results of **GNOCCHI ET AL.** (2015) in turn suggest that increased decentralization in wage setting is associated with increased correlation between wages and labor productivity. Additionally, the impact of minimum wages on employment could well depend on the level of minimum wages. However, isolating the level of minimum wages from other country differences is challenging, and consequently we did not find empirical studies providing evidence between the link of level of minimum wages and the impact of minimum wages on employment.

⁶ Both **MARTINS** (2014) and **HIJZEN AND MARTINS** (2016) study Portugal with data that mostly cover the years since the financial crisis of 2008, which might affect the estimated effects because Portugal was experiencing macroeconomic turmoil.

4.3. Empirical literature on mobility

We continue our survey with the literature on connections between the mobility of the labor force and employment. **PEKKALA AND TERVO** (2002) used a sample of Finns who were unemployed at the end of 1994 to examine how inter-regional migration is related to the share of employed two years thereafter. They found that movers are more likely to find a new job. This positive relationship nevertheless diminished or became negative after controlling for key individual characteristics and endogenous migrant selectivity. **NIVALAINEN** (2005) studied inter-regional migration and post-move employment of Finnish husbands and their wives. She found that movers were less likely to be employed compared with stayers and that this relationship is more profound among wives. However, the individuals in the pre-move sample were not restricted to unemployed individuals.

Recently, several empirical studies have used exogenous job loss to identify the causal effect of unemployment on migration and other labor market outcomes. Plant closures and/or mass lay-offs are often used to define “involuntary” separation from voluntary worker flows. Occasionally, the groups of displaced and non-displaced workers differ in their pre-displacement characteristics (e.g., skill and earnings level), which indicates that displaced workers might be a selected group of individuals. This possibility can cause a concern with respect to a causal interpretation of the estimates. **BRATSBERG, RAAUM AND RØED** (2016) used Norwegian data on natives and immigrants to study the labor market outcomes of displaced workers after a corporate bankruptcy. They found that immigrants from developing countries were overrepresented in firms that were likely to downsize or close down in the next few years. After a plant closure, more-skilled women (measured by the initial earnings level) were more likely to move to another region within three years after a job loss. However, immigrants from developing countries were less likely to move.

HUTTUNEN, MØEN AND SALVANES (2015) used similar data from Norway and found that job displacement increases regional mobility. However, these movers suffered higher income losses than did displaced workers who remained in the same region. This negative effect is likely explained by the migration flows to more rural areas. An individual’s decision to migrate also is not entirely based on income maximization; non-monetary benefits such as family ties are also important. **FAKLER AND RIPPE** (2016) found similar evidence for increased migration intensity using a sample of displaced workers in Germany. The income losses were, however, quite similar for both displaced movers and displaced stayers.

BOMAN (2011) used data from Sweden to examine the association between earnings and migration following an exogenous job loss. Boman did not examine the effect of unemployment on migration itself but found that women in particular suffer income losses after a geographic change. Finally, **KORKEAMÄKI AND KYRÄ** (2014) used a plant closure/mass lay-off to examine the earnings losses of unemployed using data from Finland. They found that the effect of displacement is largest for low-skilled individuals, particularly so if the workers lost their jobs in the recession.

In summary, earlier literature posits that, as expected based on economic standard theory, unemployment leads to a higher probability of moving to a different region within a country. Somewhat curiously, income development has not been found to be positive

after migration, which could be explained by negative selection into migration. We still must know more about how an exogenous unemployment event leads to within-country migration in Finland in a more recent sample, and what is the magnitude of this effect relative to other mobility decisions. Moreover, income and wage development after job-loss-induced migration would provide descriptive information that is valuable to relate mobility to labor outcomes and labor market flexibility. To this effect, we use involuntary job loss to examine both regional mobility and subsequent labor market outcomes for stayers/movers using data from Finland in Sections 5–7.

5. HOW BINDING ARE MINIMUM WAGES IN FINLAND?

The effectiveness of minimum wages on labor market outcomes directly depends upon how binding they are. If minimum wages increase the wages of a large fraction of workers, they manage to decrease income inequality significantly. At the same time, minimum wages create scope for larger negative employment effects or other labor-market flexibility effects. In contrast, if minimum wages exist at such a low level that they are hardly binding for anyone, then their positive and negative effects ought to be much smaller. This implication motivates us to study wage distributions relative to minimum wages in certain low-wage industries in Finland. The distributions will not reveal the causal effect of minimum wages on the actual wages, because we do not know the counterfactual wage distribution that would occur in the absence of minimum wages. However, a large fraction of workers receiving the minimum wage in a given sector would suggest that minimum wages are at least somewhat binding for these workers.

We examine wage distributions in the selected sectors relative to a minimum wage calculated in two different ways. The four sectors in the figures are retail trade, construction, cleaning and warehouse. Because minimum wages in Finland depend not only on sector but also on the experience of the worker in the sector, location and other individual specific characteristics, the first method is to compare the wage received by each worker to the minimum wage that is relevant for that worker. From the point of view of the worker, this wage is the lowest possible that she or he would be able to receive. However, this minimum wage is not necessarily binding from the perspective of the firm, because in principle the firm could lay off workers whose personal minimum wage is high and hire new workers whose specific minimum wage is lower. There are many restrictions limiting firms from performing this process systematically. First, the experience part of the minimum wage depends upon the experience in that sector, meaning that a worker takes the experience with him or her when switching jobs. The second is employment protection legislation that prevents firms from laying off employees and immediately hiring new workers for the same jobs. Nevertheless, in some sense, the lower bound for binding minimum wages is the lowest minimum wage in a given sector. Thus, the second measure we relate the wage distribution to is the lowest industry-specific minimum wage. These two measures, person-specific and industry-specific minimum wages, can be thought of as a lower and upper bound. Thus, the truth for how minimum wages are associated with compression of wage distribution can be found somewhere in between these two measures.

Figures 3 and 4 show the resulting distributions of wage differences relative to worker- and industry-specific minimum wages in four low-wage sectors of the Finnish economy. The horizontal axis shows the wage each employee receives in the data relative to the minimum wage (in percent), and each bar shows the percent of workers receiving a wage

falling to that 5% bin. We use the payroll record data of the employers' central association (Confederation of Finnish Industries, EK) for the year 2015. The four sectors in the figures are retail trade, construction, cleaning and warehouse. In the retail trade and warehouse sectors (which are both under the same collective agreement), minimum wages are determined by the experience of each worker. One year of experience indicates the lowest minimum wage that is a full salary, and minimum wage increases in increments of one year of experience until 8 years of experience is reached. If the worker has an applicable degree, he or she must be paid at least the minimum wage that applies to workers with three years of experience. In these sectors, minimum wages are also higher if the workplace is located in the capital city of Helsinki or in its neighboring cities to compensate for higher living expenses. In the cleaning sector, minimum wages depend upon the complexity of the job. However, most of the cleaners are in the same category of job complexity, meaning that the same minimum wage applies to most of these workers. In the construction sector, minimum wages depend upon the professional expertise of the worker, with more spread across the expertise of workers than in the complexity of cleaning jobs. We have included the detailed pay scales from these sectors and from the retail and warehouse sectors in the appendix in Tables A3 to A6.

Figure 3 compares each worker's actual pay to the minimum wage that applies to him/her. In the retail sector, we focus solely on salespersons. We find that the bulk of salespersons earn actual wages at or just over their individual specific minimum wage; almost 60 percent of observations are between 0 to 5 percent above the minimum wage set by the binding collective agreement.⁷ In the warehouse and retail trade sector, minimum wages are set in the same agreement. Despite this practice, wages are not as concentrated in the warehouse as in the retail trade industry. An explanation is the difference in performance-based pay, which is a more important component of total pay in the warehouse sector than in the retail trade sector (most likely because it is easier to measure performance in warehouses than in retail). Out of these four sectors, wages are most concentrated at the minimum wage in the cleaning sector; 80 percent of the workers earn wages that are 0 to 5 percent above the minimum wage, and the rest of the wage distribution is concentrated close to the minimum wage. In the construction sector, the wages are less concentrated at individual specific minimum wages; fewer than 12% of workers earn a wage within 5% of the minimum wage.

Figure 4 presents minimum wages in the same four sectors relative to the lowest possible wages in that sector rather than the individual specific minimum wages. Specifically, we compare wages to the lowest minimum wage that is not the trainee wage in each of the sectors. In retail, we find that only 10 percent of the workers are now in the interval from 0 to 5 percent above the sectoral minimum wage. This finding indicates that the individual component of the minimum wage is highly significant among retail sector salespersons. The roughly 3 percent who earn -15 to -10 percent of the minimum wage are most likely trainees, who earn 85 percent of the lowest non-trainee minimum wage. In warehouse, the fraction of workers at minimum wage declines from 28% to 7%, when we move from worker-specific to industry-specific minimum wages. Comparable figures in cleaning are

⁷ Bin width is 5% in all histograms in Figures 3 and 4.

from 80% to 59%, and in construction from under 12% to under 2%. In the construction sector, we treat the beginner wage as a trainee wage used as the sector-specific minimum wage below the next lowest wage (see the pay scale in the appendix for more details on the definitions). Both Figures 3 and 4 indicate that the wage structure is most concentrated in the cleaning sector and least concentrated in the construction sector, with retail and warehouse sectors in between.

Figure 3. Difference in % of wage received compared to minimum wage specific to each worker shown for four different industries. The bin width is 5% in all panels.

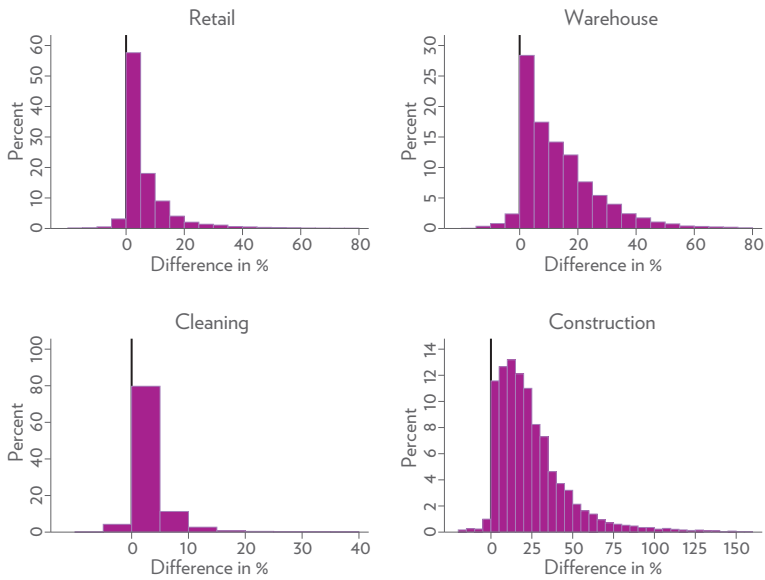
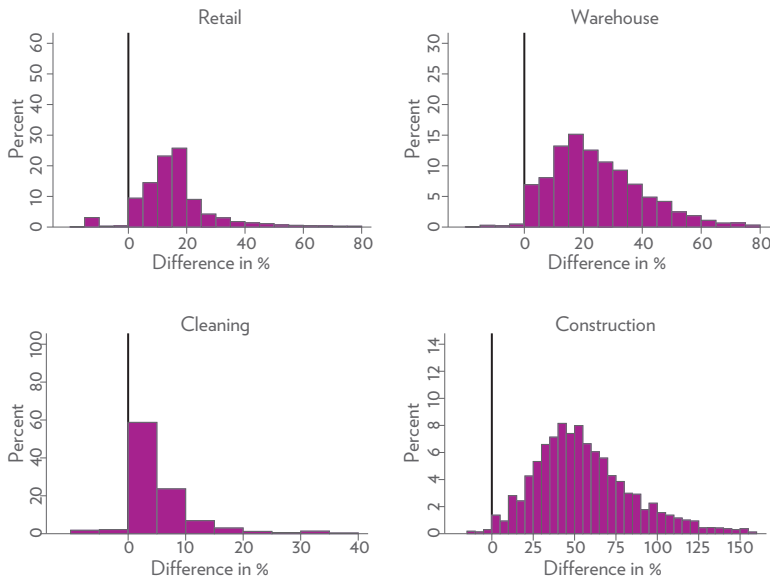


Figure 4. Difference in % of wage received compared to lowest possible minimum wage in the same industry shown for four different industries. The bin width is 5% in all panels.



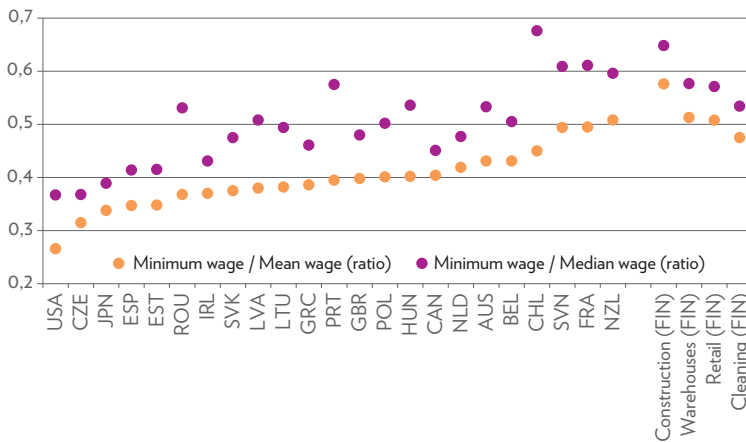
To provide an idea of minimum wages relative to average wages across countries, Figure 5 depicts the ratios of minimum wages to the national mean and median wages in several countries using OECD data for the year 2014.⁸ We chose the metric of minimum relative to mean and median because these statistics are available for most OECD countries. We have also included similar measures from the four low-wage sectors in Finland that were depicted in Figures 3 and 4. For these sectors, we have taken the same minimum wage rates that were applied in Figure 4 and compared them to the Finnish mean and median wages obtained from Statistics Finland. A higher ratio means that the sector-specific minimum wages are higher relative to the median or mean wages, suggesting either more wage concentration or lower wages in the sector compared with the national mean or median. Comparing Figure 4 and Figure 5 for the cleaning services in Finland suggests that how Figure 5 is calculated captures more the low average wages in the cleaning sector rather than wage compression relative to the minimum wage. The ratios for the four Finnish sectors can be compared with the **AER** (2016) report that we replicate in the appendix, Figure A1. It appears that the minimum wages relative to median wages are higher in the reported Swedish sectors than what we find from Finland for our sectors, but the sectors are different.

⁸ The measures of average pay vary somewhat across countries in OECD data (<https://stats.oecd.org/Index.aspx?DataSetCode=MIN2AVE>), and exceptions to the standard minimum wage are not necessarily considered.

Another approach to calculating the ratio for the Finnish sectors would be to calculate the ratio of the sector-specific minimum wage to the mean and median wages in the same sector.⁹ In the cleaning sector, the minimum wage to mean wage ratio is 0.95, and the minimum wage to median wage ratio is 0.98 in our sample of the same payroll data used in Figure 4. These ratios can be compared with those reported in the National minimum wage report by the **LOW PAY COMMISSION** (2014) in the UK. The ratio of the national adult minimum wage to the median wage in the UK cleaning sector was greater than 0.9 in 2013 according to the report, which is somewhat less than we obtain with this method for the Finnish cleaning sector. The ratio of the UK national adult minimum wage to the median wage in all low-paying sectors was roughly 0.8 in 2013 (**LOW PAY COMMISSION**, 2014). The ratios are 0.65 (minimum wage to median wage) and 0.63 (minimum wage to mean wage) in the Finnish construction sector in our sample.

Finally, we describe how collectively agreed wages have changed from year to year in Finland, Sweden and Germany in the appendix in Figure A2. For many years until 2012, yearly changes have been on the same level in Finland and Sweden but higher than in Germany. Since 2012, Finnish collectively negotiated wages have grown much more slowly than in the two comparison countries. Thus, the minimum wage development was on par with Sweden for many years, but higher than in Germany. In recent years, Finnish minimum wage development has been slower, most likely due to slow economic growth.

Figure 5.



Sources: OECD, Statistics Finland, collective agreements.

⁹ Note that the economy-wide ratios are not comparable to ratios that contain only selected low-wage sectors, because examining only the low-wage sectors in any country would yield higher ratios than examining economy-wide ratios, which include all sectors, including those in which the minimum wage is not a relevant constraint.

6. EMPIRICAL ANALYSIS OF THE MOBILITY OF WORKERS IN THE FINNISH LABOR MARKETS

6.1. Data and variables

Our primary dataset is the Finnish Longitudinal Employer-Employee Data (FLEED) by Statistics Finland. The data are created by combining various registers that have been linked together using identification codes for individuals, firms and plants. The registers include, e.g., wage and employment statistics, education and occupational registers, the region of residence, demographic characteristics and the Business Register. By using unique firm and plant codes, we identify each worker's employer in the private sector to examine whether plants are downsizing their workforce or closing down their entire business. The FLEED covers the entire Finnish labor force over the period 1988–2012 (under the age of 70).

The data have yearly records of the individual's labor market status, that is, whether she or he is a wage earner, unemployed, self-employed or not participating in the labor force. The data also report employment months for each year. The occupation variable is based on the ISCO (International Standard Classification of Occupation) classification. It is reported for the years 1995, 2000 and 2004–2012. Information on the region of residence is based on the 19 NUTS 3-level (Nomenclature of Territorial Units for Statistics) and 77 NUTS 4-level (sub-regions) classifications.

Our measure for income from the FLEED is annual taxable wage and salary earnings. We have information on employment months per year; therefore, we measure earnings from the FLEED using monthly earnings. We have also linked the Harmonized Wage Structure Statistics (HWSS) data of Statistics Finland with the FLEED. The HWSS data are available for the private sector for the years 1995–2013 and are representative of the entire private sector except for the smallest firms (fewer than 5 employees). The HWSS data include worker hourly and monthly earnings based on regular earnings paid for regular hours. The wage concept includes, e.g., basic pay, premium pay, performance-based pay components, taxation value for fringe benefits and hours worked. The income measures are deflated to 2012 prices using the cost of living index.

The empirical models include individual-level controls. We account for education level, age, gender, marital status, having children, home ownership and previous regional mobility pattern. These variables might contribute to regional mobility and be correlated with unemployment. We estimate empirical specifications for the total sample and separately for men and women. In those latter cases, gender dummy is excluded from the models.

6.2. Sample construction

We focus on the period 2000–2012. Because being a student or early retired might affect our empirical findings, we have restricted our sample to individuals who are between 25 and 55 years old. Those who are defined as retired persons, for example, in the form of disability pension, are also excluded. All the analyses include both public and private sector, except those specifications that use data on plants and/or HWSS wage data.

In additional analyses, we examine worker mobility after an exogenous job loss. Following earlier studies, we define these displaced as workers who lose their jobs (become unemployed) after a plant closure or mass lay-off, in which the plants downsize their workforce by 30% or more (cf. **HUTTUNEN ET AL.**, 2015). The group of displaced workers also includes early leavers, defined as workers who leave a plant that downsizes or closes down within one year.

The year of displacement for the treatment group and the potential displacement year for the control group is denoted b (base year). We restrict our sample to employees who are strongly attached to the labor market. Workers must also have worked in the same plant for two years before the base year ($b-1$ and $b-2$). Plants that have at least 10 employees are included. In the case of downsizing plants, the number of employees should also exceed 10 for two pre-displacement years but not necessarily in the base year b . Accordingly, self-employed are excluded, and workers must have positive monthly earnings.

Labor market status originates from registers. It is measured during the last week of each year, implying that some of the displaced workers might have a short unemployment spell before they find a new job by the end of year b . These individuals are thus observed as employed at years b and $b+1$, although they have experienced a short unemployment spell after the displacement. Fortunately, the data have yearly recording on the number of employment months. Thus, we also use an alternative measure for the displaced workers in the analysis; we add workers who have also experienced a short-term unemployment spell after the displacement to the group of displaced workers.

6.3. Descriptive evidence

Table 2 documents the shares of the number of inter-regional moves in the period 2000–2012 when an individual was between 25 and 55 years old. Panel A presents the migration pattern using 19 NUTS 3-level regions, and panel B presents the migration pattern using 77 NUTS 4-level sub-regions. Column (1) reports the shares of the number of inter-regional moves in Finland for the entire sample. Approximately 11% of individuals in our sample have moved to another region at least once in the period 2000–2012. Approximately 8% of them have moved once, but only 3% have moved at least twice (Panel A). The inter-regional migration intensity is nearly twice as high when we use the smaller NUTS 4-level classification as our measure for a region (Panel B).

Next, we restrict our sample to the individuals who at time t become unemployed from employment and follow them up to the year 2012. These individuals can experience several unemployment spells during the sample period. The shares of the number of inter-regional moves for these individuals are reported in column (2). We find that the regional mobility rate is much higher (~ 17% in Panel A and ~ 28% in Panel B) for those who have suffered unemployment spell(s) at least once.

Table 2. The magnitude of numbers of inter-regional mobility in Finland over the period 2000–2012.

	Entire sample	Sample of individuals with at least one unemployment spell
<i>Panel A: NUTS 3-level</i>		
Share of regional moves		
None	88.89 %	82.67 %
One	7.82 %	11.02 %
Two	2.47 %	4.46 %
Three	0.59 %	1.25 %
Four or more	0.23 %	0.61 %
Number of individuals	2,970,235	498,876
<i>Panel B: NUTS 4-level</i>		
Share of regional moves		
None	80.60 %	72.03 %
One	13.76 %	17.84 %
Two	4.10 %	6.76 %
Three	1.08 %	2.23 %
Four or more	0.45 %	1.15 %
Number of individuals	2,970,235	498,876

Table 3 presents the means of unemployment, job displacement, job displacement including short unemployment spells, and in-migration and out-migration intensities for each NUTS 3-level region. For the entire sample, the relative share of displaced workers is 0.7%. When we also add short-term unemployment spells in this group, the share of displaced workers is much higher, at 2%. The shares match well with the earlier findings from Finland (**KORKEAMÄKI AND KYRÄ,** 2014).

The share of unemployed in the entire sample is 9.4%. There are regional differences in unemployment and displacement shares. For example, the share of unemployed is highest in North Karelia, Kainuu and Lapland. In these regions, the share of unemployed varies between 13.5% and 15%. In contrast, the share of unemployed is lowest in Åland Island, Ostrobothnia and Uusimaa (1.8%–6%). The share of displaced workers also varies across regions. The share of displaced workers is highest in Kainuu, Varsinais-Suomi, Päijät-Häme, Pohjois-Savo and North Karelia, and lowest in Uusimaa, Ostrobothnia and Åland Island. We have also calculated in-migration and out-migration rates for each region. We find that out-migration rates are highest in Central Finland, Kanta-Häme, Päijät-häme, Kainuu, Lapland, Etelä- and Pojois-Savo and North Carelia. Out-migration rates are lowest in Åland Island, Uusimaa and South Ostrabothnia.

Table 3. Unemployment, displacement and in- and out-migration by NUTS 3-level region.

Region	Unemployed	Displaced	Displaced2	In-migration	Out-migration
Uusimaa	0.060	0.004	0.012	0.016	0.014
Varsinais-Suomi	0.075	0.009	0.021	0.018	0.017
Satakunta	0.100	0.007	0.017	0.018	0.018
Kanta-Häme	0.079	0.007	0.018	0.036	0.025
Pirkanmaa	0.091	0.007	0.018	0.023	0.019
Päijät-Häme	0.103	0.008	0.020	0.027	0.021
Kymenlaakso	0.097	0.008	0.019	0.019	0.018
South Karelia	0.107	0.007	0.018	0.021	0.019
Etelä-Savo	0.106	0.007	0.021	0.026	0.025
Pohjois-Savo	0.107	0.008	0.023	0.022	0.021
North Karelia	0.135	0.009	0.027	0.019	0.020
Central Finland	0.108	0.007	0.020	0.024	0.023
South Ostrobothnia	0.082	0.008	0.022	0.019	0.015
Ostrobothnia	0.058	0.005	0.018	0.016	0.016
Central Ostrobothnia	0.081	0.006	0.023	0.022	0.024
North Ostrobothnia	0.101	0.008	0.022	0.019	0.018
Kainuu	0.150	0.011	0.027	0.022	0.023
Lapland	0.134	0.008	0.023	0.023	0.022
Åland Island	0.018	0.001	0.012	0.012	0.008
Entire Finland	0.094	0.007	0.020	0.021	0.019

There is a statistically and economically significant relationship between unemployment and out-migration between regions. Figure 6 depicts a relationship between unemployment and out-migration rate by region and year (from 2001 to 2010), in which the horizontal axis presents the share of unemployed and the vertical axis presents the out-migration rate. The correlation coefficient from an OLS (Ordinary Least Squares) model between the two variables is 0.36 and statistically significant at least at the 1% significance level.¹⁰ These aggregate analyses suggest that there is a higher out-migration from the regions with higher unemployment, although this analysis does not reveal whether unemployment causes the out-migration.

Figure 7 shows the relationship between unemployment and in-migration year by region and year. The correlation coefficient from the OLS model shows a much weaker linear relationship at 0.08. As seen from Figure 7, the region-year unemployment and in-migration rate relationship is rather inverse u-shaped. Comparing out- and in-migration across regions and years is revealing in the sense that it appears that from some high unemployment regions, out-migration rates are high, whereas in-migration rates are not. This result suggests that population is shrinking in certain high unemployment areas.

¹⁰ The observations in the bottom left corner belong to Åland Island.

Figure 6. The relationship between out-migration intensity and the share of unemployed by NUTS 3-level region and by year 2001–2010.

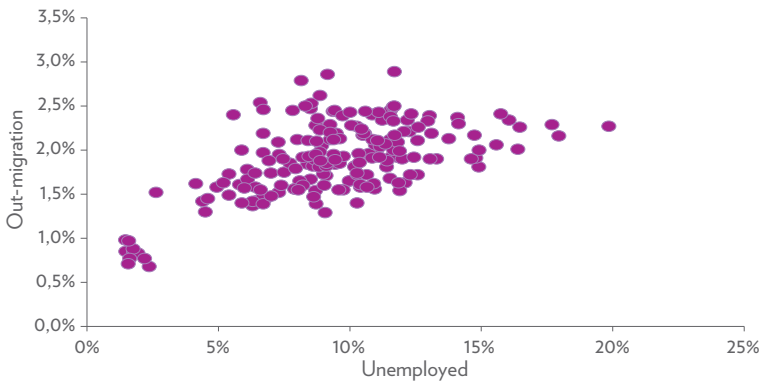
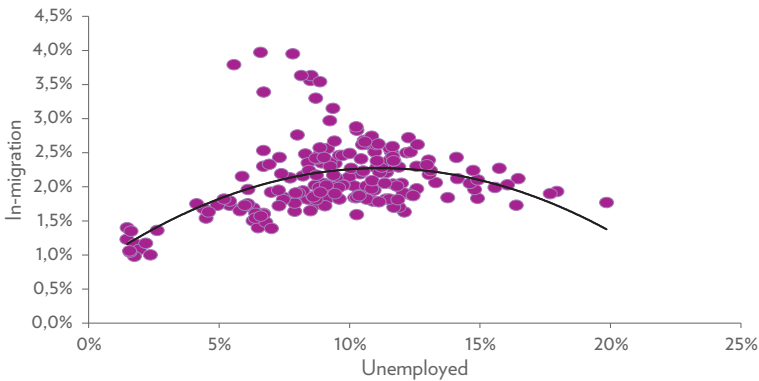


Figure 7. The relationship between in-migration intensity and the share of unemployed by NUTS 3-level region and by year 2001–2010.



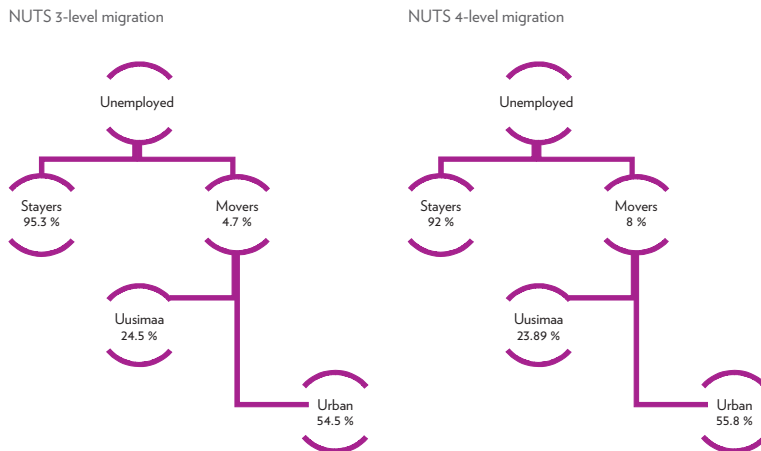
In Figure 8, we examine the migration status and destination of internal migration at time $t+2$ of those individuals who became unemployed at time t . Approximately 5% (8%) of individuals who became unemployed migrated to another region (sub-region) within two years after a job loss. Approximately 29% of movers and 34% of non-movers remained unemployed two years after a job loss (not shown in the figure). One-fourth of them moved to Uusimaa region. We have further created an indicator variable “Urban”, which consists of the five largest NUTS 3-level regions of Uusimaa, Varsinais-Suomi, Päijät-Häme, Central Finland and North Ostrobothnia. We find that for approximately 55% of unemployed movers, the new location is in an urban region.

We have further examined the migration status and destination of internal migration for those individuals who lost their job after a mass lay-off or plant closure. These results are not shown in figures; instead, the results are briefly described here. We find that 2.8%

(5.2%) of displaced workers moved to another region (sub-region) within two years after a job loss. These shares are lower compared with those in Figure 2. When we examine migration at the NUTS 3-level, we find that 20% (51%) move to Uusimaa (urban) region. When we examine migration at the NUTS 4-level, we find that 27% (57%) move to Uusimaa (urban) region.

Table 4 reports the sample means of labor market status and wages at time b+2 for the displaced and non-displaced workers by gender and inter-regional migration status at the NUTS 4-level. The pre-displacement wages, age and years of education are also reported. Monthly earnings from the FLEED include both salary earnings and self-employment income. Hourly wages from the HWSS include only salary earnings from the sample of private sector plants that have at least five employees.

Figure 8. The pathway of internal migration of unemployed.



The share of non-displaced men who move to another region within two years is 4.56%. The corresponding share for women is 4.21%. The share of displaced men who move to another region within two years after a job loss is slightly higher at 4.98%. The share of displaced women who move to another region within two years after a job loss is 5.73%. The aggregate and unconditional analysis indicates roughly a 10% (40%) increase in the probability of moving after being displaced for men (women). **HUTTUNEN ET AL. (2015)** found a higher unconditional increase in the probability of moving after displacement using Norwegian data (~50%).

We find that workers who work in plants that are downsizing or closing down within one year earn approximately 10-15% less compared with the control group. This finding suggests that displaced workers might be a selected group of workers, if the lower wage level is not entirely explained by the plant characteristics. The statistics show that displaced workers are also less educated compared with the control group.

We investigate whether displaced movers have better labor market outcomes, on average, than displaced stayers do compared with the control group of non-displaced workers. We find that non-displaced workers are generally better off at time b+2 compared with displaced workers. For example, a higher share of non-displaced workers are employed, and they earn more. However, non-displaced movers appear to have weaker labor market prospects at time b+2 compared with non-displaced stayers. They are less likely employed and they earn approximately 2-3% less, except when we examine the hourly wages for men. The main conclusion also remains similar when education level and the structure of the household are controlled for. The differences in subsequent labor market prospects are, however, more notable for the less educated than for the highly educated. The negative relationship between moving and labor market outcomes is thus likely explained by the migration flows to more rural areas (cf. **HUTTUNEN ET AL.**, 2015). There are no clear differences in post-migration labor market outcomes between displaced movers and displaced stayers.

Table 4. Sample means of selected pre- and post-displacement characteristics: NUTS 4-level region.

Men	Displaced		Non-Displaced	
	Stayers	Movers	Stayers	Movers
Age (b-1)	40.8	38.5	39.8	37.6
Education years (b-1)	12.1	12.4	13.1	13.1
Hourly wages (b-1) ^a	17.32 €	17.08 €	20.20 €	19.61 €
Monthly earnings (b-1)	3302 €	3244 €	3752 €	3607 €
Hourly wages (b+2)	17.33 €	16.21 €	21.63 €	21.25 €
Monthly earnings (b+2)	2890 €	2996 €	4085 €	3954 €
Wage earner (b+2)	0.68	0.67	0.95	0.90
Self-employed (b+2)	0.03	0.03	0.01	0.02
Unemployed (b+2)	0.23	0.22	0.03	0.055
Student (b+2)	0.04	0.06	0.006	0.015
Out of labor force (b+2)	0.02	0.02	0.004	0.01
N	19,645	1,029	2,655,369	126,776
Women	Displaced		Non-Displaced	
	Stayers	Movers	Stayers	Movers
Age (b-1)	41.5	39.2	40.8	38.4
Education years (b-1)	12.4	12.9	13.4	13.5
Hourly wages (b-1) ^a	14.61 €	15.35 €	16.66 €	16.28 €
Monthly earnings (b-1)	2649 €	2565 €	2756 €	2671 €
Hourly wages (b+2)	15.05 €	14.06 €	18.01 €	17.71 €
Monthly earnings (b+2)	2268 €	2300 €	2980 €	2870 €
Wage earner (b+2)	0.60	0.58	0.95	0.89
Self-employed (b+2)	0.02	0.02	0.01	0.01
Unemployed (b+2)	0.25	0.27	0.02	0.05
Student (b+2)	0.08	0.07	0.01	0.025
Out of labor force (b+2)	0.05	0.06	0.01	0.025
N	9,808	596	2,090,453	91,801

Notes: ^a: The sample sizes are smaller when we examine means of the pre- and post-displacement characteristics for a sample of displaced workers (and control group) with information on hourly wages from the HWSS data.

7. REGRESSION ANALYSIS OF MOBILITY IN THE FINNISH LABOR MARKETS

7.1. Empirical strategy

We begin by estimating a simple relationship between unemployment and regional mobility using a logit model. To maximize number of inter-regional moves, we use NUTS 4-level sub-regions to determine migration.¹¹ The model is as follows:

$$(1) \quad M_{it} = \alpha U_{i,t-1} + \beta' X_{it/t-1} + \epsilon_{it}$$

M_{it} is a dummy variable indicating whether an individual i has migrated between the year t and $t-1$. $U_{i,t-1}$ is an indicator variable indicating whether an individual was unemployed at year $t-1$.¹² $X_{it/t-1}$ is a vector of control variables. These variables include a previous regional mobility pattern (five categories: 1 = has not migrated before, 2 = has migrated once before, ..., 5 = has migrated at least four times before), age, gender, education level (five categories: 1 = primary education, 2 = secondary education, 3 = lowest level tertiary education, 4 = lower degree level tertiary education, 5 = upper degree level tertiary education), marital status, the presence of underage children, home ownership and the full set of year indicators. Education level, marital status, the presence of children and home ownership are measured at year $t-1$.

Next, we analyze the relationship between the duration of unemployment on regional mobility as follows:

$$(2) \quad M_{it} = \alpha Duration_{it} + \beta' X_{it/t-1} + \epsilon_{it}$$

$Duration_{it}$ is measured as the years of an unemployment spell at the time of potential regional mobility. Each individual can experience several unemployment spells in the observation window of 2000–2012. We estimate models (1) and (2) using two types of unemployment measures. The first measure is the unemployment (and the duration of unemployment) using information on the FLEED's labor market status. The second measure is the 'exogenous' unemployment (and the duration of this unemployment) that is calculated after experiencing job displacement.

¹¹ We also estimate robustness tests using NUTS 3-level classification of region. These results are in accordance with the results reported in this section, although the parameter estimates are slightly smaller.

¹² We used also alternative measure for unemployment (unemployed added with those who are otherwise out of the labor force, excluding students, retired persons and those who are in the military service), and these results were in accordance with the ones that are reported in the paper.

Finally, we follow **HUTTUNEN ET AL.** (2015) and examine the effect of exogenous job loss on regional mobility as follows:

$$(3) \quad M_{ib+2} = \alpha Displacement_{ib} + \beta' X_{ib} + \epsilon_{ib}$$

M_{ib+2} is a dummy variable indicating whether an individual has moved to a new location by the end of two years after the base year. $Displacement_{ib}$ is a dummy variable indicating whether an individual was displaced from a job between years b and $b+1$.

7.2. Empirical results

Table 5 reports the estimates of the logit models. The parameter estimates are reported as the marginal effects on the relationship between unemployment and regional mobility. The results from the model specification (1) show that unemployment is positively associated with regional mobility for both genders. Those persons who were employed in the previous year have ~0.7 percentage point higher probability of moving to another region next year compared with those who were unemployed. This result is in accordance with prior research. When we use unemployment caused by exogenous job loss as our independent variable, the estimate is again positive (~0.5 percentage points for the combined sample) and statistically significant for both genders.

The duration of unemployment also appears to matter. The results from the model (2) show that a spell of one extra year of unemployment, whether due to endogenous or exogenous job loss, is associated with an approximately 0.2 (0.4) percentage point increase in the probability of moving for men (women).

Finally, we turn to the effects of displacement on regional mobility using a conventional model based on equation (3). These results show that displaced women have a 2.5 percentage point higher probability of living in another region two years after the base year compared with the control group. The corresponding effect for men is lower, at 1.81 percentage points. Table 3 shows that an average non-displaced male worker has a 4.56% probability of moving to another region within two years, and an average non-displaced woman has a 4.21% probability of moving to another region within two years (after base year b). The estimates thus represent an increase in the migration probability of 43% for men and 59% for women. **HUTTUNEN ET AL.** (2015) found a smaller increase in the moving probability of ~30% for both genders.

Table 5. Unemployment and regional mobility.

	All	Men	Women
Model (1)			
U_{t-1}	0.0068 *** (0.0001)	0.0064 *** (0.0002)	0.0075 *** (0.0002)
Other controls	Yes	Yes	Yes
N	24,301,739	12,248,886	12,052,853
Model (1)			
U_{t-1} due to displacement	0.0051 *** (0.0005)	0.0041 *** (0.0007)	0.0071 *** (0.0009)
Other controls	Yes	Yes	Yes
N	5,930,442	3,277,584	2,652,858
Model (2)			
Duration	0.0032 *** (0.0001)	0.0020 *** (0.0001)	0.0047 *** (0.0001)
Other controls	Yes	Yes	Yes
N	1,561,093	835,359	725,734
Model (2)			
Duration due to displacement	0.0025 *** (0.0002)	0.0019 *** (0.0003)	0.0034 *** (0.0004)
Other controls	Yes	Yes	Yes
N	89,145	56,274	32,871
Model (3)			
Displaced	0.0202 *** (0.0007)	0.0181 *** (0.0009)	0.0250 *** (0.0011)
Other controls	Yes	Yes	Yes
N	3,289,245	1,965,861	1,323,384

Notes: Other controls include previous migration pattern, (gender), age, education level, marital status, presence of children, home ownership and year dummies. *** are statistically significant at least at the 1% significance level.

As a robustness test, we re-run all the analyses using our alternative measure for displaced workers, including workers who experienced a short unemployment spell after an exogenous job loss. For example, the point estimates from model (3) remained essentially intact for both men and women (not reported in Table 5). Overall, we find convincing evidence that unemployment is positively related to regional mobility.

The estimates for the individual-level background characteristics correspond well to the predictions. The results show that those persons who have previously moved to another location have a higher probability of moving again. Age is negatively associated with regional mobility, whereas higher education is positively associated with regional mobility. Finally, the estimates for ‘family ties’ confirm the well-known stylized facts that married individuals, homeowners and those who have children generally have a lower propensity to move. For example, married individuals generally have a 0.6%-points lower probability of moving compared with non-married individuals. Having children decreases this probability by approximately 0.5% points, and being a homeowner decreases this probability by approximately 1.7% points (Table A8 in the Appendix). These results are in line with **NIVALAINEN** (2005) and **HUTTUNEN ET AL.** (2015).

8. EXTENSIONS – INCOME AFTER MIGRATION

We examine the relationship between migration after an exogenous job loss and subsequent earnings. We follow **BOMAN** (2011) and examine both the short-term and long-term effects of migration as follows:

$$(4) \quad \log(wages)_{itd} = \alpha' M_{isd} + \beta' X_{itd} + wages_{ibd} + \epsilon_{itd}$$

$\log(wages)$ is the logarithm of earnings (monthly or hourly) of individual i at year t for a group of displaced workers d . M_{isd} is a categorical variable representing the year since post-displacement migration. The variable has nine categories: stayer (no migration), 1 year since migration, 8 years since migration and more than 8 years since migration. The group of stayers is used as the reference category. X_{ibd} is a vector of other explanatory variables at year t , $wages_{i(t-1)d}$ is pre-displacement earnings, and ϵ_{itd} is an error-term. Explanatory variables include age, gender, education level, marital status, the presence of underage children, home ownership and year dummies. Pre-displacement earnings are included in the model as another proxy for skill outside education (e.g., **BOMAN**, 2011). Equation (4) is initially estimated by OLS (Ordinary Least Squares) and then by fixed-effects model to control for unobserved time-invariant individual-level fixed-effects.

The OLS results are reported in Tables 6 and 7. Table 6 reports the estimates for the model, in which we use monthly earnings as the dependent variable (from the FLEED). Table 7 reports similar estimates for hourly wages from the HWSS data. The results show that migration is negatively related to earnings one to two years after migration, but that this negative relationship diminishes as time passes (Table 6). The number of observations in migration category cells is low in many cases, so the statistical insignificances might also be explained by smaller sample sizes. The results in Table 7 indicate that hourly wages are non-negative right after migration but are instead positive two years after migration for men. Otherwise, the estimates are statistically insignificant. The different signs in the estimates in Tables 6 and 7 after migration could be explained by different samples. There are more observations in the earnings sample than in the wage sample because earnings in the FLEED are observed for a larger group of individuals than are wages in the HWSS data. Thus, the difference can arise from unemployed, public sector workers or some other private sector workers who are observed in the earnings data but not in the wage data. Conditional on being displaced and finding private sector job, in which we observe wages, the wage development appears to be positive.

Table 6. OLS results for earnings effect of migration following job displacement: monthly earnings.

	All	Men	Women
No migration	(Ref.)	(Ref.)	(Ref.)
1 year since migration	-0.098 *** (0.014)	-0.086 *** (0.018)	-0.115 *** (0.026)
2 years since migration	-0.040 ** (0.016)	-0.013 (0.020)	-0.086 *** (0.027)
3 years since migration	-0.003 (0.018)	0.004 (0.023)	-0.015 (0.030)
4 years since migration	0.009 (0.022)	-0.020 (0.028)	0.049 (0.036)
5 years since migration	0.041 (0.026)	0.034 (0.034)	0.056 (0.041)
6 years since migration	-0.001 (0.037)	-0.056 (0.047)	0.078 (0.060)
7 years since migration	-0.001 (0.044)	0.016 (0.056)	-0.012 (0.070)
8 years since migration	-0.013 (0.057)	0.057 (0.073)	-0.093 (0.093)
> 8 years since migration	0.041 (0.077)	0.017 (0.095)	0.118 (0.131)
Female	-0.102 *** (0.004)	-	-
Age	-0.0004 (0.0003)	-0.002 *** (0.0003)	0.002 *** (0.0005)
Married	0.032 *** (0.004)	0.040 *** (0.005)	0.004 (0.007)
Children < 18 years	0.033 *** (0.004)	0.025 *** (0.005)	0.037 *** (0.007)
Homeowner	0.082 *** (0.004)	0.086 *** (0.005)	0.063 *** (0.008)
Primary education	(Ref.)	(Ref.)	(Ref.)
Secondary education	0.038 *** (0.005)	0.022 *** (0.006)	0.059 *** (0.009)
Lowest level tertiary educ.	0.117 *** (0.007)	0.076 *** (0.009)	0.164 *** (0.011)
Lower degree level tertiary educ.	0.220 *** (0.008)	0.163 *** (0.010)	0.282 *** (0.015)
Upper degree level tertiary educ.	0.317 *** (0.009)	0.253 *** (0.012)	0.386 *** (0.014)
Pre-displacement wages	0.430 *** (0.004)	0.545 *** (0.006)	0.323 *** (0.006)
Year dummies controlled	Yes	Yes	Yes
Number of obs.	158,229	101,702	56,527
R²	0.11	0.12	0.09

Table 7. OLS results for earnings effect of migration following job displacement: hourly earnings.

	All	Men	Women
No migration	(Ref.)	(Ref.)	(Ref.)
1 year since migration	-0.032 (0.030)	-0.044 (0.038)	-0.004 (0.045)
2 years since migration	0.067 ** (0.033)	0.086 ** (0.042)	0.032 (0.051)
3 years since migration	0.071 * (0.038)	0.078 (0.048)	0.079 (0.057)
4 years since migration	0.063 (0.046)	0.101 (0.062)	0.014 (0.065)
5 years since migration	0.055 (0.052)	0.090 (0.069)	0.026 (0.074)
6 years since migration	0.073 (0.073)	0.090 (0.094)	0.075 (0.110)
7 years since migration	-0.003 (0.093)	0.041 (0.124)	-0.016 (0.134)
8 years since migration	0.070 (0.124)	0.118 (0.151)	0.027 (0.212)
> 8 years since migration	0.098 (0.163)	0.173 (0.203)	0.023 (0.260)
Female	-0.084 *** (0.009)	-	-
Age	0.0008 (0.0005)	-0.0004 (0.0006)	0.004 *** (0.0009)
Married	0.050 *** (0.008)	0.073 *** (0.009)	-0.016 (0.013)
Children < 18 years	0.042 *** (0.008)	0.030 *** (0.010)	0.048 *** (0.013)
Homeowner	0.050 *** (0.009)	0.064 *** (0.011)	0.009 (0.014)
Primary education	(Ref.)	(Ref.)	(Ref.)
Secondary education	0.095 *** (0.010)	0.090 *** (0.013)	0.094 *** (0.017)
Lowest level tertiary educ.	0.320 *** (0.015)	0.284 *** (0.020)	0.392 *** (0.021)
Lower degree level tertiary educ.	0.500 *** (0.017)	0.457 *** (0.021)	0.553 *** (0.027)
Upper degree level tertiary educ.	0.654 *** (0.020)	0.571 *** (0.026)	0.775 *** (0.028)
Pre-displacement wages	0.215 *** (0.009)	0.332 *** (0.014)	0.096 *** (0.012)
Year dummies controlled	Yes	Yes	Yes
Number of obs.	50,336	35,444	14,892
R²	0.21	0.21	0.25

Table 8 reports the individual fixed-effects estimates of migration on both monthly and hourly earnings for men and women separately. For brevity, estimates of other control variables are not reported. When individual unobserved heterogeneity is controlled for, the relationship between migration and subsequent earnings is positive for men's hourly wages two to five years after migration. After five years, the positive relationship between migration and hourly wages diminishes and become statistically insignificant. For women,

we find a statistically insignificant relationship. When we examine the individual fixed-effect estimates using monthly wages, we again find a significantly negative relationship right after migration.

Overall, the results show that earnings develop negatively in the first years after migration but that this relationship can turn positive or become insignificant as time passes. This relationship is instead positive and stronger for men when we use hourly wages as the dependent variable. Our results are somewhat in line with previous findings. Again, the difference between earnings and wages results can arise from different samples, for example, that wages are not observed for the unemployed, but the unemployed are observed to have low earnings. Using data from Sweden, **BOMAN** (2011) found that migration has a small positive relationship with men's subsequent earnings. For women, however, a negative relationship was found. **FAKLER AND RIPPE** (2016) used a sample of displaced workers in Germany and found that there were no statistically significant earning losses for displaced movers compared with displaced stayers.

Table 8. FE results for migrants following job displacement: monthly wages and hourly earnings.

	Monthly earnings		Hourly wages	
	Men	Women	Men	Women
No migration	(Ref.)	(Ref.)	(Ref.)	(Ref.)
1 year since migration	-0.102 *** (0.018)	-0.095 *** (0.024)	0.050 (0.043)	-0.001 (0.047)
2 years since migration	-0.024 (0.021)	-0.087 *** (0.027)	0.138 *** (0.048)	0.030 (0.054)
3 years since migration	-0.018 (0.023)	-0.002 (0.030)	0.109 ** (0.054)	0.067 (0.060)
4 years since migration	-0.026 (0.028)	0.060 * (0.035)	0.135 ** (0.066)	-0.039 (0.067)
5 years since migration	0.035 (0.033)	0.064 (0.040)	0.168 ** (0.073)	-0.012 (0.076)
6 years since migration	-0.078 * (0.046)	0.081 (0.057)	0.012 (0.100)	0.064 (0.103)
7 years since migration	-0.011 (0.054)	0.033 (0.066)	0.007 (0.123)	0.023 (0.112)
8 years since migration	0.004 (0.068)	-0.028 (0.086)	-0.015 (0.144)	0.223 (0.200)
> 8 years since migration	0.071 (0.088)	0.276 ** (0.121)	0.040 (0.188)	0.117 (0.245)
Other controls	Yes	Yes	Yes	Yes
Number of obs.	101,702	56,935	35,444	14,892
R ²	0.01	0,01	0.12	0.18

9. CONCLUSIONS

In this report, we studied different factors that might help to assess the flexibility of Finnish labor markets. We subjected the employment protection legislation (EPL) and collectively agreed wages in Finland to an international comparison. We presented a literature survey on the potential negative labor market effects of EPL and minimum wages, finding that very large negative employment effects are difficult to find in the literature but that these effects could affect labor turnover negatively. We then described the wage distributions in selected low-wage sectors relative to minimum wages in Finland. We found that, particularly in the cleaning sector, wages are highly centered close to the minimum wage. Finally, we presented a description of migration across regions in Finland and elaborated how that migration is related to unemployment. We found that aggregate propensity to move among the unemployed is not very high but at the same time that exogenous unemployment events significantly increase the likelihood to migrate to another region in Finland. Earnings development of movers was not beneficial right after the migration.

Do Finnish labor markets appear inflexible? In an international comparison, Finnish EPL did not appear particularly strict, but we did find that collectively agreed wages could be quite binding in some sectors. Then again, it is very difficult to draw conclusions from the literature survey that binding minimum wages would cause large negative employment effects. Of course, the best papers come from the US, which have very different institutions than Finland. The scant evidence we found from Finland or similar countries likewise suggests small or non-existent effects. One reason for small employment effects could arise in a simple competitive economy model. If demand is inelastic, firms can transfer the higher costs arising from higher minimum wages or stricter EPL to prices. Thus, they need not reduce employment. Empirically, at least the hairdressing and restaurant sectors have been found to feature rather inelastic demand in Finland (**KOSONEN**, 2015 and **HARJU, KOSONEN AND SKANS**, 2015). This finding would support the reasoning for why the binding minimum wages might themselves not after all lead to large negative employment effects in Finland.

If the negative effects of minimum wages do not materialize, the policy recommendation cannot be to lower them. However, our literature review suggested that although the negative average employment effects did not find support, EPL and minimum wages might have other negative labor market consequences such as reducing labor turnover among firms and reducing creation of new jobs in growing firms. These effects would hold even in an economy with inelastic demand, because higher minimum wages would still create costs associated with hiring and firing of workers for firms. Thus, we posit that it is possible that minimum wages and EPL (not very high in an international context but higher than in the US) still create effects that make the labor market less flexible than without them. It remains difficult to assess whether these costs surpass the benefits workers derive from them.

A simple economic theory suggests that individuals following economic incentives should migrate from high unemployment regions to low unemployment regions if they lose their jobs. Of course, an accurate behavioral model of the unemployed might not match the one in the simple economic theory. We can call factors that deviate from basic economic theory frictions. Furthermore, we could define as inflexible labor markets in which these frictions appear large. We found mixed evidence concerning whether the unemployed appear to follow the basic economic model. Overall, the unemployed are not very mobile across regions in Finland because at least 92% of the unemployed do not migrate to another region, although some of them reside in regions with high average unemployment. At the same time, we found that the unemployed are slightly more prone to migrate than are the employed and that displacement increases the probability of migration significantly. Thus, individuals do appear to respond somewhat to incentives to migrate; however, many unemployed on average remain largely unresponsive to incentives. Thus, there is room to state that frictions preventing migration do exist. These frictions could be related for example to the housing market not functioning properly or to the unemployed having a high preference to remain where they reside. One possible explanation comes from our earnings description right after the migration, which showed negative development for two years after the migration. Thus, at least for some migrants, there could be negative risks associated with migration, and combining these risks with high housing prices, for example, in the capital region, would reduce the incentives to migrate. In conclusion, the regional migration results find support for labor market inflexibility in Finland.

Our results do not lend themselves to very strong policy conclusions because we were not able to utilize exogenous policy variation in some labor market flexibility-relevant policy. Our conclusion is rather that we found evidence of labor market inflexibility in Finland. If high minimum wages induce labor turnover to be low and other frictions induce the labor force not to be very mobile, then these factors at least set a constraint for how quickly labor markets react to policy measures created by the Finnish government to increase employment in Finland.

REFERENCES

ABOWD, J. M., KRAMARZ, F. AND MARGOLIS, D.N. (1999). Minimum Wages and Employment in France and the United States. Working Paper 6996. National Bureau of Economic Research.

ALLEGRETTO, S.A., DUBE, A. AND REICH, M. (2011). Do Minimum Wages Really Reduce Teen Employment? Accounting for Heterogeneity and Selectivity in State Panel Data. *Industrial Relations*, 50(2), 205–240.

ANDERSEN, S. K., IBSEN, C. L., ALSOS, K., NERGAARD, K. AND SAURAMO, P. (2015). Changes in wage policy and collective bargaining in the Nordic countries-comparison of Denmark, Finland, Norway and Sweden. In Van Gyes, G., and Schulten, T. (eds.), *Wage bargaining under the new European Economic Governance: Alternative strategies for inclusive growth*. 2015. ETUI.

AER (2016). Dags för större lönespridning? Arbetsmarknadsekonomisk rådet rapport, 15.2.2016. Read from www.arbetsmarknadsekonomiskaradet.se/publicerat/

ASPLUND, R. (2007). Finland: Decentralisation Tendencies within a Collective Wage Bargaining System. Discussion Papers No. 1077. Helsinki: The Research Institute of the Finnish Economy.

AUTOR, D.H., DONOHUE III, J.J. AND SCHWAB, S.J. (2006). The Costs of Wrongful-Discharge Laws. *Review of Economics and Statistics*, 88, 211–31.

AUTOR, D.H., MANNING, A. AND SMITH, C.L. (2016). The contribution of the minimum wage to US wage inequality over three decades: a reassessment. *American Economic Journal: Applied Economics*, 8(1), 58–99.

BEHAGHEL, L., CRÉPON, B. AND SÉDILLOT, B. (2008). The Perverse Effects of Partial Employment Protection Reform: The Case of French Older Workers, *Journal of Public Economics*, 92(3–4), 696–721.

BESLEY, T. AND BURGESS, R. (2004). Can labour regulation hinder economic performance? Evidence from India. *Quarterly Journal of Economics*, 119, 91–134.

BISPINCK, R. AND SCHULTEN, T. (2011). Sector-level bargaining and possibilities for deviations at company level. The case of Germany. Available at: http://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1087en4.pdf.

BLANCHARD, O. AND PORTUGAL, P. (2001). What hides behind an unemployment rate: Comparing Portuguese and U.S. unemployment. *American Economic Review*, 91(1), 187–207.

BOERI, T. (2010). Institutional Reforms and Dualism in European Labour Markets. In Ashenfelter, O. and Card, D. (eds.), *Handbook of Labour Economics*, 2010, Elsevier, 1173–1236.

BOERI, T., CAHUC, P. AND ZYLBERBERG, A. (2015). The Costs of Flexibility-Enhancing Structural Reforms. OECD Economics Department Working Papers No. 1264, OECD Publishing, Paris.

BOERI, T. AND GARIBALDI, P. (2006). "Two tier reforms of employment protection: A honeymoon effect?" *Economic Journal*, 117, 357–385.

BOERI, T. AND JIMENO, J.F. (2005). The Effects of Employment Protection: Learning from Variable Enforcement. *European Economic Review*, 49, 2057–77.

BOMAN, A. (2011). Does migration pay? Earnings effects of geographic mobility following job displacement. *Journal of Population Economics* 24, 1369–1384.

BOOCKMANN, B. (2010). The Combined Employment Effects of Minimum Wages and Labor Market Regulation: A Meta-Analysis. Discussion Paper No 4983, IZA, Bonn, Germany.

BRATSBERG, B., RAAUM, O. AND RØED, K. (2016). Job loss and immigrant labor market performance. IZA discussion papers No. 9729.

BROWN, C., GILROY, C. AND KOHEN, A. (1982). The Effect of the Minimum Wage on Employment and Unemployment. *Journal of Economic Literature*, 20(2), 487–528.

BROWN, C. (1999). Minimum Wage, Employment, and the Distribution of Income. In O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*. North-Holland, 3B, 2101–2163.

BRÄNDLE, T. AND HEINBACH, H.D. (2010). Opening clauses in collective bargaining agreements: More flexibility to save jobs? IAW-Discussion Paper 67, Tübingen.

BÖCKERMAN, P. AND UUSITALO, R. (2009). Minimum Wages and Youth Employment: Evidence from the Finnish Retail Sector. *British Journal of Industrial Relations*, 47, 388–405.

CAHUC, P. AND ZYLBERBERG, A. (2004). *Labor Economics*, MIT Press.

CARD, D. AND KRUEGER, A.B. (1994). Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania. *American Economic Review*, 84(5), 772–93.

CARD, D. AND KRUEGER, A.B. (2000). Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Reply. *American Economic Review*, 90(5), 1397–1420.

DOLADO, J., KRAMARZ, F., MACHIN, S., MANNING, A., MARGOLIS, B. AND TEULINGS, C. (1996). The Economic Impact of Minimum Wages in Europe. *Economic Policy*, 23, 319–72.

DOUCOULIAGOS, H. AND STANLEY, T. (2009). Publication selection bias in minimum-wage research? A metaregression analysis. *British Journal of Industrial Relations*, 47, 406–428.

DUBE, A., LESTER, T. W. AND REICH, M. (2010). Minimum Wage Effects Across State Borders: Estimates Using Contiguous Counties. *Review of Economics and Statistics*, 92(4), 945–64.

DUBE, A., LESTER, T. W. AND REICH, M. (2016). Minimum Wage Shocks, Employment Flows, and Labor Market Frictions. *Journal of Labor Economics*, 34(3), 663–704.

DUSTMANN, C., FITZENBERGER, B., SCHÖNBERG, U. AND SPITZ-OENER, A. (2014). From sick man of Europe to economic superstar: Germany's resurgent economy. *The Journal of Economic Perspectives*, 28(1), 167–188.

ELLGUTH, P., GERNER, H. D. AND STEGMAIER, J. (2014). Wage effects of works councils and opening clauses: The German case. *Economic and Industrial Democracy*, 35(1), 95–113.

EUROFOUND (2016). Statutory minimum wages in the EU 2016 | Eurofound. [online] Eurofound.europa.eu. Available at: <http://www.eurofound.europa.eu/observatories/eurwork/articles/working-conditions-industrial-relations/statutory-minimum-wages-in-the-eu-2016> [Accessed 31 Oct. 2016].

- FACKLER, D. AND RIPPE, L.** (2016). Losing work, moving away? Regional mobility after job loss. IWH discussion paper No. 26/2016.
- GNOCCHI, S., LAGERBORG, A. AND PAPPA, E.** (2015). Do labour market institutions matter for business cycles? *Journal of Economic Dynamics and Control*, 51, 299–317.
- HARJU, J., KOSONEN, T. AND SKANS, O.** (2015). Firm Types, Price-Setting Strategies, and Consumption-Tax Incidence. CESifo working paper No. 5654 (December 2015).
- HICKS, J.R.** (1932). *The Theory of Wages*. London: Macmillan.
- HIJZEN, A. AND MARTINS, P. S.** (2016). No Extension without Representation? Evidence from a Natural Experiment in Collective Bargaining. Working paper 16/143, International Monetary Fund.
- HUTTUNEN, K., MØEN, J. AND SALVANES, K.** (2015). Job loss and regional mobility. IZA discussion papers No. 8780.
- HYSLÖP, D. AND STILLMAN, S.** (2007). Youth minimum wage reform and the labour market in New Zealand. *Labour Economics*, 14(2), 201–230.
- KAHN, L.M.** (2007). The Impact of Employment Protection Mandates on Demographic Temporary Employment Patterns: International Microeconomic Evidence. *Economic Journal*, 117, F333–56.
- KAHN, L.M.** (2010). Employment Protection Reforms, Employment and the Incidence of Temporary Jobs in Europe: 1996–2001. *Labour Economics*, 17, 1–15.
- KEUNE, M.** (2011) Derogation clauses on wages in sectoral collective agreements in seven European countries. European Foundation for the Improvement of Living and Working Conditions (Eurofound). Dublin.
- KIANDER, J., SAURAMO, P. AND TANNINEN, H.** (2011). Finnish incomes policy as corporatist political exchange: development of social capital and the social wage. *Transfer: European Review of Labour and Research*, 17(4), 515–531.
- KORKEAMÄKI, O. AND KYRÄ, T.** (2014). A distributional analysis of earnings losses of displaced workers in an economic depression and recovery. *Oxford Bulletin of Economics and Statistics*, 76(4), 565–588.
- KOSONEN, T.** (2015). More and cheaper haircuts after VAT cut? On the efficiency and incidence of service sector consumption taxes. *Journal of Public Economics*, Vol. 131, 87–100, November.
- KRAMARZ, F. AND PHILIPPON, T.** (2001). The impact of differential payroll tax subsidies on minimum wage employment. *Journal of Public Economics*, 82(1), 115–146.
- KUGLER, A., JIMENO, J.F. AND HERNANZ, V.** (2002). Employment Consequences of Restrictive Permanent Contracts: Evidence from Spanish Labor Market Reforms. Discussion Paper No 657, IZA, Bonn, Germany.
- KUGLER, A. AND PICA, G.** (2008). Effects of Employment Protection on Worker and Job Flows: Evidence from the 1990 Italian Reform. *Labour Economics*, 15, 78–95.
- LOW PAY COMMISSION** (2014). National Minimum Wage. Low Pay Commission Report 2014. Cm 8816. March. (The Stationery Office.)
- MACURDY, T.** (2015). How effective is the minimum wage at supporting the poor? *Journal of Political Economy*, 123(2), 497–545.
- MARTINS, P.** (2014). 30,000 minimum wages: The economic effects of collective bargaining extensions. IZA Discussion Paper No. 8540.

- MEER, J. AND WEST, J.** (2016). Effects of the Minimum Wage on Employment Dynamics. *Journal of Human Resources*, 51(2).
- MORTENSEN, D. T. AND PISSARIDES, C. A.** (1999). New developments in models of search in the labor market. *Handbook of labor economics*, 3, 2567–2627.
- MUELLER, C.F.** (1982). *The Economics of Labor Migration: A Behavioral Analysis*. New York: Academic Press.
- NEUMARK, D. AND WASCHER, W.** (2000). The Effect of New Jersey's Minimum Wage Increase on Fast-Food Employment: A Reevaluation Using Payroll Records. *American Economic Review*, 90(5) 1362–96.
- NEUMARK, D. AND WASCHER, W.** (2006). Minimum wages and employment: A review of evidence from the new minimum wage research. Working paper No. 12663. National Bureau of Economic Research.
- NIVALAINEN, S.** (2005). Interregional migration and post-move employment in two-earner families: Evidence from Finland. *Regional Studies* 39, 891–907.
- PEKKALA, S. AND TERVO, H.** (2002). Unemployment and migration: Does moving help? *Scandinavian Journal of economics*, 104(4), 621–639.
- PISSARIDES, C.A. AND MCMMASTER, I.** (1990). Regional migration, wages and unemployment: Empirical evidence and implications for policy. *Oxford Economic Papers*, 42, 812–831.
- PORTUGAL, P. AND CARDOSO, A.** (2006). Disentangling the minimum wage puzzle: An analysis of job accession and separation. *Journal of the European Economic Association*, 4(5), 988–1013.
- SAURAMO, P.** (2012). Collectively agreed wages in Finland. Labour Institute for Economic Research working paper 281.
- SKEDINGER, P.** (2006). Minimum Wages and Employment in Swedish Hotels and Restaurants. *Labour Economics*, 13(2), 259–90.
- SKEDINGER, P.** (2011). Employment Consequences of Employment Protection Legislation. *Nordic Economic Policy Review*, 1, 45–83.
- SKEDINGER, P.** (2015). Employment effects of union-bargained minimum wages: Evidence from Sweden's retail sector. *International Journal of Manpower*, 36, 694–710.
- STATISTICS FINLAND** (2016). Labour Market. Read from http://www.stat.fi/tup/suoluk/suoluk_tyuelama_en.html, on October 31, 2016.
- STEWART, M. B.** (2004). The employment effects of the national minimum wage. *Economic Journal*, 114, 110–116.
- STEWART, M. B. AND SWAFFIELD, J. K.** (2008). The Other Margin: Do Minimum Wages Cause Working Hours Adjustments for Low-Wage Workers? *Economica*, 75, 148–167.
- VENN, D.** (2009). Legislation, Collective Bargaining and Enforcement: Updating the OECD Employment Protection Indicators. Working Paper No 89, Directorate for Employment, Labour and Social Affairs, OECD, Paris, France.
- VISSER, J.** (2016). ICTWSS Data base. version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies AIAS. September 2016.
- VON BELOW, D. AND SKOGMAN THOURSIE, P.** (2010). Last in, first out? Estimating the effect of seniority rules in Sweden. *Labour Economics*, 17, 987–997.

APPENDIX

Table A1. Small firm exemptions from EPL in selected countries in the year 2008 from **VENN** (2009).

Country	Threshold and type of exemption	% of total employment ^{a)}
Australia	Firms employing 100 or less employees are exempt from unfair dismissal laws, but unlawful termination (for discriminatory reasons) continues to be prohibited in all firms. Firms with fewer than 15 workers do not have to pay redundancy pay.	56 (<100) 20 (<15)
Austria	Firms with less than five employees are not required to establish a works council so there is no requirement to inform the works council of impending dismissals nor possibility for the works council to challenge unfair dismissals. In enterprises where works councils could be established but where the employees do not set up a works council, the requirement to notify the works council about dismissals is also waived. Firms with less than 20 employees are exempt from requirements for collective dismissals.	15 (<5) 36 (<20)
Belgium	Firms with less than 20 employees are exempt from requirements for collective dismissals.	37
Czech Republic	Firms with less than 20 employees are exempt from requirements for collective dismissals.	39
Denmark	Firms with 20 employees or less are exempt from requirements for collective dismissals.	28
Finland	Firms with less than 20 employees do not have to take part in consultations with employees, reducing delays before notification can take place.	27
Germany	Establishments employing 10 or fewer employees are exempt from regular employment protection legislation. Special protection is still provided to protect employees against discriminatory dismissal and arbitrary dismissal. Employers must not give notice without a minimum of social consideration. Firms with 20 employees or less are exempt from requirements for collective dismissals.	18 (<10) 28 (<20)
Hungary	Firms with less than 20 employees are exempt from requirements for collective dismissals.	43
Iceland	Firms with less than 20 employees are exempt from requirements for collective dismissals.	..
Italy	Firms with less than 15 employees are not required to pay back-pay or reinstate workers who are found to be unfairly dismissed.	51
Korea	Workplaces with four workers or less are exempt from provisions of the Labor Standards Act relating to dismissal.	20
Mexico	Firms employing less than 20 employees are exempt from requirements for collective dismissals.	48
Portugal	In cases of unfair dismissal, companies employing up to 9 workers may submit a request to the court to oppose reinstatement.	42
Slovenia	Employers employing 10 workers or less can, by collective agreement, conclude fixed-term contracts irrespective of the substantive limitations applying to fixed-term contracts and with longer duration. When terminating contracts, small employers do not have to verify the possibility of redeployment or retraining. Shorter notice periods are allowed for small employers by collective agreement.	21
Spain	The maximum duration of the trial period for workers without higher education qualifications is 3 months for firms with 25 workers or less (2 months for larger firms). In the case of redundancies in firms with less than 25 employees, the Wage Guarantee Fund pays 40% of the compensation due to workers, the maximum daily wage being equal to twice the minimum inter-professional wage. In the case of collective dismissals in firms with less than 50 workers, the consultation period with employee representatives is reduced by half (to 15 days) and there is no requirement to submit a social plan.	51 (<25) 61 (<50)
Sweden	Firms with less than 20 employees are exempt from collective dismissals.	24
Switzerland	Firms with less than 20 employees are exempt from requirements for collective dismissals.	..
Turkey	Firms with less than 30 employees do not have to reinstate workers or pay compensation or back-pay in cases of unfair dismissal. Firms with less than 20 employees are exempt from requirements for collective dismissals.	52 (<30) 45 (<20)
United States	Firms with less than 100 employees are exempt from requirements for collective dismissals.	30

Notes: .. indicates no data available. a) Except for Australia, Korea, Slovenia and Turkey, where figure gives is percentage of total employees.

Source: Responses to OECD questionnaire; national labour legislation. Coverage estimates are from OECD Structural Business Statistics database, except for Australia and Korea, which are from responses to OECD questionnaire, Slovenia, which is from the Statistical Office of the Republic of Slovenia and Turkey, which is interpolated from the 2006 Turkish Labour Force Survey.

Table A2. Exemptions from EPL for particular groups of workers in selected countries in the year 2008 from **VENN** (2009).

Country	Exempt groups and alternative regulations applying
Australia	Apprentices and trainees cannot claim unfair dismissal, but are protected against discriminatory dismissal.
Canada	British Columbia: students in approved work-experience programmes or employed at the secondary school where they are enrolled and persons receiving income assistance while participating in government training or work-experience programmes are not covered by employment protection legislation. Ontario: secondary or tertiary students engaged in approved work-experience programmes are not covered by employment protection legislation. Québec: students who work during the school year in a job induction programme are not covered by employment protection legislation.
Denmark	Workers on active labour market programmes are sometimes exempted from regulations on fixed-term contracts.
Finland	An employee's relationship can be terminated without a notice period at the end of the calendar month during which the employee becomes 68 years of age unless the employer and the employee agree to continue the employment relationship. If they agree to a continuation, they may agree to a continuation, they may agree to a fixed-term continuation regardless of the rules on the use of fixed-term contracts.
Italy	There are four special contracts for training or labour market entry. <i>Educational training apprenticeships</i> are for 15-18 year olds and can last for up to three years. <i>Vocational training and higher-level apprenticeships</i> are for 18-29 year olds and last from two to six years depending on the qualification to be obtained. Apprenticeship contracts can be used in any sector but are limited so that the number of apprentices cannot exceed the number of skilled workers employed by a firm (small firms without skilled staff can hire up to three apprentices). Apprenticeship contracts cannot be terminated except long-term unemployed aged 29-32, workers aged 50+ who are not working, workers who wish to return to work after a break of two years or more, women in areas where employment rate is 20% lower than for men and disabled workers. Contracts have a maximum duration on 6-18 months (36 months for disabled workers) and can be used in any sector except public administration. An employer can only hire new workers on access-to-work contracts if at least 60% of employees hired in the past on these contracts whose contracts have expired are still employed in the firm.
Germany	For employees over 52 years of age and unemployed for more than 4 months or who have participated in a public employment measure for more than 4 months, fixed-term contracts are possible without any need to prove objective reasons up to a cumulative duration of 60 months.
Norway	Participants employed through labour market programmes under the auspices of (or in cooperation with) the Labour and Welfare Service (PES), and for work as a trainee, can be hired temporarily without the general rules/restrictions for temporary employment applying.
Poland	The termination of contracts of employment with adolescents for the purpose of vocational training is permitted in the case of: (1) and adolescent's failure to perform his or her duties under a contract of employment or the duties arising from compulsory schooling, despite corrective measures applied to him/her; (2) declaration of bankruptcy or liquidation of the employer; (3) reorganisation of an employing establishment preventing the continuation of vocational training; or (4) unsuitability of an adolescent for work in which he or she is receiving vocational training.
Slovenia	Employees engaged in public works programmes (under such a contract, a person usually spends a quarter of their working time participating in training or educational programmes) are subject to different provisions for early termination of the contract. Early termination is possible if the participant takes up new employment with a different employer, takes part in an EU-sponsored training programme, rejects an appropriate job offer or training programme proposed by the Employment Service, fails to provide results that can be expected from an average participant due to untimely, unprofessional or poor-quality work, arbitrarily abandons a public works programme or if the programme of public works is terminated early for objective reasons on the part of the Employment Service, the implementer or the contractor of the public works programme.
Spain	Work placement contracts exist for employing youth holding tertiary or equivalent vocational qualifications within four years of graduation. Job training contracts can be used to employ youth aged 16-21 years without tertiary qualifications, disabled people and adults participating in specified training programmes organised by the public employment service. The contracts have a minimum duration of six months and maximum of two years, with a trial period of 1-3 months. Job training contracts can be extended to three years by collective agreement of four years for workers with a disability and are subject to a maximum number of workers that can be hired relative to firm size. Both types of contract are terminated by giving 15 days notice. If a contract is converted into a permanent position, the employer is entitled to a reduction in social security contributions for two years following conversion, or indefinitely in the case of a disabled worker.
Sweden	Employees who are employed under a number of active labour market programmes (Special Recruitment Incentive, Sheltered Public Employment or Development Employment) are exempt from the provisions of the Employment Protection Act, although they may be covered by employment protection through individual or collective agreements.

Source: Responses to OECD questionnaire; national labour legislation.

Table A3. Pay scale for salespersons in retail (1.9.2015–29.2.2016). Euros per month (with a 37.5-hour workweek).¹³

Experience	Helsinki, Vantaa, Espoo and Kauniainen	Rest of Finland
Less than one year (trainee)	0.85*1764 = 1499.4	0.85*1692 = 1438.2
1 year – 3 years (professional)	1764	1692
3 years – 5 years	1823	1750
5 years – 8 years	1924	1845
8 years or more	2011	1920

Table A4. Pay scale for cleaners (1.4.2015–30.11.2015).

Points (for complexity)	Monthly pay (37.5 hour workweek)	Hourly pay
Trainee (90% of the next highest pay)	1425	8.85
17–20	1583	9.83
21–24	1662	10.32
25–28	1745	10.84
29–33	1832	11.38
34–38	1924	11.95
39–44	2001	12.43
45–51	2081	12.93
52–58	2164	13.44
59–69	2251	13.98

Table A5. Pay scale for construction workers (1.6.2015–).

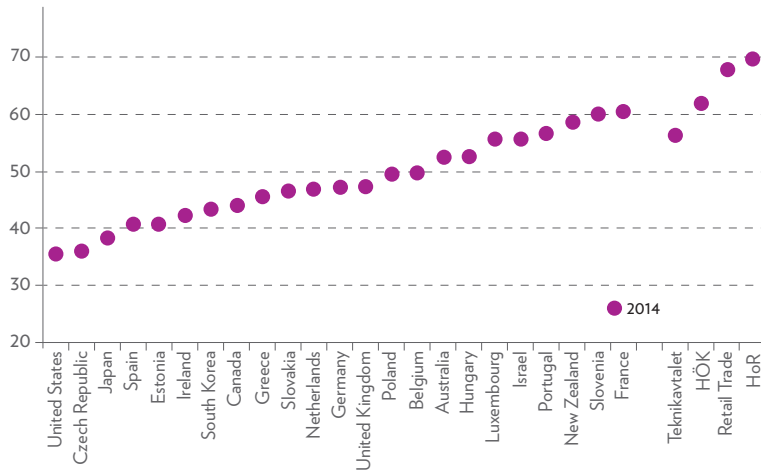
Experience	Short description	Hourly pay
Beginner	Workers whose work does not require experience from the construction sector or workers who are receiving vocational training	9.83
Worker with some experience	Worker is involved in tasks that require experience from construction and is able to work without continuous supervision	11.18
Starting professional	Professionals with little experience	12.34
Professional	Professionals with basic skills	13.68
Experienced professional	Professionals with advanced skills	14.96
Highly experienced professional	Professionals who can perform the most demanding tasks of their profession	16.07

¹³ There is in fact also another pay scale for salespersons with more demanding jobs but most of the salespersons work under the pay scale represented here. A shorter version of the collective bargaining agreement is available in English at <http://view.24mags.com/publication/PAM/933678aaeb19464d65b9e09c41ade273>

Table A6. Pay scale for warehouse workers (1.9.2015–29.2.2016). Euros per month (with a 37.5-hour workweek).

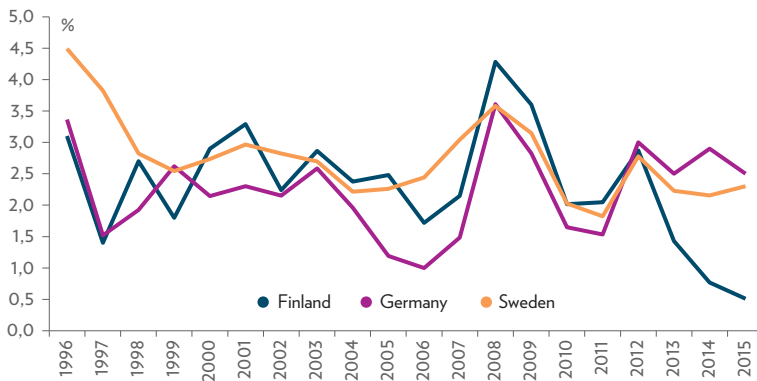
Experience	Helsinki, Vantaa, Espoo and Kauniainen	Rest of Finland
Less than one year (trainee)	0.85*1780=1513	0.85*1709=1452.65
1 year – 3 years (professional)	1780	1709
3 years – 5 years	1848	1775
5 years – 8 years	1952	1866
8 years or more	2040	1947

Figure A1. Figure 3 from Arbetsmarknadsekonomiska rådet (2016) showing minimum wages relative to median wages in four Swedish sectors and in number of OECD countries.



Note: The minimum wage bite is the ration between the minimum and median wage. Germany introduced a statutory minimum wage in 2015. Data for this country are based on OECD forecasts. HÖK stands for *Huvudöverenskommelsen*, the central agreement between the Swedish Municipal Workers' Union (*Kommunal*) and Swedish Association of Local Authorities and Regions (*Sveriges Kommuner och Landsting*), and HoR for the Hotel an Restaurant Agreement. *Teknikavtalet* is the agreement between the Association of Swedish Engineering Industries (*Teknikföretagen*) and the Union of Metalworkers (*IF Metall*).
 Source: OECD, Statistics Sweden and Collective agreements.

Figure A2. The yearly change in collectively agreed wages in Finland, Sweden and Germany.



Source: Statistics Finland, Destatis, Medlingsinstitutet.

Table A7. Sample means of selected pre- and post-displacement characteristics: NUTS 3-level region.

Men	Displaced		Non-Displaced	
	Stayers	Movers	Stayers	Movers
Age (b-1)	40.8	37.2	39.8	35.6
Education years (b-1)	12.1	12.6	13.1	13.7
Hourly wages (b-1) ^a	17.31 €	17.15 €	20.18 €	19.92 €
Monthly earnings (b-1)	3300 €	3287 €	3747 €	3646 €
Hourly wages (b+2)	17.30 €	16.55 €	21.61 €	22.04 €
Monthly earnings (b+2)	2892 €	3045 €	4078 €	4121 €
Wage earner (b+2)	0.66	0.66	0.95	0.87
Self-employed (b+2)	0.03	0.03	0.01	0.02
Unemployed (b+2)	0.24	0.23	0.03	0.07
Student (b+2)	0.04	0.06	0.006	0.03
Out of labor force (b+2)	0.03	0.02	0.004	0.01
N	20,112	562	2,730,188	51,957
Women	Displaced		Non-Displaced	
	Stayers	Movers	Stayers	Movers
Age (b-1)	41.5	38.5	40.8	36.3
Education years (b-1)	12.4	13.2	13.4	14.1
Hourly wages (b-1) ^a	14.63 €	15.63 €	16.65 €	16.65 €
Monthly earnings (b-1)	2647 €	2579 €	2753 €	2714 €
Hourly wages (b+2)	15.02 €	14.32 €	17.99 €	18.41 €
Monthly earnings (b+2)	2270 €	2281 €	2976 €	2922 €
Wage earner (b+2)	0.60	0.58	0.95	0.83
Self-employed (b+2)	0.02	0.02	0.01	0.02
Unemployed (b+2)	0.25	0.27	0.02	0.08
Student (b+2)	0.08	0.07	0.01	0.04
Out of labor force (b+2)	0.05	0.06	0.01	0.03
N	10,074	330	2,143,459	38,795

Table A8. Unemployment, other control variables and regional mobility: model (1).

	All	Men	Women
U_{t-1}	0.0068 *** (0.0001)	0.0064 *** (0.0002)	0.0075 *** (0.0002)
Previous migration pattern			
No migration	(Ref.)	(Ref.)	(Ref.)
Once before	0.0304 *** (0.0001)	0.0321 *** (0.0001)	0.0287 *** (0.0001)
Twice before	0.0348 *** (0.0002)	0.0370 *** (0.0002)	0.0326 *** (0.0002)
Three times before	0.0472 *** (0.0003)	0.0497 *** (0.0004)	0.0446 *** (0.0004)
At least three times before	0.0583 *** (0.0005)	0.0608 *** (0.0007)	0.0556 *** (0.0007)
Female	-0.0004 *** (0.0001)	-	-
Age	-0.0015 *** (0.0000)	-0.0015 *** (0.0000)	-0.0015 *** (0.0000)
Married	-0.0064 *** (0.0001)	-0.0053 *** (0.0001)	-0.0073 *** (0.0001)
Children < 18 years	-0.0046 *** (0.0001)	-0.0045 *** (0.0001)	-0.0049 *** (0.0001)
Homeowner	-0.0171 *** (0.0001)	-0.0168 *** (0.0001)	-0.0172 *** (0.0001)
Primary education	(Ref.)	(Ref.)	(Ref.)
Secondary education	0.0007 *** (0.0001)	-0.0004 *** (0.0001)	0.0021 *** (0.0002)
Lowest level tertiary educ.	0.0005 *** (0.0001)	0.0003 (0.0002)	0.0013 *** (0.0002)
Lower degree level tertiary educ.	0.0032 *** (0.0001)	0.0023 *** (0.0002)	0.0043 *** (0.0002)
Upper degree level tertiary educ.	0.0028 *** (0.0001)	0.0017 *** (0.0002)	0.0041 *** (0.0002)
Year dummies	Yes	Yes	Yes
Number of obs.	24,301,739	12,248,886	12,052,853



PALKANSAAJIEN TUTKIMUSLAITOS
LÖNTAGARNAS FORSKNING SINSTITUT
LABOUR INSTITUTE FOR ECONOMIC RESEARCH

Palkansaajien tutkimuslaitos on vuonna 1971 perustettu itsenäinen ja voittoa tavoittelematon kansantalouden asiantuntijayksikkö. Laitoksessa tehdään taloustieteellistä tutkimusta ja laaditaan suhdanne-ennusteita. Lisäksi laitoksen tutkijat toimivat ulkopuolisissa asiantuntija-tehtävissä sekä osallistuvat aktiivisesti julkiseen talouspoliittiseen keskusteluun. Palkansaajien tutkimuslaitoksen toiminnan tavoitteena on tarjota tutkimustietoa yhteiskunnallisen keskustelun sekä päätöksenteon tueksi.

Palkansaajien tutkimuslaitoksessa tehtävän tutkimustyön painopiste on tilastollisiin aineistoihin perustuvassa empiirisessä tutkimuksessa. Sen taustalla on vahva teoreettinen näkemys ja tieteellisten menetelmien asiantuntemus.

The Labour Institute for Economic Research is an independent and non-profit research organisation founded in 1971. The Institute carries out economic research, monitors economic development and publishes macroeconomic forecasts. The aim is to contribute to the economic debate and to provide information for economic policy decision making in Finland.