
REFORM MODEL

Labour Market Reforms and Collective Bargaining in France

Till Nikolka, Panu Poutvaara

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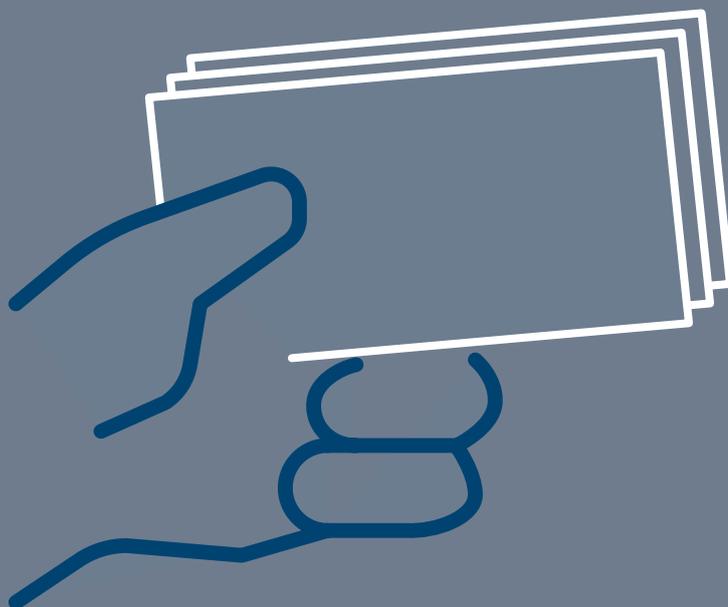
NEWS

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Minimum Wage

*Michael Christl, Monika Köppl-Turyna
and Dénes Kucsera*

Employment Effects of Minimum Wages

INTRODUCTION

The discussion on the employment effects of minimum wages has been ongoing for many decades and peaked in the 1990s, when Neumark and Wascher (1992) and Card et al. (1994) found distinct employment effects of minimum wages using the same underlying data set. Plenty of research has been conducted since then. According to Neumark and Wascher (2006), a sizeable majority of this research suggests that minimum wages have detrimental effects on employment, especially for the most vulnerable groups in the labour market. These groups are typically low-skilled or inexperienced (young) workers. With the introduction of a minimum wage in Germany in 2015, discussion of the employment effects of minimum wages was re-ignited, especially because the predicted employment losses were smaller than previously expected.

Empirical analysis to date has focused mainly on changes in the minimum wage and the implied employment elasticities, neglecting to consider that these elasticities might also depend on the actual level of the minimum wage, as well as on the size of the minimum wage changes. Manning (2016) recently stated: “Of course there is some level of the minimum wage at which employment will decline significantly. The literature should re-orient itself towards trying to find that point.” In addition, new theoretical research suggests that, in fact, the employment effects of minimum wages may indeed be non-linear. This would imply that there is a certain level of the minimum wage that maximises employment. So far, no empirical studies have tried to confirm these theoretical predictions. This is precisely the research gap that our work aims to address (Christl, Köppl-Turyna and Kucsera 2018).

In addition, the idea of the non-linearity of employment effects allows us to analyse whether the optimal minimum wage level is influenced by certain labour market characteristics, such as labour market regulations, unemployment benefits or the productivity levels of workers.

The aim of this contribution is to summarise the findings of our research. What makes our research different from that of others is that we try to take supply-side effects of minimum wages into account. In other words, we estimate whether the theoretically predicted non-linear effects of minimum wages exist. Empirical papers have assumed linear employment effects of minimum wages in a cross-country set-up. A non-linear relationship could be an explanation not only for insignificant, but also for heterogeneous results from previous studies on the employment effects of minimum wages.

LITERATURE OVERVIEW

Many recently published studies find either a negative effect or no effect at all of minimum wages on low-skilled or youth employment. Neumark and Wascher (2006) give a summary of the empirical evidence of the employment effects of minimum wages. They show that a sizeable majority of the studies surveyed give a relatively consistent (although not always statistically significant) indication of the negative employment effects of minimum wages. For a more up-to-date discussion on the minimum wage literature, Neumark (2017) summarises the ongoing debate and Neumark and Washer (2017) broadly review the most recent minimum wage studies that estimate employment effects for the US.

However, even although a number of studies analyse cross-country time-series of the employment effects of different labour market policies, comparatively few works have focused specifically on the effect of minimum wages. Like our empirical analysis, many other studies use cross-country analysis to draw conclusions as to the employment effects of minimum wages. Neumark and Wascher (2004) used a country-panel methodology with some additional data on different labour market institutions and policies that might influence employment rates of young individuals. They use panel data for 17 countries from 1975 until 2000. The results for both teenagers and youths suggest that an increase in the minimum wage has a negative employment effect.

Contrary to these findings, Sturn (2018) uses static and dynamic estimation approaches to measure the employment effects of minimum wages on low-skilled and young workers. His data set contains information from 19 OECD countries from 1997 to 2013 for low-skilled workers and from 1983 to 2013 for young workers. The results provide little evidence of negative employment effects for low-skilled or young workers.



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For Germany, several studies try to measure the causal impact of the introduction of the minimum wage in 2015. Their results are consistent with respect to marginal employment. The minimum wage led to a decrease in marginal employment (e.g., Bonin et al. 2018) compared to a situation without the introduction of the minimum wage. For employment subject to social security contributions the results are mixed. Some studies find positive effects, while others find no or negative effects. Overall, compared to total employment, those effects are low. Hence, the total employment effect is slightly negative in most of the studies (e.g., Bossler and Gerner 2016; Bossler et al. 2018). Other studies suggest that the introduction of the minimum wage has no effect on employment at all (e.g., Garloff 2017).

This brief overview of the literature demonstrates that there is mixed empirical evidence on the employment effects of minimum wages. It suggests that there are still many questions that need to be answered in the minimum wage literature.

THEORETICAL BACKGROUND

Recent theoretical research into the effect of minimum wages on employment suggests that the effect may in fact be non-linear. In this work, we make an initial attempt to test this theoretical prediction. A theoretical model introduced by Brown et al. (2014) serves as the baseline for our empirical analysis. It is a two-sided labour market flow model that implicitly models the job-offer decision of the firm and the job-acceptance decision of a worker.

The authors show theoretically that higher (minimum) wages depress the “job offer rate”, on the one hand, while higher wages increase the “job acceptance rate” on the other, since the value of work relative to unemployment increases. At a high level of minimum wage, the job offer rate reaches its upper limit, since at some point everyone will decide to work. Therefore, the

authors argue that under moderate minimum wages, the latter effect could even dominate the former. Figure 1 offers a simplified visualisation of the model.

It is exactly this possibility of a non-linear relationship that we are interested in. Keeping this theoretical approach in mind, we estimate whether the employment effects of an increase in the minimum wage may, in fact, be non-linear: lower wages could stimulate employment, whereas once the wage is set too high the effect is reversed. As a result, there is an optimal (employment-maximising) level of the minimum wage.

Additionally, this model allows us to formulate hypotheses concerning the effects of particular labour market characteristics on employment. Specifically, the model tells us how hiring costs, unemployment benefits and a worker’s productivity influence the worker’s job acceptance and the firm’s job offer decision.

Firstly, an increase in the average productivity of workers would, all other things being equal, incentivise firms to hire more workers and weaken the negative job-offer effect. Consequently, the level of the minimum wage at which the employment effect becomes negative would be higher. Secondly, an increase in hiring costs would lead to less hiring by firms, strengthening the negative job-offer effect. The optimal minimum wage level would therefore be lower. Thirdly, higher unemployment benefits lead to a lower job-acceptance rate, since people are less willing to take a job. Therefore, higher unemployment benefits should lower the employment-maximising level of the minimum wage.

To summarise the theory, we expect the minimum wage effects on employment to be non-linear. Hence, there is an optimal (employment-maximising) level of the minimum wage. In countries with high worker productivity, the model predicts this point to be on a higher minimum wage level than in countries with low productivity. In countries with strongly regulated labour markets or high unemployment benefits, the model suggests that the optimal minimum wage level will be lower.

DATA AND THE EMPIRICAL MODEL

This study looks at data from twelve EU countries over the period 1980-2011. It comprises countries with statutory minimum wages, but excludes countries like Austria or Italy that have collective bargaining systems for different economic sectors. We use two measures for the minimum wage: real annual minimum wage adjusted for purchasing parity and the Kaitz Index, which reflects the relationship between the level of the mini-

Figure 1

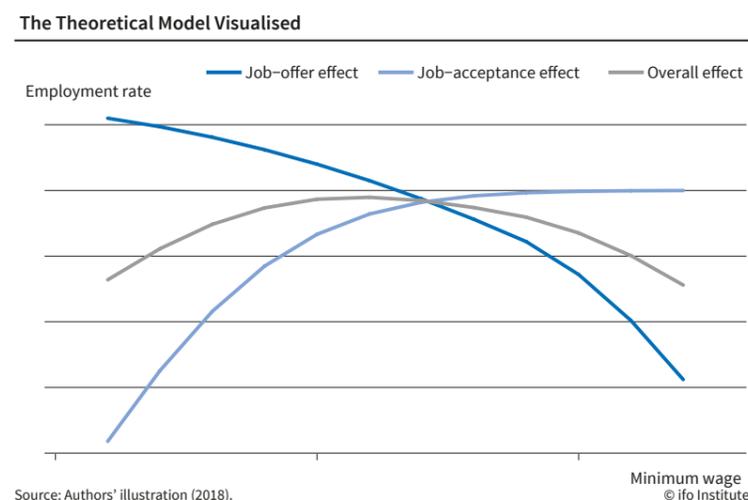
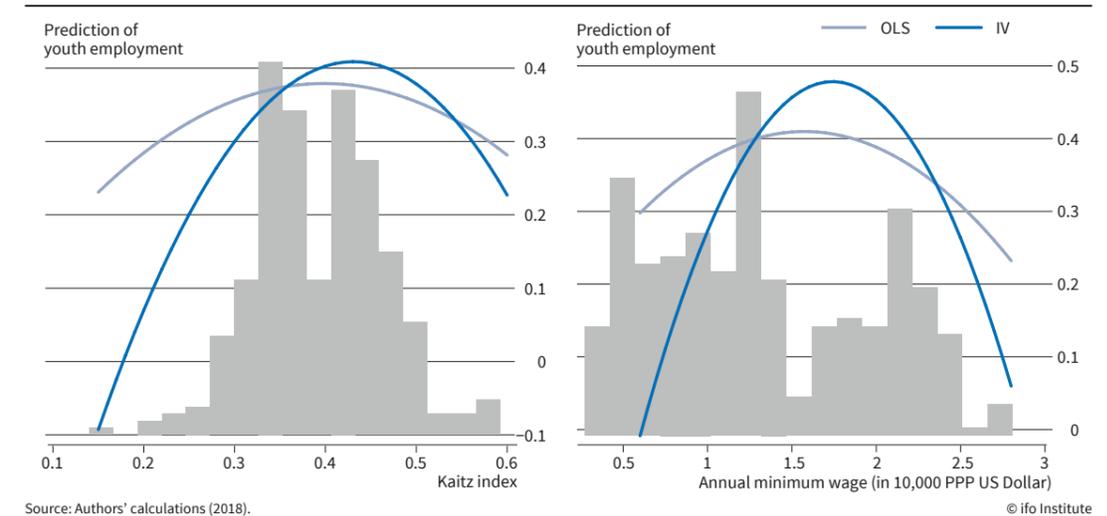


Figure 2

Marginal Effects of Minimum Wages on Predicted Employment Rates of Young Individuals
Kaitz Index (left panel) and Annual Wage (right panel)



Source: Authors’ calculations (2018).

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um and the average wage. The employment rate of the young is defined as employed people aged 15 to 24 as a percentage of the total number of people in this age group.

Additional control variables used are labour market regulation (Economic Freedom of the World, EFW), secondary school enrolment (UN), conscription (EFW), the strength of collective bargaining (WEF) and annual average wages, as well as further macroeconomic indicators (World Economic Outlook).

Our theoretical considerations predict that the relationship between the minimum wage level and employment rates of young people should have an inverted-U form. Since the effects typically occur with some delay, minimum wages are lagged. We therefore estimate several specifications, taking into account these assumptions. Moreover, as stipulated by Brown et al. (2014), the optimal level of minimum wages depends on other market characteristics. We therefore include interaction terms with the strictness of labour market regulations (EFW 5B index), average labour productivity (GDP per hour worked) and the size of unemployment benefits (gross replacement rate of unemployment benefits).

In order to deal with the endogeneity of the minimum wage, we also report instrumental variables specifications. Specifically, we instrument the minimum wage with an interaction of oil price and the share of left-wing parties in countries’ parliaments. The economic intuition behind this instrument relies on two observations: firstly, that exogenous economic shocks negatively affect employment levels, and secondly, that left-wing politicians tend to support higher minimum wages. Whenever economic conditions are good, left-wing governments will tend to support minimum wage increases more strongly than right-wing governments. On the other hand, in the case of a negative

shock, right-wing governments will be less reluctant to decrease minimum wages to counteract potentially rising unemployment levels compared to left-wing governments.

RESULTS

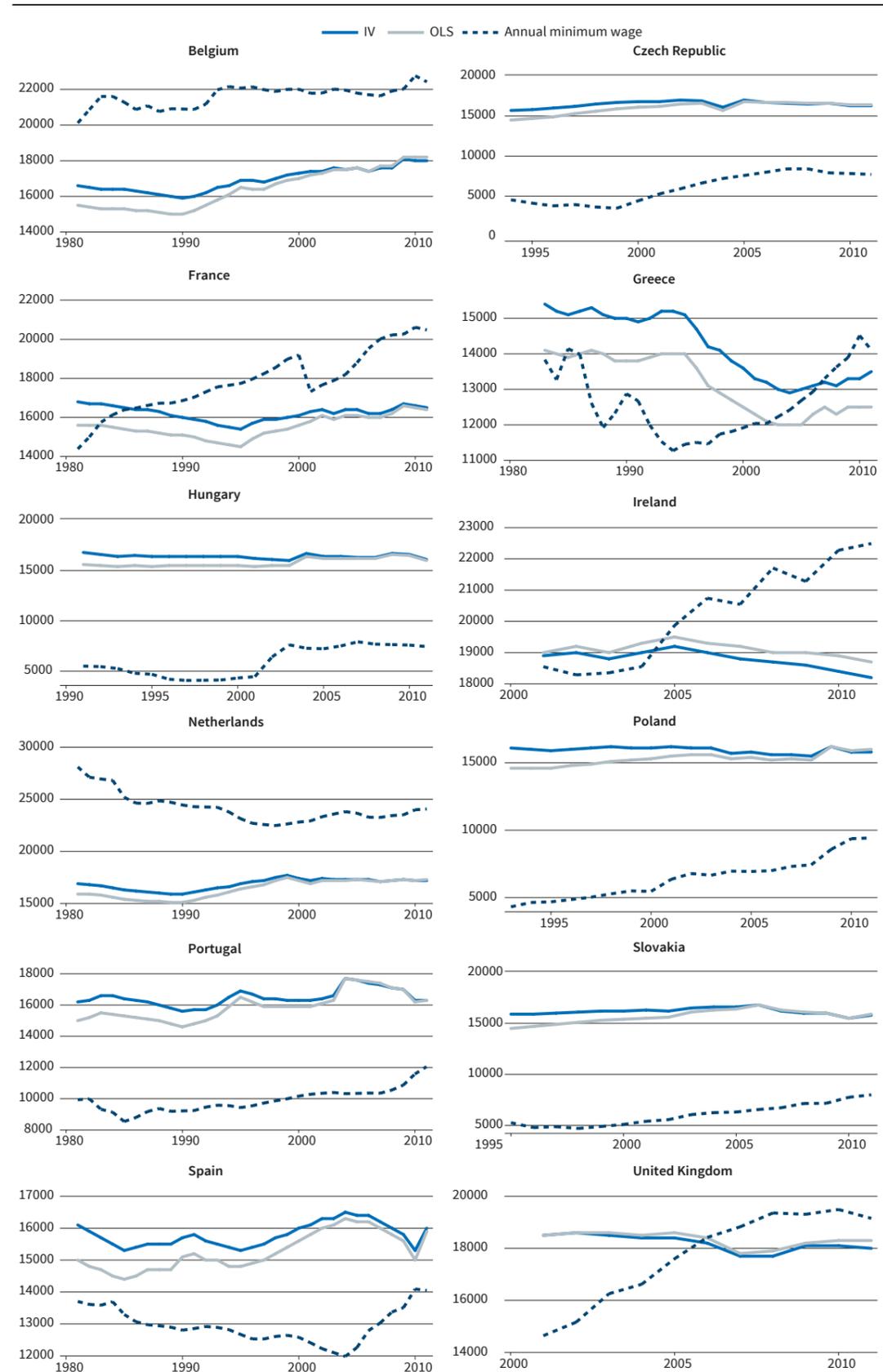
We find strong empirical evidence of a non-linear employment effect of minimum wages in our data set. Figure 2 reveals this non-linear relationship between the minimum wage and employment of young workers for both minimum wage measures. The maximum employment is achieved at a Kaitz Index of 0.39 (0.48 in the IV specification), or for annual minimum wage of 15,700 PPP Dollar (18,500 in the IV specification). These figures are averaged over all countries in the sample. The IV specification not only predicts that the maximal employment is achieved at higher minimum wage levels, but also reveals a much steeper relationship.

The estimated average elasticity of employment rates with respect to the minimum wage lies between -0.15 and -0.28, depending on the specification. These figures correspond to some previous results (see, e.g., Brown, 1999, for a survey). It is important to note, however, that previous studies estimated a linear relationship. Indeed, the average elasticity in our case should remain the same, as the average for the non-linear case equals the point elasticity for the linear estimate. However, a non-linear relationship corresponds more closely to the data and allows us to formulate more precise predictions. For instance, if we analyse only the downward-sloped part, the linear approximation would severely underestimate the negative effects above the turning point.

Next, we estimate the influence of certain labour market institutions by adding an interaction term between the levels of the minimum wage and workers’

Figure 3

Turning Points and Actual Minimum Wages of Young Workers



Source: Authors' calculations (2018).

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productivity, labour market regulations and replacement rates. We find that productivity has a significant positive impact on the optimal turning point. This indicates that the higher productivity of workers allows firms to pay higher wages without decreasing job offers. On the other hand, higher hiring costs lower the turning point of the minimum wage significantly. This is a sign that an increase in general hiring costs strengthens the negative job offer effect and therefore lowers the optimal minimum wage level. For unemployment benefits, we found no significant impact on the optimal wage level. This indicates that the replacement rate does not affect the job acceptance rate. One explanation could be that young workers are often not eligible for unemployment benefits.

COUNTRY-SPECIFIC TURNING POINTS

Since the estimated turning points (that maximise the employment of young individuals) depend on country-specific characteristics, it is possible to estimate country-specific turning points. These turning points depend significantly on labour market characteristics that change over time. Therefore, the turning-points also change over time. The results are shown in Figure 3.

We find that in six of the countries in our sample – Belgium, France, Greece, Ireland, the Netherlands and the UK – minimum wages are at present higher than both the OLS and the IV turning points, suggesting that the levels of the minimum wage in those countries are high enough to harm the employment rate of young individuals. The difference between the minimum wage and the turning point is quite small in Greece and the UK (and within the 95% confidence interval), indicating that those countries have close to the optimal value of the minimum wage.

In the Netherlands, we observe a rise in the turning point until 2000, alongside a decrease in the minimum wage. Both the IV and the OLS estimations of the turning point are nevertheless lower than the actual minimum wage in the Netherlands. This is mainly driven by the high minimum wage in the Netherlands, not by low productivity or other labour market characteristics. In Belgium, an increase in productivity, stable development of the gross replacement rate and a decrease in hiring costs have led to an increase in the turning point over the last 20 years in both the IV and OLS estimations. The actual minimum wage lies above the optimal level that maximises youth employment. In France, the turning point shows a slight upward trend since 1995, due to a slight increase in productivity alongside a slight decrease in hiring costs. The minimum wage has nevertheless increased over time. In the early 2000s, minimum wages were raised above the optimal level (IV estimate) for the first time, and still remain above that level today. In Ireland, the turning point is high – close to USD 20,000 (PPP) – due to generally high productivity levels, but there has been almost no improvement over time, while minimum wages rose steadily. Mini-

imum wages in Ireland have been above the turning points (IV and OLS estimators) since 2005 as a result.

In the UK as well as in Greece, the actual minimum wage is above both the IV and the OLS estimates (but still within the 95% confidence interval). Greece records a decrease in both the IV and the OLS turning points over time owing to rising hiring costs and poor development in productivity, especially in recent years. In the UK, productivity and hiring costs increased after 2000, while the turning point stabilised. The closeness of the minimum wage to the turning point suggests that the actual minimum wage is indeed close to its optimal value, suggesting that either an increase or a decrease in the minimum wage level results in employment losses (a slight decrease might still lead to an increase in youth employment). The case of the UK is particularly interesting, since the government sets the minimum wage in accordance with the Low Pay Commission (LPC), which is a group of experts that advises the government on such concerns. This model for setting minimum wage levels seems to result in good employment outcomes.

There seems to be room for Eastern European countries to increase minimum wages without harming the employment of young workers – or potentially even stimulating it. The same holds true for Portugal and Spain. One concern with regard to Eastern European economies is whether increases in minimum wages could harm their comparative advantage in terms of low labour costs. Although our paper uses a reduced form model, we indirectly control for this effect using the Kaitz Index. The higher participation of investment firms significantly increases average wages in these countries. As these countries still want to retain their comparative advantage of offering a cheap labour force, the development of the minimum wage follows the development of the average wage, indicating a fairly constant Kaitz Index.

CONCLUSIONS

Our results contribute to the discussion of the effects of minimum wages on employment, which previous studies reported as having a detrimental effect, particularly for the young workforce. The presented results suggest that, at low levels, minimum wages might in fact have a positive effect, as they stimulate job acceptance rates. On the other hand, high minimum wages reduce demand for labour and destroy employment possibilities. Moreover, we show that the relationship between the minimum wage and employment is conditional to other labour market characteristics, especially to the levels of workers' productivity and labour market regulations. The detrimental relation between high minimum wages and employment rates is particularly strong if accompanied by low productivity and/or by comparatively strict labour market regulations.

We found similar empirical evidence in collective bargaining systems. In a study on the Austrian collective

bargaining system (Christl, Köppl-Turyna and Kucsera 2017), we also found non-linear employment effects of minimum wages in Austrian economic sectors, as well as the dependency of the optimal minimum wage level on productivity. In general, it seems that decentralised collective bargaining seems to perform better from an employment maximising perspective. In Austria, collective minimum wages are – in five out of seven – sectors above, but generally quite close to, the optimal (employment-maximising) level.

In addition, our results suggest the need to exercise caution while considering some previous estimates of the elasticity of employment with respect to minimum wages. Barely negative or insignificant results can arise as a result of averaging the estimates over two groups of countries: those with comparatively low minimum wages, for which we expect an increase in the minimum wage to generate positive employment effects, and those with high minimum wages. Since the shape of the relationship differs substantially between these two groups, a simple averaged elasticity cannot fully capture them.

REFERENCES

- Bonin, H. et al. (2018), *Auswirkungen des gesetzlichen Mindestlohns auf Beschäftigung, Arbeitszeit und Arbeitslosigkeit*, Studie im Auftrag der Mindestlohnkommission, Forschungsinstitut zur Zukunft der Arbeit, Evaluation Office Caliendo, Deutsches Institut für Wirtschaftsforschung, Bonn.
- Bossler, M., N. Gürtzgen, B. Lochner, U. Betzl, L. Feist, and J. Wegmann (2018), *Auswirkungen des gesetzlichen Mindestlohns auf Betriebe und Unternehmen*, Studie im Auftrag der Mindestlohnkommission, Institut für Arbeitsmarkt- und Berufsforschung, Nuremberg.
- Bossler, M. and H.-D. Gerner (2016), *Employment effects of the new German minimum wage. Evidence from establishment-level micro data*, IAB-Discussion Paper 10/2016, Institut für Arbeitsmarkt- und Berufsforschung, Nuremberg.
- Brown, A. J., C. Merkl, and D. J. Snower (2014), The minimum wage from a two-sided perspective, *Economics Letters*, 124 (3), 389-391.
- Brown, C. (1999), "Minimum Wages, Employment, and the Distribution of Income", *Handbook of Labor Economics*, vol. 3, 2101-2163.
- Card, D., L. F. Katz, and A. B. Krueger (1994), Comment on David Neumark and William Wascher, "Employment effects of minimum and sub-minimum wages: Panel data on state minimum wage laws", *ILR Review*, 47 (3), 487-497.
- Christl, M., M. Köppl-Turyna, and D. Kucsera (2017), Effects of collective minimum wages on youth employment in Austria, *Empirica*, 44 (4), 781-805.
- Christl, M., M. Köppl-Turyna and D. Kucsera (2018), Revisiting the employment effects of minimum wages in Europe, *German Economic Review*, 19 (4), 426-465.
- Garloff, A. (2017), *Side effects of the introduction of the German minimum wage on employment and unemployment: Evidence from regional data – Update*, Diskussionspapier 4, Bundesministerium für Wirtschaft und Energie, Berlin.
- Neumark, D. and W. Wascher (1992), Employment effects of minimum and subminimum wages: panel data on state minimum wage laws, *ILR Review*, 46 (1), 55-81.
- Neumark, D. and W. Wascher (2004), Minimum wages, labor market institutions, and youth employment: a cross-national analysis. *ILR Review*, 57 (2), 223-248.
- Neumark, D. and W. Wascher (2006), Minimum Wage and Employment: A Review of Evidence from the New Minimum Wage Research. *NBER Working Paper Series*, Working Paper no. 12663.
- Neumark, D., J. I. Salas and W. Wascher (2014), Revisiting the minimum wage—Employment debate: Throwing out the baby with the bathwater?, *ILR Review*, 67 (3), 608-648.
- Neumark, D. and W. L. Wascher (2017), Reply to credible research designs for minimum wage studies, *Industrial and Labor Relations Review*, 70 (3), 593-609.
- Neumark, D. (2017), The employment effects of minimum wages: Some questions we need to answer, No. w23584, *National Bureau of Economic Research*, 2017.
- Sturn, S. (2018), Do minimum wages lead to job losses? Evidence from OECD countries on low-skilled and youth employment. *Industrial and Labor Relations Review*, 71 (3), 647-675.

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The Parameters of the French Minimum Hourly Wage

Interest in the issue of national minimum wages has been growing since the late 1990s. Growing wage inequality and the limits of redistribution have pushed governments to implement or to raise minimum wages. The United Kingdom and Ireland introduced a national minimum wage at the end of the last century. In 2015 Germany made history by also introducing a federal minimum wage.

By contrast, the French minimum hourly wage (SMIC - *Salaire Minimum Interprofessionnel de Croissance*) looks ancient: it was first introduced as the SMIG “Inter-professional guaranteed minimum wage” in 1950¹. It is currently amongst the highest minimum wages across OECD countries at 9.88 euros.

Gautié and Laroche (2018) provide an up-to-date review of the evaluations of the SMIC’s impact on employment. This note takes another –more modest– perspective. It aims to deliver a presentation of the multiple original parameters of the French minimum wage, which result from nearly 70 years of changing regulations. Their knowledge may stimulate the creativity of lawmakers in France’s economic partners, or prevent them from implementing some exemptions.

The first section gives the general definition of the SMIC and how it is set and enforced. The second section details the coverage of the minimum wage, while the third examines the definitions of “paid periods”. Section four focuses on the very complex issue of defining “wages”. All in all, the normal nominal rate of the SMIC provides a very rough picture of actual minimal compensations in France; which are below this fictional threshold for many French salaried workers.

HOW IS THE MINIMUM WAGE CURRENTLY SET AND ENFORCED?

The French SMIC is a gross wage reference for one hour of work, regardless of the applicable payment scheme in question (fixed wage, sales commission, piece rates, etc.) Even if the law does not cover civil servants, the administrative jurisprudence has extended the application of the SMIC to public workers.

¹ See Askenazy (2015) for a long-run perspective on labour regulations in France.

The national minimum wage is not the sole reference for minimal pay. In France, most private workers are covered by collective agreements, which may include floor wages that are differentiated according to occupation, seniority, education and, more rarely, by location. However, the minimum wage is still a key reference for negotiating these wage scales, especially at the bottom of the distribution range.

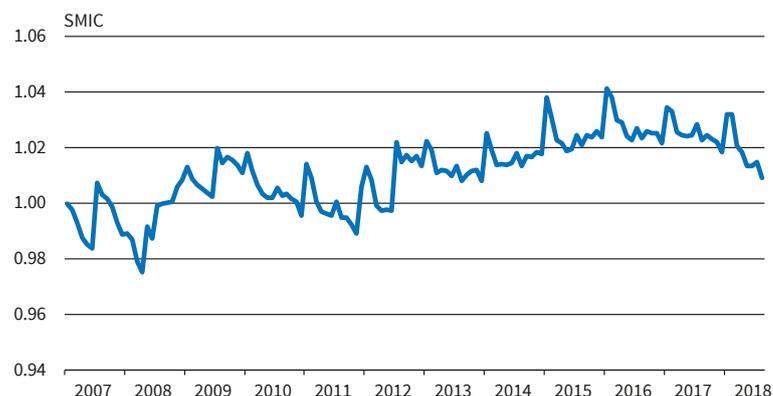
Over the past few years the French minimum wage has basically been increased according to an automatic formula. Each year on January 1st, its increase equals the evolution in the INSEE’s consumer price index² (excluding tobacco) for households in the first quintile of the income distribution, increased by half the gain of purchasing power of the average hourly salary of blue-collar workers and employees. However, the revalorisation of the SMIC occurs in-year when this consumer price index reaches a level corresponding to a price increase of at least 2% compared to the SMIC increase that immediately preceded it. In theory, the French government may decide upon an additional discretionary hike at any moment. This tool, however, has been used only once in the past decade after the election of François Hollande in 2012. A steep hike of the SMIC is a key demand of the *Gilets jaunes*. Macron’s government has refused any hike but increased the public income support for low-wage workers.

As of 2009 the government has been advised by a group of experts, which has five sitting members. Unlike advisory bodies in other countries (UK, Germany, etc.), it has no budget to fund research and its members have been, and still are, all affiliated with administrations or academic institutions with no significant experience as private-sector employees or

² The INSEE’s index differs from the European Harmonised Index of Consumer Prices. For example, when a drug is no longer reimbursed by the Social Security, the HICP increases since the price paid by the patient out of pocket is larger. In this case, the INSEE’s index is not affected because it is based on the market price of the drug, which remains unchanged. Consequently, the annual HICP inflation rate over the past decade has been about 0.1% higher than the index used to revalorise the French Minimum Wage.

Figure 1

“Normal” Rates of French Hourly Minimum Wage, Jan. 2007 — Aug. 2018
Deflated by harmonised indices of consumer prices (HICP), base 1 = October 2008



Source: Author’s calculations based on Eurostat, HICP (2018).

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employers. The current President of the group is Gilbert Cette, Deputy-General Director of studies and international relations at the Bank of France, and associated professor at the Aix-Marseille University. The group reports have systematically recommended avoiding any increase above the automatic indexation.

In December 2018, the “normal” rate of the gross hourly minimum wage was 9.88 euros in France. It is significantly higher than its German counterpart of 8.84 euros. The automatic indexation of the French national minimum wage preserves its purchasing power whatever the business cycle (Figure 1). This stagnation contrasts with historical periods marked by a decline in the SMIG in the 1950s and 1960s, steep hikes in the 1970’s and 1980’s and a moderate progression in the 1990s.

Labour and social security inspectors are in charge of enforcing the law. In France, the maximum fine for infringements may reach 1,500 euros for each employee concerned. In 2015, according to their reports to the ILO, labour inspectors transmitted just 173 *procès-verbaux* to the justice for violations of the SMIC. A worker who wants to protest can contact the labour inspection authorities confidentially, or lodge a complaint directly with an Employment Tribunal (*Le Conseil de Prud’Hommes*). French is the only permitted language for these actions, which is a real barrier for foreign workers who are most likely to be affected by violations of the law. In that perspective, when present, the unions play a key role for the effectiveness of the minimum wage in France.

Compliance with the minimum wage regulation is monitored by verifying that the gross wage divided by the number of hours worked during the reference pay period (a week, one month, etc.) is above the gross minimum hourly wage. As we shall see in the following sections, the definitions of the numerator, as well as the actual coverage, are extremely heterogeneous. They are thus crucial in assessing how attractive the SMIC really is.

LARGE COVERAGE BUT EXEMPTIONS AND REDUCED RATES

Contrary to the claims of many articles or reports, the French national minimum wage is not universal. It suffers from some exemptions and reduced rates.

Exemptions

By definition, self-employed workers are not covered by the minimum wage. Disputes frequently arise when there is doubt as to whether a worker is self-employed or an employee of a firm. There is no reliable statistic to measure the incidence of fake self-employment. However, by blurring the frontier between independent work and salaried status, the development of the gig economy is magnifying this phenomenon. Some disputes also emerge over interns who are generally not covered by the minimum wage.

In addition, France has introduced a variety of specific exemptions, concerning roughly 1% of the FTE dependant workforce in France. Two main categories of employees are not covered by the SMIC: sales representatives and activity organisers in day or holiday camps.

According to the French Labour Force Survey, there are about 100,000 sales representatives (VRP, *voyageur représentant placier*, about 0.5% of the private workforce). The SMIC cannot be applied to them because their number of worked hours is considered unmeasurable. It is worth noting that for sales representatives who work exclusively for one employer, a collective agreement ensures a minimal pay per quarter (regardless of their actual working time). A second exemption concerns many students. Organisers and directors of activities for children can be hired under a *Contrat d’Engagement Éducatif* (CEE) if they work occasionally (i.e., less than 80 days a year). There is no hourly wage reference. They can be paid as little as 2.2 hourly SMIC a day, whatever their actual working time. To my knowledge, there are no recent statistics on the number of related workers. However, based on the number of days spent by children in holiday camps with housing (12 million in 2016-17) and statistics from the late 2000s (Nutte 2012), we can estimate that 200,000 workers were hired under the CEE status last year.

Finally, workers with very specific statuses are not covered by minimum wage regulation. Among the principal examples are the members of a religious community and prisoners (one out of four works i.e., about 15,000).

Reduced Rates

The youth rate is limited to teenagers. A worker aged 17 with less than six months of working experience can be paid at 90% of the normal rate; while for younger workers the reduction can be up to 20% at most.

As in numerous countries, reduced rates also apply for apprentices or workers in vocational training. About 420,000 young workers (2% of the private workforce) were apprentices in 2017, including 7% of 16-25 year-olds. The rates depend on the age of the apprentice and her year in the programme. As in the UK, for example, reduced rates are particularly drastic for apprentices in their first year (Table 1).

Childminders also face reduced rates. Thanks to the high participation rate of women and France’s fairly

Table 1
Rounded Reduced Rates as % of the Normal Minimum Wage (SMIC)

for Apprentices, according to Age and Year in France, 2018			
	Under 18	18-20	21 or more
Year 1	25	41	53
Year 2	37	49	61
Year 3	53	65	78

Source: Author’s calculations (2018).

high birth rates, over 300,000 childminders (about 1.5% of the private workforce) are operating in France. They are directly employed by families. For each child, a family has to pay at least 0,281 hourly SMIC. So a childminder is only sure to earn the normal minimum wage if s/he cares for at least four children on a full-time basis.

Finally, a reduced rate is still in force for all workers in the overseas department of Mayotte (the latest to join France). In 2018, the gross hourly SMIC in Mayotte is 7.46 euros compared to 9.88 euros in the rest of France.

WORKED HOURS AND PAID ANNUAL LEAVE OR HOLIDAYS

Since workers are generally paid on a monthly basis, the definition of paid working hours is crucial for the implementation of the hourly SMIC.

European labour regulations, especially concerning workplace safety, and the jurisprudence of the European courts have progressively homogenised the definitions of salaried/time/paid/output hours across Europe. Basically, “hours worked” to be paid include hours spent at work, required for work or on standby near the workplace (but not on rest breaks), hours when kept at the workplace even though unable to work, hours travelling on business during normal working time, training (or travelling to training) during normal working time, as well as hours awake and working during usual sleeping time.

In France, workers are entitled to paid annual leave: a minimum of five weeks (25 days) per year. For short-term contracts, an employer can refuse to pay days off, but in this case he must pay a 10% holiday

bonus at the end of the contract. Moreover, the 1st of May must be paid if it falls on a “normal” working day, and up to nine additional public holidays³ (such as the 14th of July, etc.) are also paid to employees who have at least a three-month tenure (when the public holiday occurs a day of the week regularly worked by the employee). For a lucky worker (all public holidays occur on days regularly worked), the actual rate of the hourly minimum wage, including paid annual leave and holidays, is thus increased by up to 15%.

TIPS, GRATUITIES, BENEFITS IN KIND: THE EXTENDED DEFINITION OF MINIMUM WAGE

While the definition of worked hours is quite homogenous, the calculus of the wage used for complying with minimum wage regulations is dramatically different across European countries. In fact, workers may receive payment in a variety of forms from their employers, as well as directly from customers. In addition, they may be given significant benefits in kind. Whether or not such payments from various sources are deducted massively affects the true minimum wage for numerous occupations. Table 2 shows what types of benefits can or cannot be counted as part of the minimum wage in France, and of the minimum (or living wage) in the UK. This table is not exhaustive, but it does cover the main elements of compensation.

A first striking difference is the treatment of tips given by clients. Basically, a cloakroom attendant receives the minimum wage plus tips in the United Kingdom. In France, the job contract can stipulate that

³ In Alsace and Moselle, some German rules still apply. So two additional paid days are not worked: Good Friday and the 26th of December.

Table 2

Several Types of Compensation

Included (or not) as Part of the Minimum Wage Pay in Compliance with National Regulations (France vs UK)

	France	United Kingdom
Basic pay	Yes	Yes
Sales commissions	Yes	Yes
Tips and gratuities	Yes	No
Performance-related pay	Yes	Yes
Annual bonuses	Yes	Yes
Specific schemes	Participation, profit-sharing: no	Rewards under staff suggestion schemes: no
Any premium element for working at special times	No	No
Overtime premium	No	No
Allowances on top of basic pay: for working unsocial hours, in a particular area, in dangerous conditions, being ‘on call’, performing special duties	No	No
Benefits in kind:		
Accommodations	Yes, up offset rates	Yes, up offset rates
Meals	Yes, up offset rates	No
Car or fuel for personal use	Yes	No
Others (mobile phone...)	In general, yes	No

Source: Articles 3251-1 to L. 3252-13 and R. 3252-1 to R. 3252-49 of the Labour Code (<http://www.legifrance.gouv.fr/initRechCodeArticle.do>) [France] and <http://www.nidirect.gov.uk/index/information-and-services/employment/employment-terms-and-conditions.htm> [UK] (2018).

the employee is only paid in the cash tips s/he receives; in case of disagreement with the employer, the worker has to prove that the amount of tips collected did not reach the level of the minimum wage.

The inclusion of benefits in kind implies that the high nominal rate of the SMIC is eroded by a large variety of offsets depending on the occupation, and even on the location or on the type of compensation, generally resulting from agreements between employers and unions that are subsequently made mandatory by the government or local prefectures.

The objective is to compress wages, and thus actual labour costs, in labour-intensive activities that are central to the French economy, including tourism and agriculture. The result is an extremely complex (and sometimes exotic) system. For example, in September 2018, an employer in the hotel-restaurant branch can deduct 3.59 euros for each meal from the wages of his/her staff, whatever the number of worked hours and the actual cost of the meal. Each day, and regardless of the working time, an employer of a grape-cutter in the Gers *département* can deduct from cash gross wage, 1.01 euros for a breakfast, 5.18 EUR for a lunch or a dinner and 1.52 euros for housing; however, if the employer does not provide two litres (sic) of wine a day for drinking, s/he has to pay 0.61 euros to the grape-cutter.

This complexity creates confusion in employee and employer declarations in the labour force or cost surveys, and even in social security records. Some employers or workers declare tips and benefits in kind, while some do not at all or only partially. The treatment of this confusion by French administrations and researchers is irritating. Most of the statistics on labour costs and earnings and evaluations of the impact of the minimum wage are purged of “absurd” observations⁴.

⁴ For example, hourly wages below 0.8 or 1x SMIC cut-off points; observations with missing information on hours.

We thus fail to take into account as many as hundreds of thousands very low-paid employees in France, who are mostly youths.

Figure 2 shows the distribution of net wages of FTE workers in the private sector and public firms (excluding apprentices, and households’ and agricultural employees), according to exploitation of employers’ social security records by INSEE. The French statistical institute refuses to publish its estimations for the 4-first centiles, arguing that it is unable to disentangle between consequences of the “quality of the data” and workers actually paid under the minimum wage.

Despite its limitations, this figure suggests that the first-half of the distribution of wages is linear with no apparent change in the slope just above the SMIC threshold. Even if we trust that wages should reflect individual productivity, this observation is not all that surprising: the exemptions/reductions, and the inclusion in the wage definition of benefits in kind or tips create a continuum of final employer costs for minimum wage earners.

Social contributions schemes also participate to this continuum. In September 2018, all private employers benefit social contribution cuts plus a tax credit equal to roughly 35% of gross-wage at the minimum wage (Gautié et al 2018); they drop to 6% at 1.6 SMIC and are null above 2.5 SMIC. There are many other schemes for revitalizing zones and tipped workers, for instance. The employer final costs can even be lower than the gross wage⁵.

This linearity seems inconsistent with the common claim that around 10% of French private workers are paid “at” the minimum wage. Actually, these figures translate another series: the proportion of workers in firms in the business sector with ten or more employees paid on the “basis of the minimum wage” (see Sanchez (2016) for a presentation). These workers are those directly affected by the latest increase in the

SMIC. Their proportion is significant from between 8 and 16%, depending on the magnitude of the last increase in the national minimum wage. Among these employees, there are both workers paid below or above the normal SMIC⁶. For example, a vendor paid a fixed share of the SMIC, plus a commission on each sale, can earn much more than the SMIC, but she is considered as being “paid on the basis of the SMIC”.

⁵ Transfers or tax credits can massively alleviate their burden for households: for example, in September 2018, the final cost of a baby sitter (employed directly by the family or via a firm) working 25 hours a month for a family with two active parents and a child younger than three, can be less than 80 euros.

⁶ In 2013, about 20% earned more than 1.2x hourly SMIC (Sanchez 2016).

This discussion confirms the nature of the French minimum wage: a key reference for the collective bargaining and the labour contracts of a large proportion of the workforce, and at the same time a threshold eroded by a variety of exemptions and reductions and an extended definition of “wages”. This nature rationalises the demand of the *Gilets jaunes*: a 8% hike of the SMIC.

REFERENCES

Askenazy, Ph. (2015), *The Blind Decades. Employment and Growth in France*, University of California Press, Oakland.

Gautié, J. and P. Laroche (2018), “Minimum Wage and the Labor Market: What Can We Learn from the French Experience?”, *DocWeb Cepremap* no. 18.04.

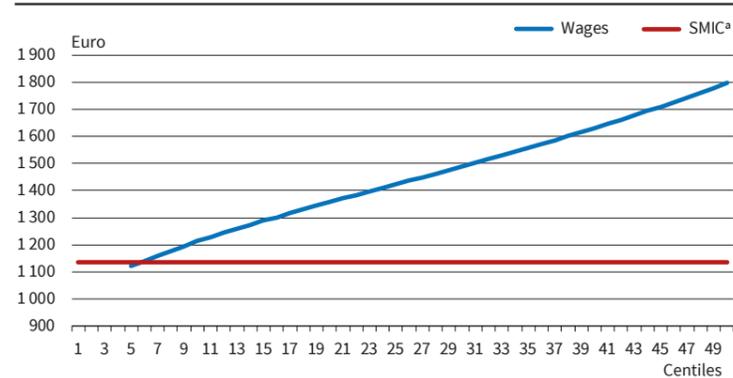
Kampelmann, S., A. Garnero and Fr. Rycx (2013), *Minimum wages in Europe: does the diversity of systems lead to a diversity of outcomes?* ETUI, Brussels.

Nuttes, A. (2012), *Rapport du groupe de travail sur le contrat d’engagement éducatif*, report to the French ministers of Labour and Education.

Sanchez, R. (2016), “Les emplois du privé rémunérés sur la base du Smic”, *DARES Analyse* no. 14.

Figure 2

Centile Distribution of Monthly Net Wages of FTE Workers, 2015
Centiles 1-50 for the private sector and public firms



Note: Net wages according to employers’ social declarations. Excluding apprentices, and households’ and agricultural employees

^a The red line is the net “normal” French statutory minimum wage for a 35-hour full time worker (Salaire minimum interprofessionnel de croissance [SMIC]).

Source: INSEE (2017).

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Mario Bossler and Joachim Möller The Effects of the Compulsory Minimum Wage in Germany



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The German Federal Government introduced a countrywide statutory minimum wage of 8.50 euros on 1 January 2015. Major exemptions were made for the long-term unemployed and for young workers below the age of 18. Moreover, for a transitional period, a few branches were allowed to pay below the minimum wage if a corresponding tariff wage had been negotiated between the unions and employer associations. The newly-implemented Minimum Wage Commission was mandated to recommend subsequent changes, resulting in a rise to 8.84 euros in 2017. For 2019, an increase to 9.19 euros has already been decided.

Before 1 January 2015, a couple of industries had already introduced a sectoral minimum wage. The forerunner was the construction sector, which implemented a binding wage floor in 1997. Using the legal framework of the Workers Posting Law of 1996, the regulations in the construction sector were especially aimed at preventing a downward spiral through massive underbidding by East European firms and workers.

To investigate the impact of the minimum wage on wages, employment and other outcome variables, the German Ministry of Labour commissioned a series of evaluation studies. These studies typically found significant effects on the wages of low-paid workers and minimal or no job losses (for an overview, see Möller 2012). A significant disemployment effect only occurred in a few sectors or professions where extraordinary high minimum wages were implemented. This was the case in the roofing sector in eastern Germany, for example, where the minimum wage exceeded the initial median wage (Aretz et al. 2013).

Despite highly favourable results regarding the effect of minimum wages in several industries, the implementation of the general statutory minimum wage was heavily debated ahead of its introduction. While support in the general public debate was quite large, a substantial number of economists delivered sharp warnings concerning potential employment losses. Calculations based on a neoclassical approach predicting an employment loss of 900,000 jobs seemingly supported such a pessimistic view (Knabe et al. 2014). It is therefore very important to analyse the actual consequences.

An initial observation is that the very positive development in the German labour market after the completion of labour market reforms in 2005 continued

after the introduction of the general statutory minimum wage. Employment due to social security contributions increased from 30.4 million in June 2014 to 32.5 million in June 2017. Hence, the compulsory wage floor was evidently not a major obstacle to another significant increase in regular employment. However, recognising the absence of a dip in the overall employment trend around the implementation period does not replace a closer investigation.

With the data that are now available, a growing number of empirical ex-post evaluations studies are comparing ex-ante projections with ex-post realisations. Typically, these studies use a difference-in-difference (DiD) approach. In addition to the already existing datasets like the German Socio-Economic Panel (GSOEP), the IAB Establishment Survey, the Integrated Employment Biographies (IEB), the Employment Register of the Federal Labor Agency and the Structure of Earnings Survey 2014, new data sources have also been created. One example is the Labour Market Mirror (LMM) published by the IAB. It was first published in January 2016 (Berge et al. 2016d) and has since been updated every six months (Berge et al. 2016e, 2017a, 2017b). The data feature transitions between different labour market states (regular social security jobs, minor employment as the so-called mini-jobs and unemployment). The IAB Linked Personnel Panel (LPP) is also suitable for evaluation purposes.

RESULTS OF EVALUATION STUDIES: WAGE EFFECTS

Based on the Structure of Earnings Survey, Bruttel et al. (2018) present the first descriptive evidence on the wage effects of the compulsory wage floor. The authors show that in 2015, wages in the 20 most affected industries increased by 7.1% compared to 2.5% over the aggregate.

Bossler and Gerner (2016) conduct a DiD analysis using the firm-level data of the IAB Establishment Survey and identify a treatment effect on earnings in the lower tail of the wage distribution of approximately 6%.

Using a DiD approach with LPP data, Bossler and Broszeit (2017) find an average effect on the hourly wages of the individuals surveyed of approximately 12%. This study also shows a significant increase in the pay satisfaction of the workers surveyed. By contrast, the authors find no statistically significant effects on a work engagement variable that serves as a proxy for workers' productivity.

Using the GSOEP, Caliendo et al. (2017) observe a positive wage effect in the lower tail of the hourly wage distribution, and a negative one on contracted working hours. As a result, the effects on monthly earnings turn out to be statistically insignificant. In line with such a finding of relatively weak effects on monthly earnings, Bruckmeier and Wiemers (2015) observe only a small reduction in the number of working poor, i.e., employees receiving social benefits on top of monthly wages.

Based on the register data of the Federal Employment Agency, the authors find that the number of employees who receive such benefits decreased by only 43,000 out of approximately 1 million.

By contrast, a very recent study again finds strong wage effects. Ahlfeldt et al. (2018) combine the IEB earnings data with imputed working hours from the labour force survey of the Statistical Office. The authors explore the regional variation in the bite of the minimum wage and uses a DiD approach. According to their findings, hourly wages at the 10th percentile increase by below one euro in western Germany and by 1.25 euros in eastern Germany, where the general wage level is lower. Moreover, their results show that a 1 percentage point higher regional bite led to 0.5% higher growth in hourly wages at the 10th percentile, whereas there were no economically significant effects at the median or the 90th percentile.

RESULTS OF EVALUATION STUDIES: EMPLOYMENT EFFECTS

The LMM data are suitable for studying the effects of the minimum wage on the dynamics of the employment structure (Berge et al. 2018). Berge and Weber (2017) compare the changes in the months just before and after the introduction of the minimum wage (December 2014 vs January 2015) with the changes over the same time window in previous years. The intertemporal comparison shows no substantial changes in the total number of newly-created jobs that are eligible for social contributions. However, there is a strong indication of a major change in the structure of employment, i.e., a sharp decline in the number of mini-jobs. The excess termination of mini-jobs in the treatment period amounted to 145,100. However, only 88,800 of these individuals left their employer, whereas 56,400 jobs were upgraded to regular social security jobs (mostly part-time). Only a small fraction of those who left their employer directly moved to another firm or became unemployed. Among these individuals, very young and rather old persons were overrepresented. One can assume that more than a few of these persons left the market.

Bruttel et al. (2018) summarise the results of the first report of the German Minimum Wage Commission. Herein, the authors exploit the variation in the minimum wage exposure in different sectors of the economy in a more descriptive way. For instance, they compare the employment trends of predefined minimum wage sectors such as restaurants or taxi services with the employment development in the total economy. As a result, the disemployment effects appear to be weak or nonexistent. Some of the industries with a high bite of the minimum wage even experienced a remarkable employment increase after 2015.

Bossler and Gerner (2016) were the first to analyse the employment effects of the German statutory minimum wage based on a genuine difference-in-differ-

ences approach. The analysis exploits the firm-level variation in the expected bite of the minimum wage measured by the IAB-Establishment Panel data of 2014, i.e., in the pre-treatment period. Comparing the firms' employment levels before and after the minimum wage implementation, the authors find an employment reduction of approximately 1.7% in the group of affected firms. Because small firms are clearly overrepresented, the estimated overall employment loss lies in the range of only 45,000 and 68,000 jobs. A reduction in hires, rather than increased separations, appears to largely drive the effect. When assessing the results, one should stress that the data does not allow for the distinction between mini-jobs and regular part-time or full-time jobs. Moreover, the authors show that the disemployment effect is mostly driven by (i) plants in eastern Germany and (ii) plants that already faced high product market competition before the minimum wage was introduced.

Garloff (2017), Schmitz (2017), Caliendo et al. (2018), and Bonin et al. (2018) all estimate the employment effects using a DiD approach and exploit the regional variation in the bite of the minimum wage to identify the treatment effects. Using register data from the Federal Employment Agency, Garloff (2017) and Schmitz (2017) both define the treatment variable as the share of full-time employees with a monthly wage below 1,400 euros among all full-time employees. By contrast, Caliendo et al. (2018) and Bonin et al. (2018) calculate the bite from the Structure of Earnings Survey 2014. Whereas Caliendo et al. (2018) use the fraction of employees paid below 8.50 euros in the pre-treatment year, Bonin et al. (2018) take the average wage gap between the minimum wage and hourly wages of 2014.

Garloff (2017) and Schmitz (2017) take the growth rate of employment as the outcome variable, whereas Bonin et al. (2018) and Caliendo et al. (2018) estimate the effects on the employment levels. Garloff (2017) finds a reduction in the fraction of affected workers in the 2015 employment growth rate of between 0.1 and 1.1 percentage points. The effect is even positive for the growth rate of regular social security employment, but negative for mini-jobs. Similarly, the effects presented in Schmitz (2017) show a negligible effect on the growth rate of social security employment, but a statistically significant negative effect on the growth rate of mini-jobs (approximately -1 percentage point). Bonin et al. (2018) find an effect on the affected region's employment level in the range of -0.5 and -0.8%, whereas Caliendo et al. (2018) present an employment effect for the affected fraction of social security employment ranging from between 0 and -1.7%.

Ahlfeldt et al. (2018) also use the variance in the regional bite of the statutory minimum wage and find that despite a significant wage effect, there was neither a reduction in employment nor an increase in unemployment in the more affected regions. In contrast, in 2016, they find a reduction in the unemployment rate

and an increase in the number of jobs caused by the treatment, although both effects are rather small.

What can we learn from the various studies exploiting the regional variation in the bite of the minimum wage to identify the employment effects of the minimum wage? The picture is somewhat mixed because even indications of the effects vary. However, one can conclude that the effects are weak in all events. Since all impacts are estimated from DiD specifications, they indicate employment changes for the treatment group compared to the control group. Hence, the effects are in relation to the number of treated employees. If existent, the disemployment effects are all in the ballpark of a 1% change. The number of affected employees was in the range of 4 and 5 million employees before the introduction of the compulsory minimum wage floor. Hence, a disemployment effect of 1% amounts to approximately 40,000 to 50,000 jobs, which is less than 0.2% of all jobs in Germany.

WORKING TIME EFFECTS

A possible adjustment path for employers after the introduction of the statutory minimum wage may be the reduction in working hours. The hourly wage could be increased to obey the minimum wage regulation while not adjusting monthly salaries.

While the empirical evidence concerning adjustments in working hours is comparably scarce, some indicative evidence suggests that working times may have declined. Wanger and Weber (2016) show a reduction in working hours among mini-jobbers by exploiting data from the German labour force survey. However, this reduction may also be explained by the changed composition of mini-jobbers, since some of them have been upgraded to regular social security employment (Berge and Weber 2017). Another indication of a working time reduction is provided in the establishment data. According to the subjective survey responses of employers, working time reductions are much more prominent than other adjustment measures (Bellmann et al. 2016). In addition, the DiD analyses by Bossler and Gerner (2016) show that the average contracted weekly working time decreased by 0.2 hours among the establishments surveyed in 2015. Moreover, estimates based on the German Socio-Economic Panel by Caliendo et al. (2017) also yield a reduction in working times.

FURTHER RESULTS

Since the minimum wage introduction only exerted relatively small employment effects, a crucial question remains as to where minimum wage induced labour costs have materialised. While there is no convincing evidence concerning firm profits presented in the existing literature, price adjustments appear to be a plausible adjustment channel. Descriptive analyses based on the IAB-Establishment Panel and the IAB-QUEST-Survey indicate that price increases are very frequent

among the self-reported adjustment measures of employers (Bellmann et al. 2016; Bossler und Jaenichen 2017). This channel is also corroborated in a DiD analysis by Link (2018), who shows that scheduled price increases became much more frequent among treated plants during the time of the minimum wage introduction. Since Bossler et al. (2018) do not detect any effects on the business volume of treated plants in Germany, the presence of a price increase suggests a low product price elasticity, which in turn indicates some sort of market power.

Other empirical results concern the exemption clauses of the new German minimum wage. The new legislation allows wages below the minimum wage for individuals below 18 years of age, apprentices, compulsory internships that are required in educational programmes, voluntary internships if the contract duration does not exceed 3 months, and for long-term unemployed people in the first 6 months of their reemployment.

The exemption clause for the long-term unemployed people was evaluated by the IAB (Berge et al. 2016). The empirical design exploits the variation in the definition of long-term unemployed, where the sharp threshold is one year of unemployment, which is when unemployed individuals become eligible for the exemption. The results show neither a significant effect on re-entry wages nor on employment probabilities. This absence of significant results is simply due to a low take-up rate, even although the potential cost savings can be quite substantial for employers.

As far as the exemption clause for internships is concerned, a study by Bossler and Wegmann (2017) presents results from the IAB-Establishment Panel and the user generated search data of Google. Their results do not show that the minimum wage has any effect on the number of internships or individuals' search intensity. However, the distinction between compulsory and voluntary internships became more important, and the minimum wage was successful in limiting the phenomenon of the "generation internship", which describes a societal sentiment that young graduates conduct multiple internships without any perspective of permanent jobs.

Looking at alternative establishment-level adjustment channels like investments in human capital, analyses based on the IAB-Establishment panel do not show significant effects on the number of posted or filled apprentice positions (Bossler et al. 2018). If anything, the results show a slight reduction in the provision of further training if the training is financed by the employer (Bellmann et al. 2017). While this latter effect becomes insignificant in some of the robustness checks, the study by Bellmann et al. (2017) highlights an important fact, namely that training plays a far smaller role in the low-paid segments of the labour market.

Additional analyses based on the IAB-Establishment Panel of Bellmann et al. (2018) look at the minimum wage's effect on collective bargaining coverage.

Against the background of steadily decreasing collective bargaining coverage, one of the political goals of minimum wage legislation was to strengthen the tariff autonomy. Theoretically, however, a minimum wage could also crowd out participation in collective agreements instead of strengthening social partnerships. Empirically, Bellmann et al. (2018) do not find a significant reduction in collective bargaining. However, the authors do observe a larger number of firms moving in and out of collective agreements.

OUTLOOK AND CONCLUSIONS

Despite some ambiguous results, several general conclusions can be drawn from the ex-post evaluation studies of the introduction of a German statutory minimum wage. Firstly, with the exception of a study based on GSOEP data, there is overwhelming evidence of significant positive wage and earnings effects in the low tail of the wage distribution. Secondly, it is fair to say that the introduction of the wage floor did not lead to massive job losses. Hence, ex-post evaluation studies do not support the terrifying predictions expressed by some economists in the lead-up to the introduction of minimum wages. Thirdly, also from the findings of the sectoral minimum wages, there are some indications that a minimum wage of a reasonable amount does not cause substantial disemployment effects.

In general, the findings are not consistent with expectations based on a purely neoclassical model of the labour market. In such a model, a binding minimum wage would have necessarily led to substantial job cuts. If, in the absence of a legal wage floor, employees were paid their marginal value and productivity was not (strongly) influenced by the minimum wage, one would observe substantial job losses in the aftermath of the introduction of a sharply binding minimum wage. In our view, the overall results suggest that one cannot realistically describe the labour market as a purely competitive market. Instead, it appears to be more plausible to characterise the market in terms of its substantial information asymmetries, transaction costs and other imperfections. In a world where employers exert some market power at least in some segments of the labour market, a compulsory wage floor benefits low-paid workers (see the new monopsony theory of the labour market as outlined by Manning 2003). Such a situation is particularly likely in cases of low tariff coverage. A statutory minimum wage of a reasonable level can correct market power imbalances at little or no costs. However, if the minimum wage is set at a level that exceeds the fictitious equilibrium point of a competitive market, significant job losses become increasingly likely.

Against the background of our interpretations of the existing results, it is less likely that an increase in the minimum wage would lead to a marked negative employment effect, even if this increase were to go beyond the general wage trend. However, the following

arguments contrast a disproportionate increase in the minimum wage level. The labour markets in eastern and western Germany continue to differ significantly. It is to be feared that unfavourable employment developments could intensify, especially in the peripheral regions of eastern Germany. A possible remedy could be to create a split minimum wage. However, a split minimum wage would increase the complexity of the law and would run counter to the political goal of approximating the wage levels between eastern and western Germany. Hence, this approach does not constitute a viable political option. As a consequence, a uniform minimum wage requires the consideration of the weakest members according to the escrow principle.

Another argument against a substantial increase in the minimum wage is the uncertainty over the effects of the minimum wage in a period of weaker labour market development. All available results related to the minimum wage should be seen against the background of positive economic and labour market developments. These results do not shed any light on the potential effects of the minimum wage in a downturn.

Another important point concerns the degree of noncompliance with the minimum wage. Studies for other countries like the United Kingdom also see non-compliance with the minimum wage as significant. Mori (2012) cites data from the Office for National Statistics (ONS) showing that part-timers are twice as likely as full-time workers to be deprived of the minimum wage. For Germany, recent studies suggest that noncompliance is a severe problem (Burauel et al. 2017, Pusch and Seifert 2017). If these findings are confirmed, the enforcement of the minimum wage should be given higher priority. Otherwise, there is no protection for those who need it the most.

REFERENCES

- Ahlfeldt, G. M., Roth, D., and T. Seidel (2018), The regional effects of Germany's national minimum wage, *Economics Letters*, forthcoming.
- Aretz, B., Arntz, M., and T. Gregory, T. (2013), The minimum wage affects them all: Evidence on employment spillovers in the roofing sector, *German Economic Review* 14(3): 282–315.
- Bellmann, L., Bossler, M., Dütsch, M., Gerner, H.-D., and C. Ohlert (2016), Folgen des Mindestlohns in Deutschland: Betriebe reagieren nur selten mit Entlassungen, IAB-Kurzbericht Nr. 18, Nürnberg.
- Bellmann, L., Bossler, M., Gerner, H.-D., and O. Hübler (2017), Training and minimum wages: first evidence from the introduction of the minimum wage in Germany, *IZA Journal of Labor Economics*, Vol. 6.
- Bellmann, L., Bossler, M., Gerner, H.-D., and O. Hübler (2018), *Collective bargaining coverage, works councils and the new German minimum wage*, *Economic and Industrial Democracy*, forthcoming.
- Berge, P. v., Klingert, I., Becker, S., Lenhart, J., Trenkle, S., and M. Umkehrer (2016), Mindestlohnbegleitforschung – Überprüfung der Ausnahmeregelung für Langzeitarbeitslose, Forschungsauftrag des Bundesministeriums für Arbeit und Soziales (BMAS). IAB-Forschungsbericht Nr. 8.
- Berge, P. v., Kaimer, S., Copestake, S., Eberle, J., and T. Haepf (2018), Arbeitsmarktspiegel: Entwicklungen nach Einführung des Mindestlohns (Ausgabe 6), IAB-Forschungsbericht, 05/2018, Nürnberg.
- Berge, P. v. and E. Weber (2017), Beschäftigungsanpassung nach Mindestlohneinführung: Minijobs wurden teilweise umgewandelt, aber auch zulasten anderer Stellen, IAB-Kurzbericht Nr. 11.

- Bonin, H., Isphording, I., Krause, A., Lichter, A., Pestel, N., Rinne, U., Caliendo, M., Obst, C., Preuss, M., Schröder, C., and M. Grabka (2018), Auswirkungen des gesetzlichen Mindestlohns auf Beschäftigung, Arbeitszeit und Arbeitslosigkeit, Studie im Auftrag der Mindestlohnkommission, Bonn/Potsdam/Berlin.
- Bossler, M. (2017), Employment expectations and uncertainties ahead of the new German minimum wage, *Scottish Journal of Political Economy* 64(4): 327–348.
- Bossler, M. and S. Broszeit (2017), Do minimum wages increase job satisfaction? Micro data evidence from the new German minimum wage, *Labour* 31(4): 480–493.
- Bossler, M. and H.-D. Gerner (2016). Employment effects of the new German minimum wage. Evidence from establishment-level micro data. IAB-Discussion Paper Nr. 10.
- Bossler, M., Gürtzgen, N., Lochner, B., Betzl, U., Feist, L., and J. Wegmann (2018). Auswirkungen des gesetzlichen Mindestlohns auf Betriebe und Unternehmen. IAB-Forschungsbericht, 04/2018, Nürnberg.
- Bossler, M. and U. Jaenichen (2017), Der gesetzliche Mindestlohn aus betrieblicher Sicht. In: *WSI-Mitteilungen* 70(7): 482–490.
- Bossler, M. and J. Wegmann (2017), The German generation internship and the minimum wage introduction: Evidence from big data, LASER Discussion Papers, 105.
- Bruckmeier, K. and J. Wiemers (2015). Trotz Mindestlohn: viele bedürftig. *Wirtschaftsdienst* 95(7).
- Bruttel, O., Baumann, A., and M. Dütsch (2018), The new German statutory minimum wage in comparative perspective: Employment effects and other adjustment channels, *European Journal of Industrial Relations* 24(2): 145–162.
- Caliendo, M., Fedorets, A., Preuss, M., Schröder, C., and L. Wittbrodt (2017), The short-term distributional effects of the German minimum wage reform, IZA Discussion Paper No. 11246.
- Caliendo, M., Fedorets, A., Preuss, M., Schröder, C., and L. Wittbrodt (2018), The short-run employment effects of the German minimum wage reform, *Labour Economics* 53: 46–62.
- Garloff, A. (2017), Side effects of the new German minimum wage on (un-) employment, First evidence from regional data – Update. German Federal Ministry for Economic Affairs and Energy, Discussion Paper No. 4.
- Knabe, A., Schöb, R., and M. Thum (2014), Der flächendeckende Mindestlohn, *Perspektiven der Wirtschaftspolitik* 15(2): 133–157.
- Link, S. (2018), The Price and Employment Response of Firms to the Introduction of Minimum Wages, Mimeo.
- Manning, A. (2003), Monopsony in motion: Imperfect competition in labor markets, Princeton University Press.
- Möller, J. (2012), Minimum wages in German industries - What does the evidence tell us so far?, *Journal for Labour Market Research*, 45(3/4): 187–199.
- Schmitz, S. (2017), The effects of Germany's new minimum wage on employment and welfare dependency, Freie Universität Berlin, Fachbereich Wirtschaftswissenschaft, Discussion Paper No. 21/2017, Berlin.

Jan Fidrmuc and Juan D. Tena Minimum Wage and Young Workers: UK Evidence¹

INTRODUCTION

The minimum wage is a popular, if controversial, tool of economic policy making and for regulating the labour markets.² On the one hand, it is seen as delivering a number of positive effects: it prevents the exploitation of marginal and vulnerable workers, reduces poverty and inequality, raises the standard of living of poorly-paid workers, and increases the labour supply. However, the minimum wage also has the potential to hurt those that it was intended to protect by increasing the cost of labour, reducing demand for labour, and even making the least productive workers unemployable. With ever progressing globalisation and digitalisation of production, poorly-paid workers' jobs can often be easily offshored or replaced by a clever machine or an app.

The UK introduced a national minimum wage in April 1999. After its introduction, its employment effects were analysed by a number of studies. Stewart (2004) and Dickens and Draca (2005) consider the effect of the minimum wage introduction and the annual increases, respectively. Dolton, Rosazza-Bondibene and Wadsworth (2009) draw on the fact that, unlike the minimum wage rates, average earnings vary considerably across the regions of the UK. They use the resulting variation in the 'bite' of the minimum wage at the regional level to assess its impact on employment. These studies find little evidence that the UK minimum wage has had an adverse effect on employment. The main (and probably only) exception so far is Dickens, Riley and Wilkinson (2015) who present evidence that the introduction, and annual minimum wage increases, reduce the employment of part-time women, a segment of the labour market that is especially exposed to the minimum wage.

To gauge the effects of a policy, one should look at those who are most likely to be affected by it. In the UK, as in many other developed countries, the incidence of the minimum wage is much higher among young and

part-time workers. The young are also more likely to be employed part-time.³ Since its introduction in 1999, UK minimum wage regulation has mandated lower rates for young workers: at present, different minimum-wage rates apply to workers aged 25 and above, 21–24, 18–20, and below 18.⁴ This helps to ensure that young workers, who tend to be less productive than older and more experienced workers, are not disadvantaged in the labour market. However, it also implies that the cost of employing young workers at the minimum wage jumps by a discrete increment when they reach the threshold age. In particular, upon turning 22 (21 from 2010 onwards), young workers on minimum wage become eligible to a pay increase of 20–25%. This is a much larger increase than any of the annual minimum-wage increases. Moreover, employers can easily replace such workers with slightly younger, and cheaper, workers who are still below the relevant age threshold. So if we want to understand how increases in the minimum wage affect employment, it is instructive to look at young workers, a segment of the labour market where the incidence of the minimum wage is high and where workers are subject to relatively large minimum-wage increases.

EMPLOYMENT EFFECTS OF AGE RELATED MINIMUM WAGE INCREASES

In our research, we consider UK young workers aged between 18 and the age that makes them eligible for the adult rate of the national minimum wage. Such workers are considered adults in the UK: they can drive (if they have a driver's license), handle and sell age-restricted goods such as tobacco and alcohol, and work late or long hours. As such, they can be considered substitutes for slightly older workers, except that the latter may be slightly more experienced. Therefore, individuals just below and just above the age threshold should, arguably, be essentially perfect substitutes in terms of their productivity and experience – yet they are subject to different minimum-wage rates.

Our main analysis uses the regression discontinuity design (RDD). This quasi-experimental method is based on comparing observations on either side of a discontinuity: in our case the age threshold for the adult minimum-wage rate. If observations on either side of the discontinuity differ only with respect to the forcing variable (age), but are otherwise similar, the differences between them are as good as random. Importantly, the discontinuity effect can be manifested either in a level change (a step increase or decrease in employment probability), or in a kink in the underlying functional relationship (a slope change in the relationship



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² The vast majority of OECD countries impose some form of a minimum wage, either determined centrally by the government (whether national or local), or through collective bargaining between employers and unions, with the outcome being binding also for non-unionized firms (see Dolado et al. 1996, and Dolton and Rosazza-Bondibene 2012).

³ See Section 9 and Figures 8a and 8b in Syed et al. (2016).

⁴ In 1999, when the UK National Minimum Wage was introduced, it featured two rates: an adult rate for those aged 22 and above, and a development rate for those between 18 and 21. A third rate, for workers aged 16–17, was introduced in 2004. The age threshold for the adult rate was lowered to 21 in 2010. Finally, a National Living Wage, applying to anyone aged 25 and above, was implemented in 2016.

between employment and age).⁵ We thus estimate the following relation:

$$E[y_i | age_i, d] = F(\theta + \alpha_0 * age_i * (1 - d) + \alpha_1 * age_i^2 * (1 - d) + \alpha_0^* * age_i * d + \alpha_1^* * age_i^2 * d + \beta * d) = F(u) \tag{1}$$

where y_i is equal to one if the individual is employed (or, alternatively, unemployed or inactive), F is the standard normal cumulative distribution function, age_i is age in months minus the threshold age (so that the threshold age equals 0), d is a dummy variable equal to one when the individual is at the threshold age or older and zero otherwise, and θ includes any remaining covariates. We allow for the effect of age to be different before and after the young workers attain the threshold age. It is worth noting that F is a non-linear function (probit). The discontinuity effect on employment thus becomes:

$$\frac{\Delta F(\cdot)}{\Delta age} =$$

$$F(\theta + \beta) - F(\theta - \alpha_0^* + \alpha_1^* + \beta) - F(\theta) + F(\theta - \alpha_0 + \alpha_1) \tag{2}$$

It is also worth noting that the effect of discontinuity on employment probability depends not only on the coefficient of the discontinuity dummy, β , but also on the changes in the slope coefficients of age: α_0 , α_1 , α_0^* , and α_1^* .

The analysis is carried out with the UK Labour Force Survey (LFS), a quarterly nationally-representative survey of UK households of approximately 60,000 households and over 100,000 individuals aged 16 and above in each quarterly survey. The survey contains detailed demographic and socio-economic information on the respondents, including their labour-market outcomes, and the exact date of birth of every respondent.⁶ The date of birth, together with the information on when the survey was carried out, allows us to deter-

⁵ See Card et al. (2012), Dong (2014), and Nielsen et al. (2010) for further details.

⁶ This information is not available in the publicly released LFS datasets. We are grateful to the Low Pay Commission and the Office for National Statistics for helping us obtain access to the restricted release of the LFS.

Table 1

Discontinuity Effect on Employment at 21, 22 and 23 years, 1999–2009

	21 years		22 years		23 years	
	Males	Females	Males	Females	Males	Females
Discontinuity (1)	-.00994 (.00326)**	-.001039 (.00349)	-.00228 (.00331)	.00368 (.00353)	.00435 (.00318)	-.00179 (.00336)
β (2)	-.00764 (.01150)	-.00186 (.01184)	.00567 (.01097)	.00589 (.01154)	.01043 (.01023)	-.01325 (.01138)
No. observations	68,324	70,647	66,582	70,009	65,206	70,622
χ^2	17001.14	12155.02	15412.56	12942.46	13443.49	14310.83
$Pr > \chi^2$	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R ²	0.1947	0.11285	0.1918	0.1411	0.1879	0.1602

Note: All estimations include covariates. (1) estimated discontinuity effect taking into account the combined impact of age (slope effect) and the threshold dummy variable (level effect). (2) estimated impact of the threshold dummy variable only. Coefficients reported are marginal effects at mean values, with standard deviations in parentheses. Significance levels denoted as * 5% and ** 1%.

Source: Labour Force Survey (1999–2009).

mine the exact age of each respondent at the time of the survey. Therefore, we can distinguish the young workers on either side of the age threshold. This threshold was 22 years until October 2010, when it was lowered to 21. To avoid potentially contaminating our results by considering two different age thresholds, we only use data from the 2nd quarter (April-June) of 1999 until the last quarter (October-December) of 2009. Our analysis uses all workers whose ages lie within ± 15 months around the age threshold: the threshold age is thus 264 months and we consider workers aged between 249 and 279 months.

An important assumption behind the RDD approach is that the discontinuity is applied in a manner that is as good as random. Examples include points thresholds for awarding scholarships, externally imposed border changes, or the difference in a competition between the winner and the runner-up. In the case of minimum-wage rates, however, the threshold age is known beforehand by both employees (actual or potential) and employers. Both can already act in advance of the workers reaching the threshold age. For instance, if an employer has an incentive to avoid employing a 22-years-old worker, they may similarly wish to avoid employing one aged 21 and half or 21. Likewise, a worker whose reservation wage is below the 18-21 minimum-wage rate may nevertheless take up employment when aged 20 or 21 in anticipation of the statutorily mandated pay increase when turning 22. Another possibility is that either employer or employee takes action only with a delay, well after reaching the threshold age. Therefore, besides looking at the threshold effect at 22 years of age, we also consider 21 and 23 years.

The results are summarised in Table 1. It is worth noting that we report both the full discontinuity effect as given by equation (2) above, and the level effect, given by the coefficient estimate of β . We find no discontinuity effect on the employment probability when turning 22, the age when young workers become eligi-

Table 2

Discontinuity Effect on Employment at 21, 22 and 23 years in the Pre-NMW period, 1994–98

	21 years		22 years		23 years	
	Males	Females	Males	Females	Males	Females
Discontinuity (1)	-0.004 (0.0181)	-0.0056 (0.0183)	0.00528 (0.017)	0.0175 (0.018)	0.0144 (0.0156)	0.0072 (0.005)
β (2)	0.00804 (0.0055)	-0.0097 (0.0053)	-0.0008 (0.005)	0.00205 (0.0053)	-0.0047 (0.0045)	-0.0036 (0.0166)
No. observations	29,872	30,550	30,606	32,265	31,839	34,538
χ^2	7964.52	5768.08	7556.75	6809.31	6873.88	7512.05
$Pr > \chi^2$	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R ²	0.2052	0.1396	0.1994	0.1592	0.1877	0.1698

Note: All estimations include covariates. (1) estimated discontinuity effect taking into account the combined impact of age (slope effect) and the threshold dummy variable (level effect). (2) estimated impact of the threshold dummy variable only. Coefficients reported are marginal effects at mean values, with standard deviations in parentheses. Significance levels denoted as * 5% and ** 1%. Source: Labour Force Survey (1999–2009).

ble for the adult minimum-wage rate, for either males or females. However, we find a significantly negative effect one year earlier, for male workers turning 21. The effect of turning 23, one year after the relevant threshold, is again insignificant for both genders.

Finding a negative effect at the age of 21, one year before the higher minimum-wage rate has to be applied, could be explained as an anticipation effect, whereby employers either avoid hiring or dismiss workers who are within one year of the age threshold. An alternative explanation, however, is that it is driven by the productivity difference between workers aged 21 and 22. To test the latter explanation, we turn to data that pre-date the minimum-wage introduction in the UK. Table 2 reports the estimates for the period 1994–99, which are all insignificant. Hence, the negative employment effect for males aged 21 only occurs in the period when the minimum-wage regulation was in effect.

CONCLUSIONS

The results of our analysis suggest that young workers face a lower probability of employment as they are approaching the threshold age at which they become eligible for the higher adult rate of the minimum wage. The effect, however, does not occur at the age when they become eligible for the higher rate. Instead, it takes place one year earlier, in a manner that is consistent with employers acting in anticipation of the age-related minimum wage increase. This reflects the nature of the issue at hand: age-related minimum-wage increases take place at predetermined ages in a deterministic, rather than a random fashion. Therefore, employers can act well in advance of the minimum-wage increase. Another possibility is that workers approaching 22, knowing that soon they will be eligible for a higher minimum-wage rate, increase their reservation wage before reaching the threshold wage.

These results have two important implications: one policy-related, and the other methodological. The

policy-related lesson is that well-meant policy measures, such as implementing a lower minimum-wage rate for young workers, can have unexpected adverse effects by inducing employers to discriminate against workers who are no longer eligible for the reduced rate. This incentive is particularly compelling if the pay difference is relatively large, as in the UK case (20–25%).⁷

The methodological lesson, in turn, is that when considering age-related discontinuities (and other deterministic rather than random allocation mechanisms), the effect need not take place at the threshold age. Since the age at which the discontinuity occurs is predetermined, it is possible to see anticipation effects, such as the one we observe for the minimum wage effect.

REFERENCES

Card, D., D. S. Lee, Z. Pei and A. Weber (2012), "Nonlinear Policy Rules and the Identification and Estimation of Causal Effects in a Generalized Regression Kink Design." *NBER Working Paper* no. 18564.

Dickens, R. and M. Draca (2005), "The Employment Effects of the October 2003 Increase in the National Minimum Wage," *CEP Discussion Paper* no. 693, Centre for Economic Performance, London School of Economics.

Dickens, R., R. Riley and D. Wilkinson (2014), "The UK minimum wage at age 22: a regression discontinuity approach." *Journal of the Royal Statistical Society: Series A*, 177 (1), 95–114.

Dickens, R., R. Riley and D. Wilkinson (2015), "A Re-examination of the Impact of the UK National Minimum Wage on Employment", *Economica* 82(328), 841–864.

Dolado, J., F. Kramarz, S. Machin, A. Manning, D. Margolis and C. Teulings (1996), "The economic impact of minimum wages in Europe," *Economic Policy* 11 (23), 317–372.

Dolton, P. and C. Rosazza-Bondibene (2012), "The International Experience of Minimum Wages in an Economic Downturn." *Economic Policy* 27 (69), 99–142.

Dolton, P., C. Rosazza-Bondibene and J. Wadsworth (2009), "The Geography of the National Minimum Wage," Royal Holloway College, University of London, mimeo.

⁷ However, Kabatek (2015) presents evidence of a negative employment effect of the Dutch minimum wage for young workers, which increases marginally with each year of age. Kabatek finds that workers face a lower employment probability around the time of their birthdays as a result.

Dong, Y. (2014), "Jump or Kink? Identification of Binary Treatment Regression Discontinuity Design without the Discontinuity," University of California-Irvine, mimeo.

Kabátek, J. (2015), "Happy Birthday, You're Fired! The Effects of Age-Dependent Minimum Wage on Youth Employment Flows in the Netherlands." *IZA Discussion Paper* no. 9528.

Nielsen, H., T. Sorensen and Ch. Taber, (2010), "Estimating the Effect of Student Aid and College Enrollment: Evidence from a Government Grant Policy Reform." *American Economic Journal: Economic Policy* 2 (2), 185–215.

Stewart, M.B. (2004), "The employment effects of the national minimum wage", *The Economic Journal* 114, 110–116.

Syed, A., D. Ollerenshaw, D. Roberts and J. Rowlings (2016), "Analysis of the distribution of earnings across the UK using Annual Survey of Hours and Earnings (ASHE) data 2016", Office for National Statistics, <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/analysisofthedistributionofearningsacrosstheukusingashedata/2016#earnings-distribution-by-age-bands> (accessed September 2018).

Paul Redmond and Seamus McGuinness Assessing the Impact of the Minimum Wage in Ireland

THE MINIMUM WAGE IN IRELAND

A national minimum wage was first introduced in Ireland in 2000, at a rate of 5.58 euros per hour.¹ There were several increases in subsequent years, bringing the minimum wage up to 8.65 euros per hour by 2007. The period from 2008 onwards in Ireland was characterised by a prolonged economic downturn, during which time national income declined and unemployment increased dramatically, peaking at just under 15% in 2012. There were no increases in the minimum wage during this time and, in 2015, the minimum wage still remained at its 2007 level of 8.65 euros per hour. However, in 2015, against the backdrop of an economic recovery, the Irish Low Pay Commission (LPC) was established and tasked with providing yearly recommendations to the Irish government regarding changes to the minimum wage. Following recommendations in 2015, the minimum wage was increased to 9.15 euros per hour in January 2016, its first increase in nine years. There were further increases in January 2017, to 9.25 euros per hour, and in January 2018, to 9.55 euros per hour. Sub minimum wage rates exist for certain categories of workers in Ireland. Expressed as a percentage of the full rate, the sub-minimum rate is 70% for employees under 18 years of age, 80% for employees in their first year of employment, 90% for employees in their second year of employment and 75-90% for employees in structured training during working hours, depending on the level of progression.² If an employee receives food and accommodation (referred to as board and lodgings) from their employer, then the maximum amount that can be included as part of their wage is 0.85 euros per hour for board and 3.24 euros per day for lodgings. As part of its remit, the Irish Low Pay Commission engaged the Economic and Social Research Institute (ESRI) to undertake research on minimum wage issues that would help inform their decision-making process; many of the findings reported here stem from that research.

In making recommendations relating to minimum wage adjustments, the primary aim of the Low Pay Commission is to set a minimum wage that provides an incentive to work and assists as many low-paid workers as possible, without creating significant adverse effects on competitiveness or employment (Low Pay Commission 2018). While minimum wages are designed to help

low-paid workers, their effectiveness as a policy tool for tackling poverty may be limited. Although the risk of poverty among minimum wage workers is higher compared to non-minimum wage workers in Ireland (Maitre et al. 2017), the majority of minimum wage recipients are in families at the higher end of the income distribution curve (Logue and Callan 2016). As a result, the Low Pay Commission notes that minimum wages alone may not be sufficient to alleviate poverty (Low Pay Commission 2018).

Just over 8% of Irish employees were minimum wage workers in 2017. This consisted of 7% of workers who were earning the national minimum wage and 1% who were on sub-minimum rates. This is lower than the 2016 incidence of minimum wage employment, which stood at just over 10%.³ However, certain groups within the population, including women, non-Irish nationals, younger persons, people with lower levels of education and part-time workers, have a higher likelihood of being on the minimum wage (Maître et al. 2017). The two sectors with the highest incidence of minimum wage employment are accommodation and food (30%) and wholesale and retail (17%) (Low Pay Commission 2018). These patterns have remained relatively consistent in recent years.

HOW DOES IRELAND COMPARE TO OTHER EU COUNTRIES?

In 2018, 22 of the 28 EU member states had a national minimum wage.⁴ A simple cross-country comparison of minimum wages in nominal terms is limited, as it fails to account for different living costs across countries. For that reason, it is useful to compare purchasing power adjusted minimum wages.⁵ It is important to note that while Ireland expresses its minimum wage in terms of an hourly rate, some other countries specify a monthly minimum wage, which is paid in exchange for the normal hours of work of a full-time employee in that country. Part-time workers are then paid a proportion of this amount based on the number of hours worked.⁶ As a result, Eurostat shows all minimum wages as monthly rates when making cross-country comparisons. For example, the monthly minimum wage in Ireland is calculated as (hourly rate x 39 hours x 52 weeks) / 12 months.

Table 1 shows that Ireland has the second highest nominal minimum wage in the EU, after Luxembourg. However, once the cost of living is taken into account (column two of Table 1), the minimum wage in Ireland is



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¹ This was equivalent to £4.40 in Irish pounds.

² See www.lowpaycommission.ie for further details on sub-minimum rates and for a full definition of what qualifies as "structured training".

³ Incidences of minimum wage employment are calculated using the Irish Labour Force Survey.

⁴ The exceptions are Denmark, Italy, Cyprus, Austria, Finland and Sweden.

⁵ Minimum wage statistics for Europe are published by Eurostat.

See https://ec.europa.eu/eurostat/statistics-explained/index.php/Minimum_wage_statistics

⁶ For further discussion on the hourly versus monthly setting of minimum wages, see https://www.ilo.org/global/topics/wages/minimum-wages/definition/WCMS_439066/lang--en/index.htm.

Table 1
Minimum Wages in the EU

Country	Minimum Wage (€ per month, 2018)	Minimum Wage (PPP per month, 2018)
Bulgaria	261	539
Lithuania	400	619
Romania	407	796
Latvia	430	594
Hungary	445	720
Croatia	466	688
Czech Republic	469	672
Slovakia	480	694
Poland	480	878
Estonia	500	637
Portugal	677	795
Greece	684	811
Malta	748	909
Slovenia	843	988
Spain	859	930
United Kingdom	1,464	1,269
Germany	1,498	1,427
France	1,498	1,377
Belgium	1,563	1,411
Netherlands	1,594	1,420
Ireland	1,614	1,287
Luxembourg	1,999	1,575

Note: Column 1 shows the nominal minimum wage and column 2 shows the purchasing power adjusted minimum wage.

Source: Eurostat (2018).

the sixth highest after Luxembourg, Germany, the Netherlands, Belgium and France.

COMPLIANCE AND ENFORCEMENT

The issue of non-compliance with the national minimum wage has been highlighted by the Irish Low Pay Commission as a “topic of particular concern”. Evidence presented to the Low Pay Commission during oral hearings suggests that non-compliance is more likely to be an issue within certain vulnerable groups of society, and particularly among migrants. Furthermore, non-compliance may also be more prevalent in certain sectors, including the fishing industry, child-care and hairdressing.

Ireland has recently implemented reforms to the state’s workplace relations structures. In 2015 the activities of several separate state agencies were consolidated into one organisation, the Workplace Relations Commission (WRC).⁷ One of the main roles of the

⁷ The WRC has taken over activities from the National Employment Rights Authority, the Labour Relations Commission, the Equality Tribunal as well as certain functions of the Labour Court and Employment Appeals Tribunal.

WRC is to promote maximum compliance with employment law, including the national minimum wage. While precise statistics relating to non-compliance with the minimum wage are, by nature, difficult to compile, the WRC annual reports provide information on the number of inspections carried out and the percentage of those inspections that related to the minimum wage. In 2017 the WRC recorded 3,039 legislative breaches, of which 409 (13%) related to the national minimum wage (Workplace Relations Commission 2017).

The WRC report also provides information on the sectors that may be most likely to breach employment legislation. In 2017, over 40% of all employers inspected were found to be in breach of some type of employment legislation (including minimum wage legislation). The sectors showing the highest degree of non-compliance were contract cleaning (78%), hair and beauty (61%), wholesale and retail (61%), food and drink (58%) and equine (56%). The WRC recovered 1.77 euros million in unpaid wages in 2017, which represents an increase of 18% on the previous year.

THE EFFECT ON EMPLOYMENT AND HOURS WORKED

Proposed increases in the minimum wage can give rise to concerns that employment will be negatively impacted. This has generated much debate over recent decades and there is a large body of research, both theoretical and empirical, that studies these effects. A priori, the expected employment effects will depend on the structure of the labour market. In perfect competition, the wage elasticity of labour supply is infinite and workers earn their marginal product. In this setting, an increase in the minimum wage can lead to unemployment. However, under monopsony, the wage elasticity of labour supply is low and firms can use their market power to set wages below their perfectly competitive level. An increase in the minimum wage under monopsony may not have negative employment effects. While the empirical evidence is somewhat mixed, the weight of recent evidence tends to indicate little to no negative employment effects resulting from minimum wages (Schmitt 2015; Belman et al. 2015).

It is important to note that employment effects can occur at the extensive margin, with a reduction in the number of workers, and/or the intensive margin, with a reduction in hours worked (Neumark and Wascher 2008; Brown 1999). While some studies show a reduction in the hours worked of low paid workers as a result of minimum wage increases (e.g., Stewart and Swaffield 2008; Metcalf 2008; Couch and Witttenburg 2001; Neumark & Wascher 2008; Neumark et al. 2004), others find little to no effect on hours worked (see, e.g., Zavodny 2000; Skedinger 2015; Dolton et al. 2010).

McGuinness and Redmond (2018) evaluate the effect of the 2016 increase in the minimum wage, from 8.65 euros to 9.15 euros per hour, on employment and hours worked in Ireland. Their results show that the

minimum wage increase did not lead to a higher likelihood of unemployment or inactivity among low-paid workers in the six-month period following the rate change. However, there was a negative and statistically significant decrease in the hours worked by low paid workers of 0.5 hours per week. The effect for temporary workers was substantially higher, at three hours per week. There was also an increase in voluntary part-time employment, indicating that more workers chose to work part-time, as opposed to not being able to find full-time employment. Therefore, McGuinness and Redmond (2018) conclude that while some employers may have cut hours in response to higher labour costs, at least some of the observed fall in hours was probably due to more individuals choosing to work part-time at the higher minimum wage. The research could not provide an assessment of the relative strength of each of these factors in explaining the decline in hours worked following the minimum wage rate rise in 2016.

LABOUR MARKET TRANSITIONS OF MINIMUM WAGE WORKERS

There is a strand of literature that examines the labour market transitions of low paid workers, the definition of which often varies depending on the study in question.⁸ While there is evidence that low pay can be persistent over time, it also acts as a temporary stepping stone towards higher pay for many low-paid workers (Stewart and Swaffield 1999; Cai et al. 2018). There is also evidence that being in a low-paid job increase a person’s probability of transitioning into unemployment, relative to higher-paid workers (Stewart 2007; Stewart and Swaffield 1999). However, very few studies exist which specifically examine the transitions of minimum wage workers. The evidence that does exist, which relates to the US, suggests that minimum wage employment is likely to lead to higher earnings for most workers (Smith and Vavrichek 1992; Schiller 1992; Carrington and Fallick 2001).

In 2016, a question was added to the Irish Labour Force Survey, which captures information on whether a person’s hourly wage is equal to, less than or greater than the national minimum wage. Redmond et al. (2018) use this new measure to examine the labour market transitions of minimum wage workers in Ireland over a period of three quarters (nine months) by constructing a panel dataset of employees who received the minimum wage in at least one of the three quarters⁹. Their analysis reveals that minimum wage employment often acts as a stepping stone to higher paid employment. Just 18% of employees remained on the minimum wage for all three quarters, compared to 30% who transitioned to higher paid employment. Redmond et al. (2018) show that these exits to higher paid

⁸ For example, Stewart and Swaffield (1999) use three definitions of low pay: half the mean wage, half the median wage and two thirds of the median wage.

⁹ Individuals were in the panel element of the data for a maximum of three quarters. Sample size considerations limited our analysis to three quarters.

employment are primarily achieved through within-employer wage progression, rather than a movement to a new employer. Over 90% of employees who transition to higher paid employment do not change occupation or employer.

While, in general, minimum wage employment appears to act as a stepping stone to higher pay for a large number of employees, there are certain groups who are more likely to experience persistently low pay. Redmond et al. (2018) show that Irish nationals, older workers, those with higher educational attainment, full-time workers and permanent employees are more likely to transition from NMW employment to higher paid employment compared to foreign citizens, younger workers, those with less education, part-time and temporary employees.

Redmond et al. (2018) also find a higher transition rate to unemployment or inactivity among minimum wage workers relative to higher paid employees. Compared to workers in the highest income decile, minimum wage employees are ten percentage points more likely to become unemployed or inactive. After controlling for a range of personal and employment characteristics, minimum wage workers are still four percentage points more likely to transition to unemployment or inactivity compared to higher paid workers.

THE EFFECT ON POVERTY

Minimum wage workers in Ireland are more likely to be at risk of poverty and deprivation than higher paid workers (Maitre et al. 2017).¹⁰ In 2014, 17% of minimum wage employees were at risk of poverty and 28% experienced deprivation, compared to 3.3% and 19.5% for non-minimum wage workers. Therefore, while these statistics indicate that minimum wage workers have an above-average tendency to be economically disadvantaged, they also show that the vast majority do not come from poor households. The reason is that minimum wage workers typically reside in multiple-earner households in which they are not the primary earners. According to Maitre et al. (2017), in households with more than one employee, just 13% of minimum wage earning females and 19.5% of minimum wage earning males were primary earners.

This is consistent with the results of MaCurdy (2015) and Logue and Callan (2016), who analyse the distributional impacts of minimum wage increases in the US and Ireland respectively, and find that increases in the minimum wage are an inefficient way of boosting the incomes of poor families. They find that a substantial portion of the earnings increase goes to families at the higher end of the income distribution scale. However, this is not to say that minimum wages are com-

¹⁰ A person is categorised as being at risk of poverty if their income is lower than 60% of median income. Deprivation is based on a household’s ability to afford certain basic food and family requirements. For details see Maitre et al. (2017).

pletely ineffective when it comes to helping low earners. Holton and O'Neill (2017) find that the Irish minimum wage is an effective tool in protecting the income of low-skilled workers, particularly during recessions. Autor et al. (2016) find that minimum wages reduce earnings inequality in the lower end of the earnings distribution in the US.

CONCLUSION

This paper provides an overview of the minimum wage in Ireland. Due to the impact of the great recession, the minimum wage remained unchanged in Ireland between 2007 and 2015, before being reactivated as a policy tool in 2016 following the establishment of the Irish Low Pay Commission. The adult minimum wage rate in Ireland was 9.55 euros as of January 1st 2018, with the most recent data indicating that 8% of employees earned the minimum wage, or less in 2017. In line with the patterns observed in many countries, the incidence of the minimum wage was found to be higher among females, young workers, the poorly educated and in sectors such as accommodation and food and wholesale and retail. In terms of its magnitude, after accounting for cost of living differences, the minimum wage in Ireland is the sixth highest after Luxembourg, Germany, the Netherlands, Belgium and France. In keeping with the bulk of international evidence, the minimum wage in Ireland has been shown to be a somewhat blunt tool with regard to tackling poverty, given that over three quarters of minimum wage workers do not belong to households at risk of poverty. Somewhat contrary to international findings, recent increases in the national minimum wage have been shown to have resulted in a fall in the average hours worked of minimum wage workers, which was most pronounced among those on temporary contracts. The decline in the hours worked by minimum wage workers was found to be at least partly due to its composition impact, whereby more part-time workers were attracted back into employment as a result of the higher minimum wage. Finally, longitudinal analysis has found that while many minimum wage workers progress to higher-paid employment, predominantly within their current jobs, migrants, those with less education, part-time and temporary employees are less likely to transition to higher pay.

REFERENCES

- Autor, D.H., A. Manning and C. L. Smith (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.
- Belman, D., P. Wolfson, and K. Nawakitphaitoon (2015), "Who is Affected by the Minimum Wage?", *Industrial Relations: A Journal of Economy and Society* 54 (4), 582-621.
- Brown, C. (1999), "Minimum Wages, Employment, and the Distribution of Income", *Handbook of Labor Economics* 3, 2101-2163.
- Cai, L., K. Mavromaras, and P. Sloane (2018), "Low Paid Employment in Britain: Estimating State-Dependence and Stepping Stone Effects", *Oxford Bulletin of Economics and Statistics* 80 (2), 283-326.
- Carrington, W. and B. Fallick (2001), "Do Some Workers have Minimum Wage Careers?", *Monthly Labor Review* 17.
- Couch, K.A. and D. C. Wittenburg (2001), "The Response of Hours of Work to Increases in the Minimum Wage", *Southern Economic Journal* 68, 171-177.
- Dolton, P., C. R. Bondibene and J. Wadsworth (2010), "The UK National Minimum Wage in Retrospect", *Fiscal Studies* 31, 509-534.
- Holton, N. and D. O'Neill (2017), "The Changing Nature of Irish Wage Inequality from Boom to Bust", *Economic and Social Review* 48 (1), 1-26.
- Irish Low Pay Commission (2018), *Recommendations for the National Minimum Wage*, Low Pay Commission, Dublin.
- Logue, C. and T. Callan (2016), *Low Pay, Minimum Wages and Household Incomes: Evidence for Ireland*, Economic and Social Research Institute, Dublin.
- MaCurdy, T. (2015), "How Effective is the Minimum Wage at Supporting the Poor?", *Journal of Political Economy* 123 (2), 497-545.
- Maitre, B., S. McGuinness and P. Redmond (2017), *A Study of Minimum Wage Employment in Ireland: The Role of Worker, Household and Job Characteristics*, Economic and Social Research Institute, Dublin.
- McGuinness, S. and P. Redmond (2018), *Estimating the Effect of an Increase in the Minimum Wage on Hours Worked and Employment in Ireland*, Economic and Social Research Institute, Dublin.
- Metcalfe, D. (2008), "Why has the British National Minimum Wage had Little or no Impact on Employment?", *Journal of Industrial Relations* 50, 489-512.
- Neumark, D. and W. Wascher (2008), *Minimum Wages*, The MIT Press, Cambridge, Mass.
- Neumark, D., M. Schweitzer, and W. Wascher (2004), "Minimum Wage Effects Throughout the Wage Distribution", *Journal of Human Resources* 39, 425-450.
- Schiller, B. R. (1994), "Moving Up: The Training and Wage Gains of Minimum-Wage Entrants", *Social Science Quarterly*, 622-36.
- Schmitt, J. (2015), "Explaining the Small Employment Effects of the Minimum Wage in the United States", *Industrial Relations: A Journal of Economy and Society* 54, 547-581.
- Skedinger, P. (2015), "Employment Effects of Union-Bargained Minimum Wages: Evidence from Sweden's Retail Sector", *International Journal of Manpower* 36, 694-710.
- Smith, R. and B. Vavrichek (1992), "The Wage Mobility of Minimum Wage Workers", *Industrial and Labor Relations Review* 46 (1), 82-88.
- Stewart, M. and J. Swaffield (1999), "Low Pay Dynamics and Transition Probabilities", *Economica* 66 (261), 23-42.
- Stewart, M.B. and J. K. Swaffield (2008), "The Other Margin: Do Minimum Wages Cause Working Hours Adjustments for low-wage Workers?", *Economica* 75, 148-167.
- Stewart, M. B. (2007), "The Interrelated Dynamics of Unemployment and Low-Wage Employment", *Journal of Applied Econometrics* 22 (3), 511-531.
- Workplace Relations Commission (2017), *Annual Report*, Dublin.
- Zavodny, M. (2000), "The Effect of the Minimum Wage on Employment and Hours", *Labour Economics* 7, 72-750.

Sergio Puente

Efficiency vs. Equity: Does This Trade-Off Hold for Minimum Wage Policy?¹

INTRODUCTION

Minimum wage policy is often seen as a tool to ensure lower income inequality. From a theoretical point of view, raising minimum wage has costs in the form of employment losses and unemployment, as labour supply for those jobs with equilibrium wages below the minimum cannot find enough labour demand. However, there is also a theory supporting minimum wages. Those workers losing their low-wage jobs could find it profitable to increase their human capital, in order to find a new, better job that complies with the new minimum level, and hence increases the productivity of the economy. If labour demand takes the form of very few agents with some monopsony power, then setting a higher minimum wage could also partially offset the market power of those few employers.

Which effect dominates is therefore an empirical question. Applied literature has approached this problem from two different angles. One stream uses some sort of macro data, and estimates the effect on aggregate² employment after an increase in minimum wages. This tends to find little or no effects on employment trends after the increase in minimum wage³, usually concentrated on young people. The problem with this approach is that it is difficult to disentangle the true effects of minimum wages from the fact that very few workers are usually affected because of the low level of minimum wages. Not surprisingly, the results are more negative among those groups with a higher share of affected people, i.e., the young.

The other approach uses individual micro data to assess individual employment prospects after an increase in minimum wage. Here, the share of affected people is not an issue, since the focus is on individuals. Findings in this literature are much more negative⁴: minimum wage increases are often followed by lower employment prospects among those workers affected by the new minimum, in terms of

lower employment probabilities and/or higher unemployment incidence.

The remainder of this article provides a non-technical summary of Galán and Puente (2015), who estimated the effects of an important minimum wage increase that occurred in Spain in the late 2000s. These estimations are then used to provide an assessment of recent and projected increases, both in terms of efficiency and equity. The bottom line is: minimum wage increases actually could do harm on both fronts.



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DATA AND METHODOLOGY

The Spanish government made a substantial increase (11.4%) in the minimum wage⁵ in January 2005. There were further, smaller increases in the subsequent years up until 2010, all of which were higher than inflation. By 2010, the minimum wage cumulative increase reached 37.5% (more than 18% in real terms), rising from 537.3 euros/month in 2004, to 738.9 euros/month in 2010. This important increase within a relatively short time span makes it possible to analyse the effects of minimum wage increases on employment.

Data used for such a task are individual labour histories, available in Spain thanks to Social Security⁶. These micro data make it possible to focus on particular workers, affected by the minimum wage increase, and follow their working careers after the increase to properly estimate its potential effects on employment prospects.

The methodology used to estimate these effects is based on the comparison of workers affected by the increase in the minimum wage (called “affected group”), with other, similar workers, not affected by the increase (called “control group”). If employment prospects in the affected group are worse than those observed in the control group, then we can say that minimum wages have a negative effect. Workers in the affected group are defined as those whose current real wage⁷ is below the real minimum wage twelve months later. It is precisely for these workers that employers have to make the choice of either raising their wages to comply with the new minimum, or firing them.

Table 1 shows the observed probability of losing employment status, depending on whether the individ-

⁵ The minimum wage in Spain has been common for all workers, irrespective of age, since 1998.

⁶ In particular, we have complete employment histories for each worker since 1980, with monthly information about wages, days worked, and personal and job characteristics, for a 4% sample of all workers.

⁷ Both observed and minimum wages are deflated by standard CPI.

¹ The views expressed here are those of the author, and do not necessarily coincide with those of Banco de España or the Eurosystem.

² This aggregation could be at the level of states, counties, or even firms. But these studies always share an interest in aggregate employment, without looking at each individual's labour market performance.

³ See for example Card and Krueger (1994), Dube et al. (2010), or Dolado et al. (1996).

⁴ See, for example, Neumark et al. (2004) or Galán and Puente (2015).

Table 1

Comparison of Employment Loss Probability Between Affected and Others

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Affected	-	-	-	-	16.7%	16.6%	15.3%	18.2%	23.7%
Others	8.6%	9.1%	8.6%	8.6%	8.6%	8.5%	8.7%	11.0%	15.1%

Source: Authors' calculations (2018).

ual is affected or not. As it can be seen, people in the affected group were far more prone to lose their job than others. While this is illuminating, it is not enough to infer any causal effects, because both groups could differ in many ways apart from whether they were affected or not.

Consequently, these affected workers are compared to two different groups: firstly, to workers with wages that are slightly above the new minimum, hence not affected by the increase while at the same time earning a similar wage; and secondly, workers earning the same wage, but in years when real minimum wages actually decreased, i.e., between 2000 and 2004. While the actual estimation is a little more complex⁸, these two groups together loosely define the control group mentioned above.

ESTIMATION RESULTS

Table 2 summarises the main results of the estimation, for several age and gender groups.

As it can be seen, the increase in minimum wages leads to a significant deterioration in the labour market performance of affected workers, except for those between 25-32 years of age. Indeed, the effect is most harmful for elderly workers, which seems to be in conflict with other studies based on aggregate data. But this conflict is easy to reconcile: individual elderly workers who happen to earn a wage lower than the new minimum level are more adversely affected than their younger counterparts. However, since there are far more workers earning low wages among young people, the aggregate effect seems to be higher for the young.

Why are elderly workers more intensively affected? The reason is fairly intuitive: the firing probability is related to the wage increase needed to comply with the new minimum, but also to the typical real wage increase observed for a particular gender and age group, in normal years when minimum wages are not increasing. If the minimum wage raises by X, but the employer would

⁸ In particular, we estimate a logit model for the probability of not being employed in t+12. The main explanatory variable is the gap between the current real wage and the new minimum wage twelve months later (only positive for affected people, and zero otherwise), interacted with age group dummies. Other controls included are wage, interacted also with age, nationality, duration of contract, tenure in the firm, family situation, and year and month dummies. The presence of all these controls allows us to interpret the estimated coefficient for the gap as the effect of a minimum wage increase on the individual probability of keeping or losing employment status.

Table 2
Estimation Results

Age group\gender	All	Men	Women
16-24	7.6*	9.3*	7.3*
25-32	2.6	1.9	4.0
33-45	5.1*	2.0	11.9*
More than 45	14.2*	9.2*	17.9*

Note: Effects are measured as: increase in percentage points on the probability of losing employment of affected workers, after an increase in minimum wage of 100 EUR. An * denotes statistical significance at 1%. Source: Author's calculations (2018).

have increased the wage of a particular worker by more than this amount, then the expected effect should be zero. This is what is happening for those middle-aged workers. They are in the steep part of their life-cycle profile of wages, with strong productivity increases each year, as they accumulate experience. On the other hand, the elderly typically enjoy much lower increases, which are not enough to compensate for the rise in the minimum wage, and hence they are more prone to be fired.

Finally, it should be noted that the approach used here only takes into account job losses after the introduction of a higher minimum wage. The possible effects on job creation are therefore absent. This is especially important for those groups with typical high wage growth for the following reason: let's suppose that most 30 year-old workers have the usual wage improvements above the minimum wage increase, so most of them actually keep their jobs one year later. Does it mean minimum wages do not have any negative effects for this particular age group? Not necessarily, as workers who were 29 years old last year, and hence have less experience and a typical lower wage, could find it difficult to find a job when they are 30, with a higher minimum wage in force. The implication is that our estimations of job destruction are downward biased for those fast-growth wage groups, and they are probably closer to the true total effect for people with stable wages, i.e., elderly people.

RECENT INCREASE IN MINIMUM WAGE IN SPAIN: PREDICTED EFFECTS

After the above-mentioned increases, the real minimum wage remained stable during the first part of the 2010s. But in recent years, the minimum wage returned to growth (8% in 2017 and 4% in 2018). Moreover, the public debate is strongly biased towards further increases. Indeed, it has already materialised in a Framework Wage Agreement between main social agents, which suggests a minimum bargained wage of 14,000 euros/year, and Spain's new government stated their intention to enforce it by setting a minimum legal wage very close to this figure. This would imply a substantial increase (of over 35%) compared to the 2018 level.

The estimations presented in the previous section make it possible to infer the predicted effects of these realized and foreseen increases on employment developments. In this respect, it is worth mentioning a common mistake, usually present in other analyses of minimum wage effects. This error involves estimating a certain elasticity of employment to minimum wage, and using it to extrapolate available estimations to further increases.

Table 3
Predicted Employment Effects in Different Scenarios

Age	Scenario 1: Min wage = 825.5 €			Scenario 2: Min wage = 933.3 €			Scenario 3: Min wage = 1108.3 €		
	Share affected	Job losses, total	Job losses, affected	Share affected	Job losses, total	Job losses, affected	Share affected	Job losses, total	Job losses, affected
[16-25]	32.69%	1.64%	5.01%	37.45%	4.52%	12.07%	49.01%	10.27%	20.96%
[25-33]	7.35%	0.13%	1.71%	9.91%	0.37%	3.77%	18.33%	0.99%	5.41%
[33-46]	1.16%	0.03%	2.55%	2.67%	0.13%	4.85%	7.88%	0.57%	7.21%
[46-70]	0.93%	0.07%	7.03%	2.09%	0.29%	13.82%	5.79%	1.21%	20.89%
[16-70]	3.23%	0.12%	3.64%	4.90%	0.39%	7.98%	10.28%	1.24%	12.05%

Source: Author's calculation (2018).

This is not a good approach because the number of affected people is highly non-linear, which makes using elasticity misleading. The intuition is easy to explain by means of an example: Suppose the minimum wage is set to zero, and then a one euro/month increase takes place. Probably, the number of affected workers would be close to zero, and so it is the estimated elasticity, even using micro data. Does it mean we can raise it without boundary without fearing any employment effects? The answer is clearly not, as further increases will start to affect more and more people, taking taller parts of the wage distribution below the minimum. So, the correct approach is to apply the previous estimations to each worker present in the current wage distribution, and estimate his probability of losing his job as a consequence of the new minimum. Then, we can obtain an aggregate effect by adding up all these individual effects.

This is what is done in this section. In particular, we take the wage distribution of 2016 (the last year available in our sample), and compute individual predicted probabilities of losing the job, based on individual characteristics, and on the distance between the current individual wage and the new minimum. We make three different exercises, each assuming a different new minimum: Scenario 1 assumes a new minimum of 825.5 euros/month, which is the level in force in 2017, after the first 8% increase. Scenario 2 uses an intermediate figure (933.3 euros/month). Finally, scenario 3 is close to the suggested minimum bargained wage (1108.3 euros/month).

Table 3 presents the results of the exercise. For each scenario, three columns are presented. The first one shows the share of workers affected (i.e., with current wages below) by the new minimum. The second one estimates implied total employment loss, as a fraction

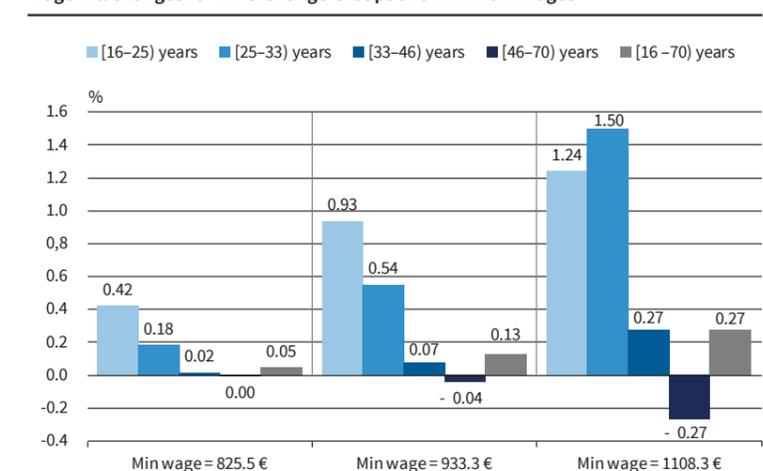
of all workers. Finally, the third one also reports job losses, but as a fraction of affected people only.

The share of total affected workers ranges from 3.2% (scenario 1) to 10.3% (scenario 3). But there are important differences among age groups. For all the three scenarios, young workers are by far the most affected group, reaching almost 50% of all young workers in the third scenario.

In terms of employment losses, estimates vary from a small 0.1% in the first scenario, to ten times higher in the third one (1.2%). This illustrates the danger of extrapolating elasticities, as the effect in the last scenario is disproportionately high in comparison with the associated minimum wage increase. Indeed, if we have instead extrapolated the effect of scenario 1 to the increase in the third one, we would have obtained approximately half of the effect.

These employment effects are also unequal among age groups. Young workers, being the most affected, also concentrate most of the employment losses, with figures around ten times higher than the aggregate. However, if we divide job losses only over affected workers (in order to better capture average effects on individual job loss probabilities), we find that

Figure 1
Wage Bill Changes for Different Age Groups and Minimum Wages

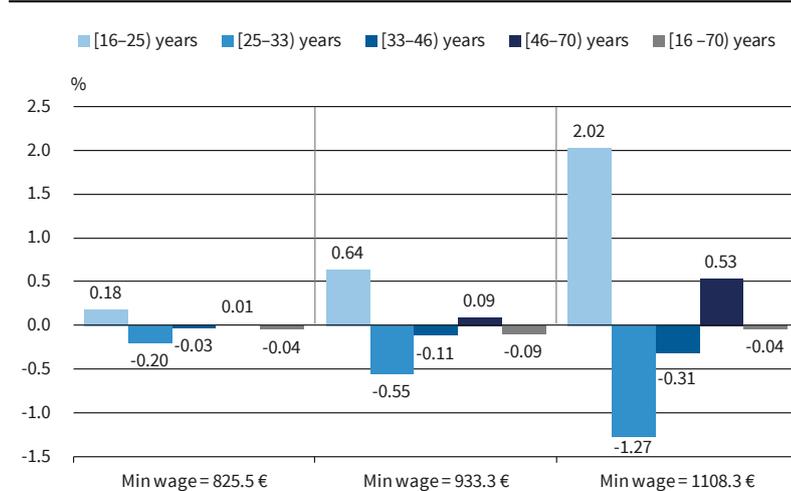


Source: Author's calculations (2018).

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Figure 2

Changes in the GINI Coefficient for Different Age Groups and Minimum Wages



Source: Author's calculations (2018).

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elders are as affected as the young. The different number of affected people is behind this difference.

We estimate that some workers lose their job, but other do not. Consequently, it is interesting to see whether the total employment bill actually decreases or not in each of the scenarios. This is done in Figure 1.

The result is that the total wage bill actually increases for all age groups but the oldest one. However, this increase is quite small in comparison with the amount of the increase in the minimum wage necessary to achieve it. Moreover, the wage bill actually decreases for the last age group, precisely the group least affected by the bias mentioned before. All these results illustrate the reduced role of minimum wages as an income policy.

Finally, we have estimated the effect for each particular individual. This allows us to obtain not only aggregate effects, but also to analyse changes in the whole income distribution. This is useful when we try to assess whether minimum wages are a good inequality tool or not. In this respect, there are two competing forces. On one hand, workers losing their job are worse off. But on the other hand, those managing to keep working actually earn a higher wage. Therefore, the effect on inequality is uncertain. We present results in this respect using the variation in the Gini coefficient resulting from each of the scenarios described above. The results are shown in Figure 2.

As it can be seen, the total Gini index presents a negligible variation, suggesting that the two previous effects compensate each other. However, for both young and elders, the increase in the Gini index is quite apparent. Again, elders are the least affected group by the previous bias. Hence, these results point to a reduced, or even adverse, effect of minimum wages on inequality.

CONCLUSIONS

Macroeconomic effects of minimum wages are uncertain in the economic literature, mainly due to the small number of affected people. However, microeconomic evidence is much clearer, pointing to significant adverse effects of minimum wages on employment, especially among low skilled people. We presented estimations of this effect, finding it more intense among elder affected workers. We also applied the estimations to current and future minimum wage increases. Our finding is that the more intense the increase is the more employment

destruction it implies, in a more than proportional way. Finally, our results also point to a reduced, or even adverse effect of minimum wages as an income or inequality policy tool. Hence, the trade-off between efficiency and equity seems to be not present in the case of minimum wages: They actually decrease efficiency (employment) without improving equality.

REFERENCES

- Card, D. and A. Krueger (1994), "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania." *American Economic Review* 84 (4), 772-793.
- Dolado, J., F. Kramarz, S. Machin, A. Manning, D. Margolis and C. Teulings (1996), "The economic impact of minimum wages in Europe." *Economic Policy*, 11(23), 317-372.
- Dube, A., W. Lester and M. Reich (2010). "Minimum Wage Effects Across State Borders: Estimates Using Contiguous Counties." *Review of Economics and Statistics* 92 (4), 945-964.
- Galán, S. and S. Puente (2015), "Minimum Wages: Do They Really Hurt Young People?" *The B.E. Journal of Economic Analysis and Policy* 15 (1), 299-328.
- Neumark, D., M. Schweitzer and W. Wascher (2004), "Minimum Wage Effects Throughout the Wage Distribution." *Journal of Human Resources* 39 (2), 425-50.

Jan van Ours¹ The Minimum Wage in the Netherlands

INTRODUCTION

The Netherlands has a national, government legislated minimum wage, which is usually adjusted twice a year, on 1 January and 1 July. Depending on the payment period of the firm or the industry, the minimum wage is defined on a monthly, weekly or daily basis. In 2017, 47% of the employees had a 36-hour working week, 9% had a 37-hour working week, 31% had a 38-hour working week and 13% had a 40-hour working week (Ministerie van Sociale Zaken en Werkgelegenheid 2018). Because of the specification of the minimum wage, the hourly rate varies substantially between workers depending on their usual working hours. As of 1 July 2018, the gross minimum wage for full-time workers aged 22 and older is 367.90 euros per week. For workers with a 36-hour working week, this implies an hourly minimum wage of 10.22 euros, while for workers with a 40-hour working week it is 9.19 euros per hour, a difference of 1 euro per hour. Like many European countries with a minimum wage, the Netherlands has a separate minimum wage for young workers, in the Dutch case this applies to workers who are 15 to 21 years old. Youth minimum wages are defined as a percentage of the adult minimum wage. For 15-year-olds, this wage is currently 30%, which implies that the hourly minimum wage for a 15-year-old worker in an industry with a usual working week of 40 hours is 2.76 euros.

A SHORT HISTORY OF THE MINIMUM WAGE

After World War II, the Netherlands had a centralised guided wage policy. There was wage bargaining between unions and employers, but this was a highly centralised process starting with a directive from the Minister for Social Affairs on the permitted wage increase during a particular year (Van Zanden 2005). Every collective agreement had to be approved by a special Board of Mediators. Initially, wage increases were connected to living costs, while the development of labour productivity was subsequently also taken into account. A minimum wage was defined as a wage that would be sufficient for an unskilled worker to support a family with two children. For workers in one of the big cities, in 1945 the minimum wage was NLG 35 (15.90 euros) per week, for unskilled workers in rural areas it was NLG 31 (14 euros) per week (Sociaal-Economische Raad 1985). In 1963, the guided wage policy

was abolished. Up to the introduction of the statutory minimum wage, negotiations between employers and unions determined the minimum wage. In 1964, the minimum wage was set at NLG 100 per week for employees aged 25 years and older.² In 1965, employers and unions did not reach an agreement. As a response, the government increased the minimum wage to NLG 110 per week. In 1966, the Minister of Social Affairs asked the Socio-Economic Council (SER) for advice on a legal minimum wage. The request stated that the minimum wage needed to be sufficient to provide every worker with a labour income sufficient to have a socially acceptable existence (Van Damme 2013). In 1968, the parliament discussed the proposed law on the minimum wage. The proposal suggested a minimum wage of NLG 135 per week. Every year on 1 July, the minimum wage would be adjusted to the average wage and price level following information from Statistics Netherlands. On 1 July 1968, the government increased the minimum wage to NLG 135 per week.

The Netherlands introduced a legal minimum wage in 1969. Initially, it applied to employees aged 24 years and older.³ In 1970, the age threshold was lowered to 23 years and older. In 1974, the youth minimum wage was introduced. The youth minimum wage is specified as a fraction of the adult minimum wage, whereby that share depends on the age of the worker.⁴

Over the course of time, the minimum wage has not merely been an instrument of wage policy. The minimum wage also defines the level of old age state pension benefits and the level of various welfare benefits. The level at which the minimum wage was set has therefore had far-reaching implications for government budgets. Although the general idea of the minimum wage was that it should follow the evolution of average wages and prices, there have been multiple deviations from this general idea. In the 1980s and early 1990s in particular, the minimum wage was not adjusted to price changes nor to wage changes. The main argument for keeping the wage at a standstill was the labour market situation, and particularly the rise in unemployment that occurred in the first half of the 1980s.

EVOLUTION OF THE MINIMUM WAGE

The weekly minimum wage was about 35 euros in 1960, versus around 360 euros today. The tenfold increase in 55 years is not informative about the changes in real terms, considering inflation, or in relative terms, compared to the average or median wage. Figure 1 shows

² Initially, this minimum wage only applied to male workers. From 1966 onward, the minimum wage also applied to female workers.

³ Initially, the minimum wage applied only to workers who worked at least one-third of the number of hours of a full-time job. In 1993, this restriction was removed.

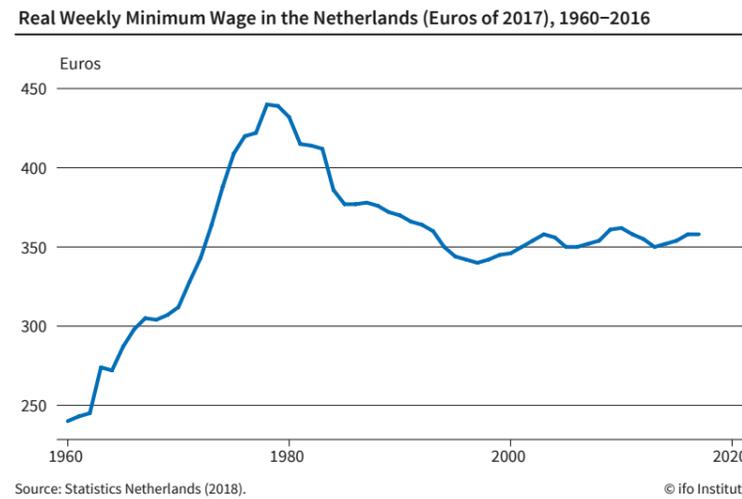
⁴ Currently, the youth minimum wage applies to workers younger than 22 years of age. One of the peculiarities of the youth minimum wage is that it does not apply to employees from outside the EU. Employers need to apply for a working permit if they want to hire workers from outside the EU. Even if the employee is younger than 22 the employer has to pay the adult minimum wage.



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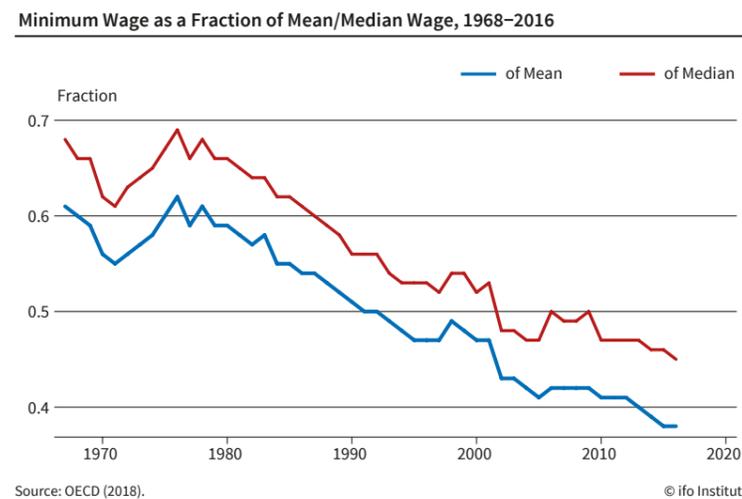
Figure 1



the evolution over the period 1960-2017 of the real minimum wage (deflated by the consumer price index). Both before and after the introduction of the legal minimum wage in 1969, there was a strong increase. Measured in euros of 2017, the weekly minimum wage increased from about 240 euros in 1960 to a maximum of 440 euros in 1978. After that, the real minimum wage declined to about 340 euros per week in 1996. In later years, the real minimum wage increased slightly to fluctuate at around 350 euros per week.

In theory, the minimum wage follows the evolution of the contractual wage. The actual wage may deviate from the contractual wage because this does not include incidental wage increases. Furthermore, motivated by labour market conditions, the minimum wage has not been adjusted and remained constant in nominal terms over a total period of eleven years (1984-89, 1993-95, 2004-05). Furthermore, in many years there was an incomplete compensation in the minimum

Figure 2



wage compared to the development of the contractual wage (De Beer et al. 2017).

A frequently used measure to assess the relative development of the minimum wage is the Kaitz-index, or the ratio of minimum wage and average or median wage.⁵ Figure 2 shows the evolution of the minimum wage both as a fraction of the mean wage and the median wage over the period 1965-2016. Due to skewed wage distribution, the Kaitz-index is slightly higher as a fraction of the median wage. There is nevertheless a strong correlation between both indicators. In the late 1960s, the Kaitz-index

dropped by about 5%-points only to increase to the 1960-level in the early 1970s. From the mid-1970s onwards, the Kaitz-index declined steadily. In terms of median wages, the drop was from about 70% in the mid-1970s to about 45% at present.

MINIMUM WAGE BY AGE GROUP AND INDUSTRY

Youth minimum wages, introduced in 1974, have always been specified as a fraction of the adult minimum wage. Table 1 gives an overview of the changes in the youth minimum wage over time. Initially, the minimum wage was reduced by 7.5% points for every year that an employee was aged below 23 years old. In 1981, motivated by the idea that this would increase employment among youngsters, the percentage reduction among the higher youth age categories was set to ten. A few years later, in 1983, worries about rising youth unemployment led to a further reduction of the youth minimum wage. In recent years, the age threshold for the adult minimum wage was lowered. From 2017, the adult minimum wage applies to employees age 22 and older. From 2019, the adult minimum wage will also apply to 21-year-old workers.

Table 2 gives an overview of the percentages of minimum wage workers by age group. The percentages are both in terms of full-time equivalents and in terms of jobs. For the younger age groups, the per-

⁵ Formally, the Kaitz index also includes the minimum wage coverage, i.e. the share of the workforce to whom the minimum wage applies, but in many countries - including the Netherlands - coverage is universal (see Boeri and Van Ours 2013).

centages in terms of full-time equivalents are higher than the percentages in terms of jobs. This implies that for young workers part-time jobs are less likely to be minimum wage jobs. From age 25 onward, part-time jobs are more likely to be minimum wage jobs. As shown in Table 2, in the age category 15-20 year olds about 17% of all jobs are minimum wage jobs. This age category accounts for 7.3% of all jobs, which in full-time equivalents is equal to 3.2%, indicating that

the share of part-time jobs is very high among workers in this age category. Higher age categories have an employment share of roughly 10% in terms of jobs and full-time equivalents. The employment share of minimum wage jobs declines steadily with age. Beyond age 35, the share of minimum wage jobs is about 3% in terms of jobs and 2-2.5% in terms of full-time equivalents. Over half of employment among 15 to 23 years old consists of jobs that involve employment for less than twelve hours per week. Since 15-year-olds and 16-year-olds are still legally obliged to go to school, they often combine work and education. The share of young workers who combine work with school declines strongly with age and weekly working hours, but even among 21-year-olds and 22-year-olds with fulltime jobs one-third is also still at school (CPB 2015).

Table 3 gives an overview of the share of minimum wage workers by industry in 2016. There are major differences between industries. In accommodation and food serving, as well as in renting and other business support, over 10% of the jobs are minimum wage jobs. In mining and quarrying, only 1% of all workers have a minimum wage job. Differences in the share of minimum wage workers between industries are not only related to the type of jobs, but also to bargaining between employers and unions. Collective agreements often specify a lowest pay scale above the level of the legal minimum wage. An increase in the legal minimum wage leads to an increase in these minimum pay scales. Collective agreements also sometimes specify a lowest pay scale for young workers above their youth minimum wage. According to a recent study, about one-third of all collective agreements had a lowest pay scale of between 100% and 110% of the legal minimum

Table 1

Age-related Minimum Wages as a Percentage of the Adult Minimum Wage

Age	From Jan 1, 1974	From Jan 1, 1981	From Jan 1, 1983	From July 1, 2017	From July 1, 2019
15	40.0	35.0	30.0	30.0	30.0
16	47.5	40.0	34.5	34.5	34.5
17	55.0	45.0	39.5	39.5	39.5
18	62.5	52.5	45.5	47.5	50.0
19	70.0	60.0	52.5	55.0	60.0
20	77.5	70.0	61.5	70.0	80.0
21	85.0	80.0	72.5	85.0	100.0
22	92.5	90.0	85.0	100.0	100.0
23 and older	100.0	100.0	100.0	100.0	100.0

Source: Ministerie van Sociale Zaken en Werkgelegenheid (2016).

wage in 2017. On average, the minimum pay scale was 1.3% above the legal minimum wage (SZW 2018).

In addition to differences in the share of minimum wage workers by age group and industry, there are small differences between males and females (more among females), full-time jobs and part-time jobs (more among part-time jobs) and firm size (more among small firms) too. Furthermore, the share of minimum wage workers is larger among temporary jobs as compared to permanent jobs (De Beer et al. 2017).

Except for youngsters, the share of workers earning the minimum wage is not very high, although there are quite a few workers earning slightly above the minimum wage. Figure 3 gives an overview of the shares of workers earning 100–110%, 110–120%, and 120–130% of the minimum wage. As shown in the lowest age categories, over half of the workers (both in terms of jobs and in terms of full-time equivalents) earn at most 130% of the minimum wage. For the age category 25-30 year olds this is about 30%, while in the age category 30-35 about 20% of the workers earn at most 130% of the minimum wage. Among the higher age categories, this figure is about 10% to 15%.

Table 2

Percentages of Minimum Wage Workers and Share of Total Employment by Age Group, 2016

Age	Share MW workers		Employment	
	FTE	JOBS	FTE	JOBS
15-20	24.5	17.0	3.2	7.3
20-25	19.4	18.9	8.4	10.4
25-30	6.8	8.4	12.0	11.2
30-35	3.3	4.2	11.5	10.3
35-40	2.6	3.3	10.8	9.9
40-45	2.4	3.2	11.3	10.5
45-50	2.3	3.1	13.0	12.1
50-55	2.2	3.0	12.5	11.7
55-60	2.0	2.8	10.5	9.9
60-65	2.1	2.9	6.8	6.5
Total	5.2	6.6	100.0	100.0

Note: FTE = Fulltime equivalents

Source: Statistics Netherlands (2018).

Table 3
Share of Minimum Wage Workers and Share of Total Employment by Industry, 2016

Standard Industrial Classification 2008	Share MW workers		Employment	
	FTE	JOBS	FTE	JOBS
A Agriculture, forestry and fishing	8.2	8.4	1.2	1.3
B Mining and quarrying	1.0	1.0	0.2	0.1
C Manufacturing	3.4	4.0	11.2	9.4
D Electricity and gas supply	1.2	1.5	0.4	0.3
E Water supply and waste management	1.7	2.1	0.5	0.4
F Construction	2.0	2.3	4.6	3.8
G Wholesale and retail trade	6.0	7.8	15.0	16.7
H Transportation and storage	3.1	6.0	5.0	4.6
I Accommodation and food serving	9.5	10.9	3.4	4.9
J Information and communication	3.4	3.8	3.8	3.1
K Financial institutions	2.7	2.9	4.1	3.5
L Renting, buying, selling real estate	4.6	5.1	0.9	0.8
M Other specialized business services	4.5	5.0	6.9	6.1
N Renting and other business support	11.3	13.7	11.1	12.4
O Public administration and services	4.3	4.7	7.5	6.3
P Education	2.0	2.2	6.4	6.5
Q Health and social work activities	4.5	5.1	14.8	16.3
R Culture, sports and recreation	8.6	9.6	1.3	1.6
S Other service activities	7.2	8.4	1.5	1.6
Total	5.2	6.6	100.0	100.0

Source: Statistics Netherlands (2018).

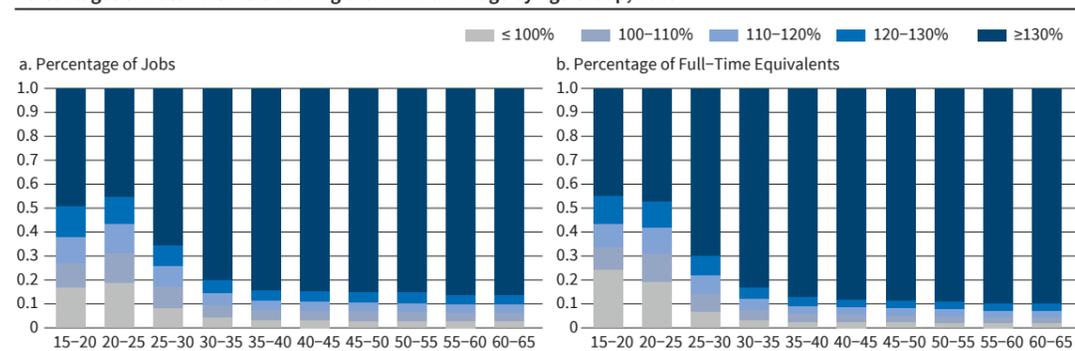
the situation in the 1980s when unemployment was high. Van Soest (1989) for example argued that lowering the minimum wage reduced unemployment. Van Soest and Kapteyn (1991) showed that high minimum wages in the early 1980s were contributing to high unemployment and the reduction of the minimum wage helped to reduce unemployment. Centraal Planbureau (1991) reached a similar conclusion. Later, when the situation in the labour market improved, Van Soest (1999) argued in favour of a modest increase in the minimum wage given the low share of minimum wage workers, i.e. the limited spike in the wage distribution at the minimum wage. Van den Berg et al. (2005) argued that although for most workers the employment effects of a higher minimum wage would be small, for lower educated workers they could be substantial.

In terms of the current policy debate, the focus is on youth minimum wages. From an international perspective, the system of youth minimum wages in the Netherlands has two distinguishing characteristics. Firstly, the adult minimum wage applies from a relatively high age onward. Secondly, the age gradient of the youth minimum wage is relatively steep. As a result, minimum wages among youngsters are relatively low. Because the level of the youth minimum wage depends on the exact age, there are clear discontinuities from the day before one's birthday to the birthday. For example, 19-year-olds are entitled to 55% of the adult minimum wage, but on their

RESEARCH AND POLICY

Economic theory does not give much guidance as to the optimal level of the minimum wage. In imperfect labour markets, there is a range in which an increase in the minimum wage leads to an increase in employment. Nevertheless, if the increase is too large, employment will go down (Boeri and Van Ours 2008). In past decades, the minimum wage in the Netherlands has declined significantly, both in real and relative terms. Whether the current minimum wage is too high or too low is hard to tell. Past research has mainly focused on

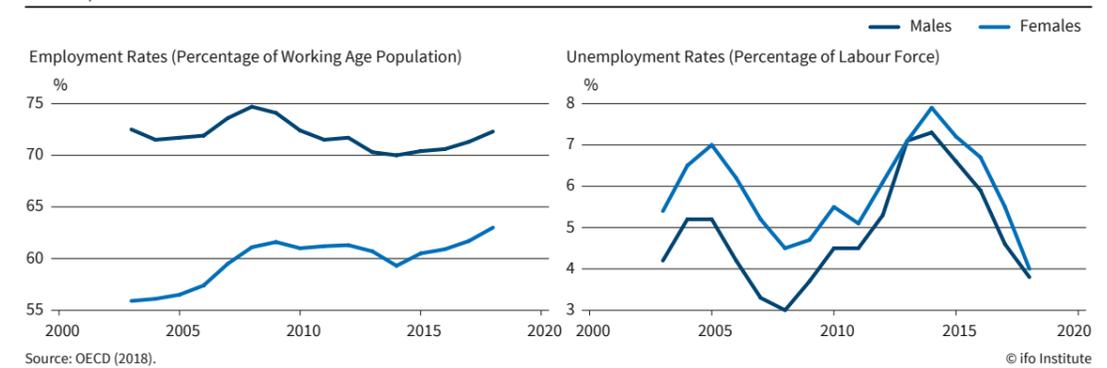
Figure 3
Percentages of Dutch Workers Earning the Minimum Wage by Age Group; 2016



Source: Central Bureau of Statistics (2018).

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Figure 4
Employment and Unemployment Rates in the Netherlands
Second quarters 2013-2018



twentieth birthday, their minimum wage increases to 70% of the adult minimum wage. Using micro data with detailed information about employment status, Kabatek (2016) finds that job separations increase before birthdays, while job accessions increase after birthdays. These effects are significant, but relatively small. Recently, youth minimum wages were increased and the age from which workers are subject to the adult minimum wage was lowered to 22 years. From next year onwards, the adult minimum wage will be applicable to workers of 21 years and older. It is still too early to assess how these recent changes will affect youth employment. Prior to the changes, Centraal Planbureau (2015) concluded that small increases in the youth minimum wage would not have severe effects, but a substantial increase in youth minimum wages would not only harm youth employment, but might also stimulate youngsters to leave school earlier.

Somewhat surprisingly, given its sharp decline, the level of the minimum wage is no issue in the current policy debate. Nevertheless, the labour market in the Netherlands is performing well overall. Figure 4 shows recent developments in employment and unemployment rates grouped by gender. The employment rate of males has fluctuated over this period a little, but in 2018 the level is about the same as it was in 2003, with 72.5% of the male working age population having a job. There is a clear upward trend in the employment rate of females from 56% in 2003 to 63% in 2018, representing a 7%-point increase over a period of 15 years. The unemployment rate of both males and females fluctuated a lot. From 2003 to 2005, there was an increase, followed by a decrease in unemployment which reached its lowest points in 2008 shortly before the Great Recession. From 2008 onwards, the unemployment rate increased until 2014, followed by a sharp decline until in 2018 when unemployment rates for both males and females were about 4%.

In the discussion on the level of the minimum wage, there is a trade-off between too high a minimum wage having negative effects on employment, and too low a minimum wage having negative effects on income

distribution. An increase in the minimum wage will undoubtedly cause the low end of the wage distribution to become denser and the spike at the minimum wage level to increase. After all, about 80% of all employees in the Netherlands are covered by collective agreements. An increase in the minimum wage will affect the negotiated lowest pay scales either directly if the new minimum wage is higher than the negotiated lowest pay scales; or indirectly if unions prefer to have some distance between the minimum wage and the lower pay scales. An increase in the negotiated wage will affect the minimum wage directly through the formal connection between the two. Nevertheless, given the low share of minimum wage workers, increasing the minimum wage does not seem to be problematic in terms of wage distribution. However, the minimum wage in the Netherlands is more than a floor in the wage distribution. It is also used as an instrument to define a socially acceptable minimum. Thus, the minimum wage in the Netherlands is not only important for workers at the low end of the wage distribution. The minimum wage is also used as an instrument for redistributing income and reducing poverty. For example, welfare benefits and old age state pensions are linked to the minimum wage. This implies that an increase in the minimum wage will induce an increase in welfare benefits and old age state pensions; and thus increase government expenditure.

REFERENCES

Boeri, T. and J.C. van Ours (2013), *The economics of imperfect labour markets*, 2nd edition, Princeton University Press, Princeton.

Centraal Planbureau (1991), *De werkgelegenheid in de Jaren tachtig* ("Employment in the 1980s"), Den Haag.

Centraal Planbureau (2015), *Werkgelegenheidseffecten aanpassing wetelijk minimumjeugdloon* ("Employment effects of an adjustment of the youth minimum wage"), CPB-notie, Den Haag.

Centraal Planbureau (2016), *Kansrijk arbeidsmarktbeleid* ("Potentially succesful labour market policy"), deel 2. Den Haag.

De Beer, P., W. Been and W. Salverda (2017), "The interplay between the minimum wage and collective bargaining in the Netherlands; an overview and a case study of three sectors", *AIAS Working Paper* no. 173, University of Amsterdam.

- Kabatek, J. (2016), "Happy Birthday, You're Fired! The Effects of an Age-Dependent Minimum wage on Youth Employment Flows in the Netherlands", Tilburg University, *CentER Discussion Paper Series* no. 2016-001.
- Ministerie van Sociale Zaken en Werkgelegenheid (2018) ("Ministry for Social Affairs and Employment") *CAO Afspraken 2017 ("Collective negotiation agreements 2017")*, Den Haag.
- Ministerie van Sociale Zaken en Werkgelegenheid (2016) ("Ministry for Social Affairs and Employment"), *Nota van wijziging wetsvoorstel herziening wet minimumloon ("Report policy proposal reforming minimum wage law")*, Den Haag.
- Sociaal-Economische Raad (1985), *Advies wettelijke minimumloonregeling ("Advice legal minimum wage arrangement")*, SER, Den Haag.
- Van Damme, L. (2013), "De verzorgingsstaat verder optuigen" ("Building the welfare state"), in: C. van Baalen and J. van Merriënboer, eds., *Polarisatie en hoogconjunctuur ("Polarisation and economic booms")*. Het kabinet De Jong 1967-1971, Boom: Amsterdam, 463-503.
- Van den Berg, G. J., P. A. Gautier and C. N. Teulings (2005), "Feiten en valkuilen van het minimum loon" ("Facts and pitfalls of the minimum wage"), *Economisch-Statistische Berichten*, 90 (4453), 52-54.
- Van Soest, A. H. O. (1989), "Minimum wage rates and unemployment in the Netherlands", *De Economist*, 137 (3), 279-308.
- Van Soest, A. H. O. and A. Kapteyn (1991), "Minimumlonen en werkgelegenheid" ("Minimum wages and employment"), *Economisch-Statistische Berichten*, 76, 68-72.
- Van Soest, A. H. O. (1999), "Het minimumloon is te laag" ("The minimum wage is too low"), *Economisch-Statistische Berichten*, 84, 604.
- Van Zanden, J.L. (2005), *The Economic History of The Netherlands 1914-1995: A Small Open Economy in the 'Long' Twentieth Century*, Routledge, London and New York.

Raul Eamets and Amaresh K. Tiwari Minimum Wage in Estonia and its Impact on Employment and Wage Distribution

INTRODUCTION

In November 2017, the European Commission proclaimed the European Pillar of Social Rights, a set of 20 principles and rights that included the right to fair wages and minimum income. The rights, among others, have sought to ensure adequate minimum wages for workers to allow them to have a decent standard of living and safeguard the ability of low-skilled and young workers to find employment, while providing incentives to (re)integrate into the labour market.

According to the European Commission, the term ‘minimum wage’ refers to the various legal restrictions governing the lowest rate payable by employers to workers, regulated by formal laws or statutes. There is a national minimum wage in 22 of the 28 member states of the European Union and data from the OECD show the minimum wage in 2016 was around 40% of the average monthly wage in those countries. This ratio varied widely between countries, from 31% in Spain to 49% in France. In Estonia, the ratio in 2016 was 37.5%, which increased to 38.5% in 2017, and is currently at 37%.

The Estonian wage setting process is characterised by a low union density rate and a low collective coverage rate (25% in 2016). Most of the agreements are concluded at the enterprise level. There are no collective agreements at the national level except agreements about minimum wages and very few agreements at the industry level. In 2003-2017 minimum wages were agreed in negotiations between the Employers Confederation and Trade Union Confederation. Before 2003 minimum wages were agreed in tripartite negotiations, which involved both social partners and the government. In 2018 tripartite negotiations were re-established. It was agreed in the national minimum wage agreement, that as of 2019 until 2022 the minimum wage increase will be calculated annually on the basis of labour productivity and economic growth, instead of on classic negotiations between the social partners.

This report focuses on the minimum wage and its impact on employment and wage distribution in Estonia. Section 2 provides a brief overview of the literature, especially research covering Central and East European countries, on the impact of the minimum wage. Section 3 describes the institutional features of minimum wage negotiations in Estonia and discusses the trends in the minimum wage starting from the middle of the last decade. The section also discusses the

possible reasons for the steady increase in the level of minimum wages in the last five years, and describes the shifting nature of the minimum wage negotiations in Estonia. Section 4 summarises the results in two recent peer reviewed articles that studied the impact of minimum wages on employment and wage distributions, and section 5 offers some conclusions.

LITERATURE REVIEW

There is growing interest among academics and policy-makers in the minimum wage as a policy tool for rewarding work, reducing poverty and improving the living standards of low-wage workers. While the motivation behind the setting of the minimum wage to improve the living conditions of low-earning is laudable, it remains a contentious and hotly-debated issue; precisely because raising the minimum wage can potentially lead to those very low-earning individuals whose living standard it seeks to raise losing their jobs.

Neumark and Wascher (2007) (see also Neumark et al. 2014) review a huge body of literature on the employment effects of minimum wage and point out that there is a wide range of existing estimates and, accordingly, a lack of consensus over the overall effects of an increase in the minimum wage on low-wage employment. They also state that economic theory does not provide an unambiguous prediction about the employment effects of minimum wages. There are some economists, the “marginalists,” who claim that the low-wage labour market is competitive in nature, so a rise in the minimum wage would lead to unemployment. Then there are, “the institutionalists,” who claim that it would not, and that labour markets do not behave like commodity markets.

According to the institutionalists, the model of competitive wage determination is inconsistent with existing business practices and the assumption that labour markets behaved as if they were commodity markets could lead to erroneous conclusions about the employment effects of minimum wages. The models proposed by the institutionalists incorporate a variety of market frictions, including monopsony (e.g., Aaronson and French 2007), search costs (e.g., Ahn, Arcidiacono and Wessles 2005; Flinn 2006), informational asymmetries (Drazen 1986), and efficiency wages (Rebitzer and Taylor 1995). These models predict that employment effects depend on the types of workers affected, and on the specific conditions of the labour markets concerned.

The ongoing debate and research on the appropriate theoretical model of the low-wage labour market, Neumark and Wascher (2007) nevertheless find that a sizeable majority of the studies on the employment effects of minimum wages in the United States, as well as in other countries, give a relatively consistent (although not always statistically significant) indication of the negative employment effects of minimum wages. Two important conclusions emerge from their



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review. Firstly, very few studies provide convincing evidence of the positive employment effects of minimum wages, especially from those studies that focus on the broader groups for which the competitive model predicts disemployment effects. Secondly, the studies that focus on the least-skilled groups provide relatively overwhelming evidence of stronger disemployment effects for these groups.

While there are many country-specific studies on the impact of minimum wages on employment in western European countries (see Neumark and Wascher 2007), very few studies cover Central and East European (CEE) countries. The few studies that are there, however, do not present uniform findings as to the effect of the impact of minimum wages on employment. Using administrative data from Slovenia to study the impact of an increase in the minimum wage in 2010 on employment retention, Vodopivec (2015) finds that the increase had a negative effect on employment retention for the workers directly affected by the rise. While Majchrowska et al. (2016), who study the effects of changes in the minimum wage on overall employment in Poland during the period 1999-2012, find no effect for the labour market as a whole, but do find negative effects for young workers in disadvantaged regions. Baranowska-Rataj and Magda (2015) focus on young workers in Poland and discover a substantial negative effect on their employment.

Bodnár et al. (2018) report on a survey conducted during 2010-2013 in several CEE countries, where firms were asked how they had reacted to increases in the minimum wage. They find that the most important channels through which adjustments were made in response to a rise in minimum wages turned out to be increases in productivity, cuts in non-labour costs and price increases; while the least important channel was firing of staff. The relative unimportance of firing of staff was particularly prevalent in Estonia, where less than 10% of the firms surveyed cited this as a relevant adjustment channel.

Estonia shares many economic and institutional features with other European post-communist and CEE countries, where labour markets are largely unorganised, employment protection is weakly enforced, and collective wage bargaining plays a very limited role (see Eamets et al. 2005). It therefore becomes interesting to compare the effects of minimum wage on employment with those of Western European and other CEE countries. The two formal econometric analyses of the employment effects of the minimum wage for Estonia, reviewed in section 4, are the studies by Hinnosaar and Rõõm (2003) and Ferraro et al. (2018a). While Hinnosaar and Rõõm (2003) find a substantial negative effect on employment retention for those directly affected by the changes in the minimum wage, Ferraro et al. (2018a) find that a rise in the minimum wage has little or no effect on employment retention.

The minimum wage set can have far-reaching implications. It can also affect income distribution and

inequality through spillover effects. While the rise in the minimum wage is intended to lift wages for those directly affected by the minimum wage, i.e., those who earn wages below the new minimum wage, it may also affect the wage distribution for those with wages above the new minimum wage. The latter effect is called the spillover effect.

The spillover effects of a minimum wage on wage distribution may occur for several reasons. Firstly, since a rise in the minimum wage raises the relative price of low-skilled labour, it may lead to a higher demand for certain types of more skilled labour (depending on substitutability) and hence to increased wage rates for certain types of workers already above the minimum. Secondly, it may prompt firms to reorganise how they use their workforce to realign the marginal products of their minimum wage workers with the new minimum; and this may have effects on the marginal products of other workers. Thirdly, it may lead to increases in wages for some workers above the minimum in cases where employers seek to maintain a given wage structure or 'hierarchy' if the efforts of employees depend on their relative wage (Grossman 1983; Akerlof and Yellen 1990). Fourthly, the rise may increase the reservation wages of those looking for jobs in certain sectors; and hence push up the wages that employers must pay in those sectors to recruit. Falk et al. (2006) find that because minimum wage affects subjects' fairness perceptions, minimum wages have a significant effect on subjects' reservation wages. Flinn (2006) shows that minimum wages can also affect workers' reservation wages in search and matching models with wage bargaining.

Given the increase in distributional concerns after the global financial crisis and the consequent economic slowdown, Ferraro et al. (2018b) note that it is surprising that there is virtually no research on the effects of the minimum wage on wage inequality in CEE countries, especially since many post-transition countries have very unequal wage and income distribution. According to an OECD publication, the Baltic states were among the most unequal economies in Europe in 2015. Measured by the Gini coefficient, income equality in Estonia since 2003 has fluctuated between 37% and 31%; the coefficient was at 32.7% in 2015.

Ferraro et al. (2018b) is one of the first papers to address the distributional effects of the minimum wage in Estonia, a CEE country in the EU. The authors find that the minimum wage has had substantial spillover effects on wages in the Estonian economy, that the increases in the minimum wage have helped to lower wage inequality, and that this has particularly benefited low-wage workers.

INSTITUTIONAL MECHANISM OF AND TRENDS IN THE MINIMUM WAGE

The institution of collective bargaining facilitates the direct involvement of social partners in deciding on minimum wages. In Estonia, national minimum wages

since 1992 have been agreed between social partners in bipartite meetings between the Estonian Trade Union Confederation (EAKL) and Estonian Employers' Confederation (ETTK). Since 2001, the national minimum wage for cultural workers has been negotiated between TALO and the Ministry of Culture.

The Estonian Employers' Confederation (*Eesti Tööstajate Keskkliit*) ETTK is the only employer organisation recognised as a national-level social partner representing employers. Its members include associations as well as enterprises.

Although there are no representative criteria set in Estonia, ETTK is the largest employer organisation involved in collective bargaining, and the only employer organisations involved in national level collective bargaining. It is therefore considered to be a national-level social partner.

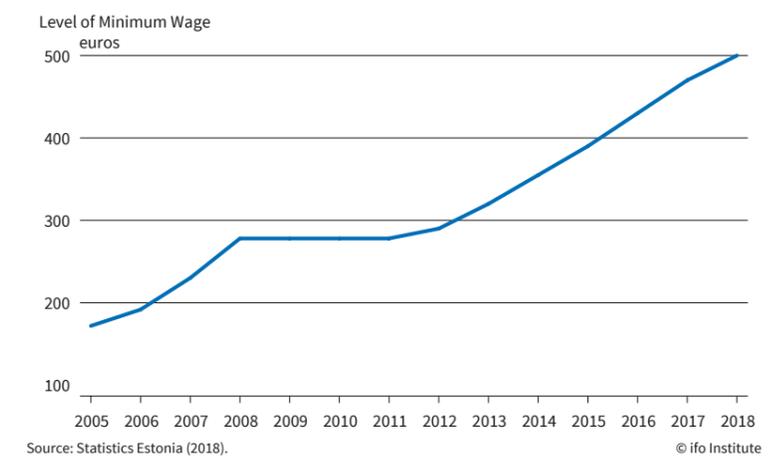
Estonian Trade Union Confederation (*Eesti Ametiühingute Keskkliit*) EAKL is the largest trade union in Estonia and the main national level trade union partner in national minimum wage negotiations. The second largest trade union organisation is Estonian Employees' Unions' Confederation (*Teenistujate Ametiliitude Keskorganisatsioon*) (TALO), which mostly represents cultural workers and public servants.

Usually social partners bargain annually, although in 2016 and 2017 negotiations were conducted biennially. The negotiations open with a proposal from the trade unions to raise the minimum wage next year, and employers respond with their own proposal. Intensive discussions mainly take place in the autumn, when the statistics on the average wage in the second quarter of the current year are published by Statistics Estonia, and the Ministry of Finance releases its economic forecast. The agreed minimum wage is generally lower than the first proposal of the trade unions, while the lower boundary of the initial proposal of employers is the current minimum wage level.

Once an agreement on minimum wages has been reached, it is made statutory by government decree. Changes in the minimum wage take effect from 1st January the following year. The Employment Contracts Act forbids the

Figure 1

Nominal Monthly Minimum Wage in Estonia



payment of wages below the minimum wage to full-time employees.

Since 1999, the national monthly minimum wage has increased from 79.90 euros in 1999 to 500 euros in 2018. Until 2008, an agreement signed in 2001 between the ETKL and the EAKL played an important part in negotiations of the minimum wage, as it called for the minimum wage to be raised to 41% of the average monthly wage by 2008, this being the average level in the European Union.

Figure 2 below shows that the minimum wage as a percentage of the average monthly wage ranged from 32-39% between 2005 and 2018, and has settled at around 37% in recent years. This is the second highest level in Central and Eastern Europe after Slovenia. The ratio of the minimum wage to the average wage fell in 2005-2006, because negotiations failed to anticipate the rapid rise in the average wage as the economy grew. When economic growth peaked in 2006 and 2007,

Figure 2

Comparison of Minimum Wage with Average Monthly Wage



the trade unions bargained to raise the minimum wage to around 40% of the average wage. This meant that the agreed minimum wage would be 20% higher than that in 2005-2006. This rate of 20%, however, turned out to be higher than the rise in the average wage in 2008, as wage growth was brought down by the recession in the economy.

Following the recession, the minimum wage was constant during the period 2008 to 2011 and was raised moderately in 2012, but has increased by around 10% each year from 2013 to 2017. Since 2013 the trade unions and the employers have agreed the minimum wage for the following two years. In 2013 the EAKL and the ETKL were essentially agreed on the minimum wage for 2014 and 2015.

Soosaar and Urke (2017) note that in 2015, however, state arbitration became necessary due to a major difference between the minimum wages proposed by the two parties. While the trade unions proposed that the minimum wage should be raised by 25% in each of the next two years, the employers' association held that the minimum wage should increase at about the same rate as the average monthly wage. The state arbitrator seeking to resolve the stalemate proposed that the minimum wage be raised in 2016 to reach 41% of the average wage. In 2017, a tax rebate for the low paid workers was introduced. Hence the minimum wage that was approved in 2017 accounted for the fact that the rebate increased the net incomes of low-paid workers.

The negotiating strength of the trade unions and employers is reflected by how far the agreed rate lies from the minimum wages proposed by the two parties. As can be seen from Figure 3, following 2012, when the growth rate of the economy started to pick up and unemployment started declining, the bargaining power of the trade unions also increased. Low unemployment, strong demand for labour and faster GDP growth made it easier for the trade unions to argue that

the minimum wage should rise faster than the average wage in the years ahead.

The European Foundation for the Improvement of Living and Working Conditions (Eurofond 2018) published a report on statutory minimum wages in EU member states. The report notes that in Estonia, because of the large difference between the minimum wage proposed by the Trade Union and the Employers' Association, the negotiations became complicated. Since the new income tax reforms planned to increase net wages, especially of those earning lower wages, by up to 64 euros per month, employers wanted no change in the minimum wage. They also argued that an increase in the minimum wage would artificially increase wage levels without any actual growth in productivity, and suggested alternative sustainable and long-term solutions, such as linking increases to economic indicators. However, the trade unions disagreed and requested that the minimum wage be increased to 535 euros in 2018, proportionate to increases in the national average wage. They also proposed long-term goals like increasing the minimum wage level to 50% of the national average wage over the next five to ten years (currently at around 37%). The government encouraged employers to agree on the increase for 2018 as regular increases in the minimum wage have led to a fall in levels of undeclared work, social inequality and emigration. After negotiations lasting four months, the social partners finally agreed to raise the minimum wage to 500 euros in October 2017.

To sum up, over the last five years there has been a steady increase in minimum wages in Estonia. This is remarkable, given that there has been a continuous decline in trade union membership, except for a few sectors like medicine and maritime transportation, and collective bargaining coverage. Both trade union membership and density have been decreasing over the last ten years. The share of employees who belong to a trade union declined from 10.7% in 2009 to 7.2% in 2015. The share in 2015 was higher among employees in the non-governmental, non-profit sector (17%) and in the public sector (12%), while it was lower in private sector organisations (5%). As far as collective agreements are concerned, the number of agreements signed has declined from 88 in 2007 to 40 in 2015.

As noted by Espenberg et al. (2016) and Soosaar and Urke (2017), the increases in the minimum wage over the last few years have been accompanied by the rapid increase in average wages and the labour shortage in many economic fields in Estonia.

This could have facilitated agreements on the demands to increase the minimum wage.

Moreover, as Espenberg et al. (2016) note, even although there has been a decline in trade union membership and collective bargaining coverage, some important changes have been made since 2013 as far as social partners and social dialogue are concerned. They document that trade unions and their members, as well as workers in general, have developed a better understanding of the need for trade unions and the roles they play in the labour market and state policy development. Employers and their associations have also started to take trade unions more seriously and have become more responsible in terms of collective negotiations. The authors find that even in cases of disagreement, the negotiation culture has improved.

Today, both the EAKL and the ETTK have a presence on several bodies, including the supervisory board the Estonian Unemployment Fund and the council of the Estonian Health Insurance Fund. It has been noted that the social dialogue has moved from parties rigidly holding on to their positions to cooperation during negotiations. State level relations between social partners has also improved, with the Ministry of Social Affairs involving employees' and employers' representatives on a more comprehensive basis. Espenberg et al. (2016) partly attribute these changes to the influences of the EU level developments.

TWO STUDIES ON THE IMPACT OF MINIMUM WAGES IN ESTONIA

In view of the fact that the annual increases in minimum wages were above the inflation rate and the growth rate of average monthly wages during the period 2012 and 2017, the minimum wage saw a substantial increase in real terms. Given that the minimum wage was constant in 2008-2011 and rose moderately in 2012, the substantial rises in the minimum wage in Estonia in 2013-2016 provide an excellent opportunity to analyse the effects of the minimum wage on employment.

As the average wage has risen more slowly, the minimum wage has also increased in proportion to the average wage. The higher the minimum wage as a ratio to the average wage, the larger the role it plays in setting the wages for the economy in general. In particular, due to spillover effects, changes in minimum wages could affect the wage and income distributions.

In this section, we summarise the results in Ferraro et al. (2018a), in which the impact of minimum wage on employment retention is analysed, and Ferraro et al. (2018b), who study the impact of minimum wages on wage distribution.

Ferraro et al. (2018a) assess whether the probability of workers retaining full-time employment across the wage distribution was affected by the rises in the minimum wage during the period 2013-2016. They employ the difference-in-differences methodology, whereby the probability of a worker retaining employ-

ment during the "treatment" period 2013-2016 is compared with the probability in the "reference" period 2009-2011 when the minimum wage was constant.

They find that, except for workers who report wage income below the minimum wage, the probability of retaining employment for different wage groups during the period of rises in the minimum wage was not different to the probability of retaining employment for comparable wage groups during the years 2009-2011 when there were no increases in the minimum wage. This suggests that the increases in 2013-2016 had little or no effect on employment retention during this period.

Their results are not in line with the results in Hinosaar and Rõõm (2003), who, using the data from 1995 to 2000, found that an increase in the minimum wage had a negative effect on the employment of those directly affected by it. This, they argue, may be for various reasons. Firstly, the difference in the results could be due to the different methodologies used in the two papers. Secondly, there were very large rises in the minimum wage and intensive worker reallocation during the period 1995-2000, while in the sample considered in Ferraro et al. (2018a) the increases in minimum wages were moderate and there was less intensive reallocation of workers (Meriküll 2016).

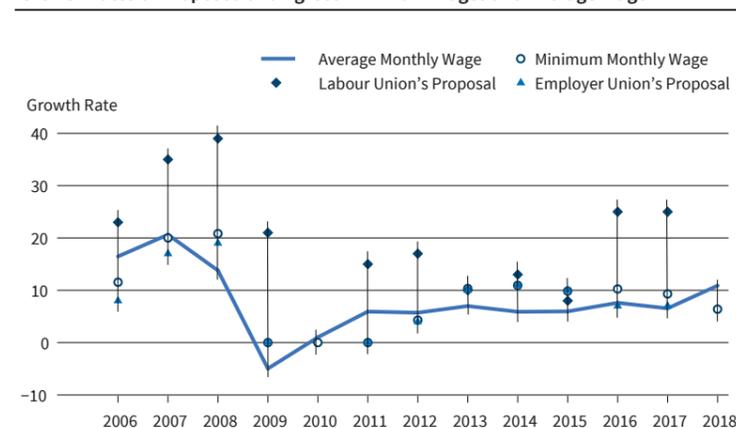
Their results support the findings in Bodnár et al. (2018) where only about 10% of Estonian firms reported firing staff in response to increases in the minimum wage. They argue that the results are in line with a number of studies from other countries, which find little or no effect of minimum wages on employment retention as long as increases in the minimum wage are moderate and employers have other adjustment mechanisms available to channel increases in minimum wages.

Ferraro et al. (2018a), however, caution that the absence of any disemployment effects related to minimum wage hikes in their study does not necessarily mean that a higher minimum wage has no overall employment effects. The minimum wage could, for instance, make it harder for the unemployed to enter the labour market; or the labour market could be subject to substitution and complementarity effects that are not captured in their study. Moreover, their study considers the job retention of workers who are employed full time. It is possible that increases in the minimum wage affect employment at the intensive margin by affecting the number of working hours of unskilled workers. Future research should consider the broader and long-term effects of rises in the minimum wage using other empirical models.

Compared to older EU member states, Estonia has fairly unequal wage and income distributions, which is partly due to the low-profile presence of collective bargaining, its modest social safety net and the flat income tax system. Therefore, it becomes particularly interesting to see how minimum wages affect income and wage distribution. Ferraro et al. (2018b) look at the effect of the statutory minimum wage on wage distribution in Estonia.

Figure 3

Growth Rates of Proposed and Agreed Minimum Wages and Average Wage



Source: Statistics Estonia (2018).

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Ferraro et al. (2018b) use data from the Estonian Labour Force Survey covering the period 2001–2014. They consider only full-time wage-earners who are Estonian residents, while excluding those who work part-time, are self-employed or currently reside abroad. The net wage comprises take-home pay after income taxation, while the minimum wage is set in gross terms and is therefore converted to net terms using the rules of the income tax system.

They adapt the method developed by Lee (1999) to study the implications of minimum wage on wage distribution. The underlying idea in Lee (1999) is that the effect of the minimum wage on the wage distribution will vary depending on the existing wage distributions in different well-defined labour markets. In labour markets, where wages are typically high, few workers will be affected and so the minimum wage will have little impact on wage distribution. By contrast, labour markets with typically low wages will see many workers affected and the minimum wage will have a substantial impact on wage distribution.

Lee (1999) defines each labour market in terms of location and time. Given that there are a limited number of regions in Estonia, to attain enough observation points Ferraro et al. (2018b) define labour market by location, time, as well as by sectoral activity. To check robustness, they also define labour market by occupation instead of by sectors. Given the relatively low degree of mobility in the Estonian labour market, not only geographically but also across sectors and occupations, the variation in wage distribution and the effective minimum wage across the labour markets defined along sectoral or occupational lines allows the authors to identify the effect of the minimum wage on wage distribution.

Ferraro et al. (2018b) show that for the full sample, there are substantial spill-over effects from the minimum wage to the lower percentiles of the wage distribution, but the spill-over effect declines as the wage approaches the median wage. They conclude that the minimum wage appears to have contributed to lower wage inequality in Estonia. They also find that the spill-over at given percentiles of the wage distribution is larger for women than for men. The spill-over effect is also larger for wage-earners aged over 45.

The substantial spill-over effects, they conclude, may be tied to several structural features of the Estonian economy such as the virtual absence of collective bargaining, the relatively low level of wages immediately above the minimum in Estonia, and the indexation of some fees and prices to the minimum wage.

CONCLUSION

This report documents recent trends in minimum wages in Estonia. It describes the institution of collective bargaining of minimum wages and describes the social partners – the trade unions (EAKL and TALO) and the employers' confederation (ETTK) – involved in this

bargaining. We document a sustained increase in the minimum wage since 2012, despite a decline in trade union membership and collective bargaining coverage since 2008. We discuss possible reasons for this phenomenon. We also discuss the changing nature of the social dialogue between the partners.

The report also reviews recent studies on the impact of changes in minimum wages on employment and wage distribution. Ferraro et al. (2018b), who study the impact of minimum wages on wage distribution, find that the minimum wage has had substantial spillover effects on wages in the Estonian economy, that the increases in the minimum wage has helped to lower wage inequality, and that it has particularly benefited low-paid workers.

Ferraro et al. (2018a), who study the impact of increases in minimum wages during the period 2013–2016 on employment retention, find that when compared to the period, 2009–2011 during which minimum wages were constant, increases in 2013–2016 had little or no effect on employment retention. However, as noted earlier, this does not necessarily mean that a higher minimum wage has no overall and long-term employment effects, and there is still scope for future research. Such research could also study the impact of increases in minimum wages on prices, as well as the spending and debt responses of households in CEE countries.

REFERENCES

- Aaronson, D. and French, E. (2007), Product Market Evidence on the Employment Effects of the Minimum Wage, *Journal of Labor Economics*, 25, 167–200.
- Aaronson, D., Agarwal, S. and French, E. (2012), The Spending and Debt Response to Minimum Wage Hikes, *American Economic Review*, 102, 3111–39.
- Ahn, T., Arcidiacono, P. and Wessels, W. (2011), The Distributional Impacts of Minimum Wage Increases When Both Labor Supply and Labor Demand Are Endogenous, *Journal of Business & Economic Statistics*, 29, 12–23.
- Akerlof, G. A. and Yellen, J. L. (1990), The Fair Wage-Effort Hypothesis and Unemployment, *Quarterly Journal of Economics*, 105, 255–283.
- Baranowska-Rataj, A. and Magda, I. (2015), The impact of the minimum wage on job separations and working hours among young people in Poland, *Institute of Statistics Working Series*, Papers No. 45, Warsaw School of Economics.
- Bodnár, K., Fadejeva, L., Iordache, S., Malk, L., Paskaleva, D., Pesliakaitė, J., Todorović, N., Tóth, J. P., and Wyszynski, R. (2018), How do firms adjust to rises in the minimum wage? Survey evidence from Central and Eastern Europe, *ECB Working Paper Series*, No. 2122.
- Drazen, A. (1986), Optimal Minimum Wage Legislation, *The Economic Journal*, 96, 774–784.
- Emets, R., Masso, J., and Altosaar, M. L. (2005), Estonian labor legislation and labor market developments during the great recession, In A. Piasna & M. Myant (Eds.), *Myths of employment deregulation: How it neither creates jobs nor reduces labour market segmentation*, 103–121, Brussels: ETUI.
- Espenberg, K., Nedozhogina, O., Varblane, U. (2016), Industrial Relations in Estonia: Recent Developments and Future Challenges, *European Commission*.
- Eurofound (2018), Statutory minimum wages 2018, *Publications Office of the European Union*, Luxembourg.
- Falk, A., Fehr, E., and Zehnder, C. (2006), Fairness perceptions and reservation wages - the behavioural effects of minimum wage laws, *Quarterly Journal of Economics*, 121, 1347–81.

Ferraro, S., Hänilane, B., and Staehr, K. (2018a), Minimum wages and employment retention: A microeconomic study for Estonia, *Baltic Journal of Economics*, 18, 51–67.

Ferraro, S., Meriküll, J., and Staehr, K. (2018b), Minimum wages and the wage distribution in Estonia, *Applied Economics*, 50, 5253–5268.

Flinn, C. J. (2006), Minimum wage effects on labour market outcomes under search, matching, and endogenous contact rates, *Econometrica*, 74, 1013–62.

Grossman, J. B. (1983), The impact of the minimum wage on other wages, *Journal of Human Resources*, 18, 3–18.

Hinnosaar, M. and Rõõm, T. (2003), The impact of minimum wage on the labour market in Estonia: an empirical analysis, Working Papers of Eesti Pank, Paper No. 2003/8.

Kiss, A. (2018), The effects of the minimum wage on employment: Evidence from a panel of EU Member States. *European Commission, Directorate-General for Employment, Social Affairs and Inclusion*.

Lee, D. S. (1999), Wage Inequality in the United States during the 1980s: Rising Dispersion or Falling Minimum Wages?, *Quarterly Journal of Economics*, 114, 977–1023.

Majchrowska, A., Broniatowska, P., and Żółkiewski, Z. (2016), Minimum wage in Poland and youth employment in regional labor markets, *Emerging Markets Finance and Trade*, 52, 2178–2194.

Malk, L. (2014), Relaxation of employment protection and labour reallocation, *International Journal of Manpower*, 35, 898–926.

Meriküll, J. (2016), Labor market transitions during the great recession in Estonia, In M. Kahanec & K. F. Zimmermann (Eds.), *Labor migration, EU enlargement, and the great recession*. Berlin: Springer Verlag.

Neumark, D. and Wascher, W. (2007), Minimum Wages and Employment. *Foundations and Trends in Microeconomics*, 3, 1–182.

Neumark, D., Salas, J. M. Ian and Wascher, W. (2014), Revisiting the Minimum Wage-Employment Debate: Throwing Out the Baby with the Bathwater?, *Industrial and Labor Relations Review*, 67, 608–648.

Rebitzer, J. and Taylor, L. (1995), The Consequences of Minimum Wage Laws: Some New Theoretical Ideas, *Journal of Public Economics*, 56, 245–256.

Soosaar, O. and Urke, K. (2017), Estonian Labour Market Review, *Eesti Pank Labour Market Review Series*.

Vodopivec, M. (2015), The employment and wage spillover effects of Slovenia's 2010 minimum wage increase, *European Scientific Journal*, July, 82–109.

Till Nikolka and Panu Poutvaara Labour Market Reforms and Collective Bargaining in France¹



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INTRODUCTION

After the financial crisis, Germany experienced a booming economy with steadily decreasing unemployment rates. The growth rate in France, by contrast, was considerably lower during this period, while unemployment increased steadily from 2008 until 2015, then declined modestly. High unemployment and low growth rates led to disillusionment with traditional political parties. Both traditional mainstream left and traditional mainstream right candidates failed to make it to the second round in France's 2017 presidential election. Instead, French voters faced a stark second-round choice between pro-European Emmanuel Macron who had launched a new centrist party and promised to reform the economy to boost growth and employment, and nationalist Marine Le Pen who represented the far-right National Front and promoted protectionist policies and opposed liberalizing reforms. Macron won 66% of second-round votes. His newly established party won an absolute majority in subsequent parliamentary elections, on a platform to promote economic growth and labour market reforms.

Less than 20 years earlier, Germany had suffered from high unemployment rates and low growth, performing worse than France and most other EU countries. During the 1990s, many collective bargaining agreements in Germany started to include opening clauses allowing for derogations and more flexibility at the regional or company level.² In 2003, a coalition government by the Social Democrats and Greens initiated the so-called Agenda 2010 reform package, with an aim of boosting growth and employment. The name Agenda 2010 refers to the European Union's Lisbon Strategy from 2000, with its ambitious (but ultimately unfulfilled) target of making the European Union "the most competitive and dynamic knowledge-based economy in the world" by 2010 (Lisbon European Council 2000). The German economy subsequently recovered, and the unemployment began to decline in 2005.

Germany's turnaround inspired French politicians to try and reignite economic growth in their country too. Back in 2015, the French government under President Francois Hollande and Prime Minister Manuel Valls proposed reform measures to address structural chal-

lenges facing the French economy. The proposed measures emphasized reforming labour market regulation and the collective bargaining system in France. As part of its evaluation of a proposed reform package, the French Senate invited the ifo Center for International Institutional Comparisons and Migration Research to compare the institutional settings of employee representation and collective bargaining in France and Germany, and to evaluate the proposed reforms. In this article, we describe the regulation of workplace representation and collective bargaining in France, compare the main features with the regulatory framework in Germany, summarise our 2016 evaluation for the French Senate, and discuss subsequent developments and perspectives for the French economy.

We start by presenting the institutional and economic situation in France before the 2016 labour market reforms were implemented. We then summarize and discuss selected reform proposals by Combrexelle (2015). This is followed by a description of the proposed and implemented reforms, first under the Valls government and then once Macron was elected president. Finally, we discuss the presented reform measures in the context of a shift towards more decentralised bargaining in Europe.

LABOUR MARKET DEVELOPMENTS IN FRANCE

Figure 1 reports harmonised unemployment rates for France and Germany. During the 2000s and before the financial crisis unemployment rates were higher in Germany than in France. In Germany, the unemployment rate peaked at 11.3% in 2005, while it was at 8.9% in France during the same year. In 2008, the unemployment rate was 7.4% in both countries. After the financial crisis, the unemployment rate in France increased to 10.4% in 2015, then dipped to 9.4% in 2017. In Germany, unemployment steadily declined to 3.8% in 2017. The OECD (2017b) as well as the IMF (2009) document a significant deterioration in France's export performance during the 2000s due to a structural deterioration in competitiveness. Figure 2 illustrates that between 1995 and 2008 nominal unit labour costs increased by 20 percentage points in France, but remained almost unchanged in Germany, resulting in a major boost to German competitiveness vis-à-vis France. Subsequently, wage growth picked up in Germany, but in 2017 Germany was still considerably more competitive than France. Overall, unit labour costs increased from 1995 to 2017 by 14 percentage points more in France than in Germany.

In a bid to boost an economy with falling international competitiveness, persistently high unemployment, and a structural public budget deficit, Prime Minister Manuel Valls took the initiative and launched a major reform of the French Labour Code and commissioned a report in 2015 from an expert committee headed by Jean-Denis Combrexelle, President of the social department of the Conseil d'État. The resulting proposal

Figure 1

Harmonised Unemployment Rates in Germany and France
As a percentage of the civilian labour force

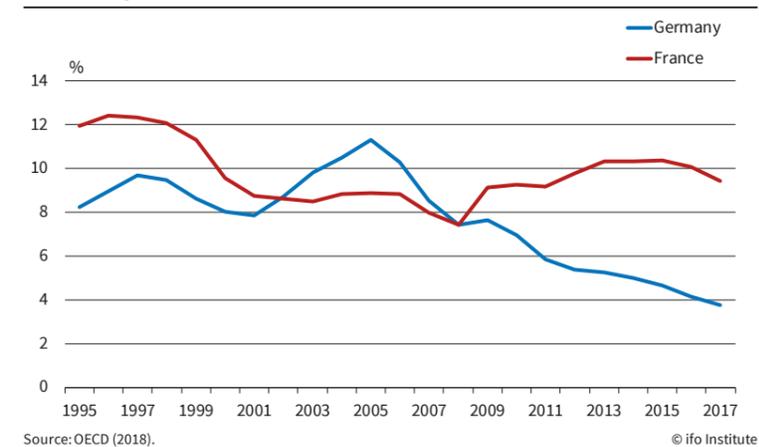
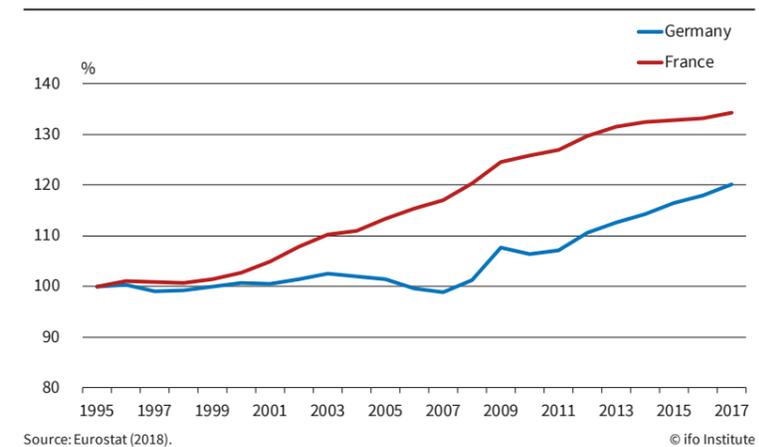


Figure 2

Nominal Unit Labour Cost, % Changes and Index
Index baseline 1995 = 100



Note: 1995: 100%; Nominal unit labour cost are defined as the ratio of total labour costs to total labour productivity; 2016 and 2017 data for France provisional, Source: Eurostat (2018).

(Combrexelle 2015) aimed at improving the functioning of the collective bargaining system, by giving priority to company-level agreements regarding wages, working time and working conditions.

COLLECTIVE BARGAINING IN FRANCE COMPARED WITH GERMANY BEFORE THE 2016 REFORMS

Labour unions and employer organisations play an important role in both France and Germany. Before the 2016 labour market reforms, a central difference between collective bargaining in France and Germany was that the French system was far more fragmented, and the state played a much more central role. France has five major trade unions, each with its own distinct political profile. Several labour unions could be active in one firm, and strikes could be started by employees,

even without the backing of a union, and the lack of a "peace obligation" to rule out strikes, even once an agreement has been reached resulted in a large number of strikes. Furthermore, strikes could also be initiated on topics not covered by collective bargaining, like government policies.

Before the recent labour market reforms in France, participants in collective bargaining were exclusively trade unions and the employers or employers' associations. Trade unions represent distinctive professions, so several trade unions are usually present in one company and take part in collective negotiations.

Even before the recent changes to the labour law, only those unions that fulfilled criteria of representativeness, which means they need a minimum of 10% of votes by employees at a company level (8% at industry and national level) could be represented in a company. Furthermore, collective agreements were only valid if the representative trade union won 30% of votes at elections at a company/industry or national level. If different collective agreements were valid for one company, usually the one with the better condition for the employees applied – the so-called favourability principle. Even although

collective agreements were possible at the regional or company level, the scope of collective bargaining was usually the national level. The possibility to extend collective agreements in France if they contained subjects defined in the Labour Law, was frequently used. Due to the practice of frequent extension of collective agreements by the state, the collective bargaining coverage has remained consistently high in France (98% in 2012 according to worker-participation.eu (2018)).

Like in France, trade unions, employers or employers' associations in Germany generally participate in collective bargaining. There are three main trade union organisations and a bulk of smaller non-organised single unions mostly for specific professions. The unions are not politically motivated and differ according to the industry or profession they represent. Since the 1990s, many collective agreements at the national level

¹ We thank Anne Schönauer for her excellent research assistance.

² According to the OECD (2017a) "opening or derogation clauses [...] allow to set lower standards, i.e. less favourable conditions for workers".

include opening clauses to allow for derogation by regional or firm-level agreements. This leads to variations in collective agreements by region within the same industry, especially concerning wage levels and weekly working hours, in particular between Eastern and Western German states. In 2015, a new law regulated that only one collective agreement is valid for an establishment or a specific group of employees. As in France, employees in a company are covered by collective agreements, irrespective of union membership. The extension of collective agreements by the state to companies that do not participate in collective agreements is possible by law, but can only be conducted by the Ministry of Labour: “if there is a general interest by the public” and if 50% of the employees are already covered by the negotiating employers and if the employers’ representatives agree. In practice, this state intervention is quite rare and the number of extended collective agreements by the state declined in the past. In Germany, there is a “peace obligation” for strikes: if a collective agreement has been signed, there is the duty not to go on strike for the duration of that agreement and on grounds covered by it.

REFORM PROPOSALS IN THE COMBEXELLE REPORT AND THEIR EVALUATION

Combrexelle (2015) suggested several points for reform in French labour law to overcome structural challenges and improve the economy’s performance. In general, the Combrexelle report made a set of proposals to improve the functioning of the collective bargaining system, by prioritising company-level agreements in establishing the rules governing working time, wages, working conditions and employment, including derogations from the legislation on the 35-hour week and

overtime payments. Table 1 gives an overview of central proposals in the Combrexelle report and the 2016 evaluation by the ifo Institute, which is available in English in Poutvaara et al. (2017).

DEVELOPMENT SINCE COMBEXELLE PROPOSAL

In general, the Combrexelle report was welcomed by the Valls government (Rehfeld and Vincent 2018). Based on the reform proposal, labour minister Myriam El Khomri presented a first draft of a bill in February 2016, which included most of the reform measures laid out in the Combrexelle report. It added the reduction of severance payments, and provisions to enable the existence of minority unions representing at least 30% of the workforce (Rehfeld and Vincent 2018). In contrast to the proposals by Combrexelle (2015), however, the 35 hour working week and overtime regulations should not be open to derogations. After its presentation in February 2016, the draft was rejected by all trade unions, as well as the main leaders of the Socialist Party, leading to numerous strikes and mass demonstrations over a period of four months (Rehfeld and Vincent 2018). After consultation with trade unions Prime Minister Valls presented a revised draft of the bill (Laulom 2016). The trade union CFDT agreed with the new draft, but it was opposed by the employer association MEDEF for being too protective for workers to the detriment of businesses (Rehfeld and Vincent 2018). Other trade unions criticised that workers’ rights may be negatively affected and the balance of power in labour negotiations would shift too much in favour of businesses (Henley and Inman 2016). After parliamentary debates, the proposal for capping severance payments was removed from the bill. The bill passed both houses of parliament on July 21st, 2016, was reviewed

Table 1

Reform Proposals and Their Evaluation According to Poutvaara et al. (2016).

Reform Proposal No.	Content	Evaluation
30	Extension of collective negotiations to working conditions, working time, employment and wages. Allow new forms of working contracts in collective negotiations under a framework predefined by the law.	Suggestion to enlarge the scope of collective bargaining can improve the competitiveness of firms. More flexibility of firms can be expected to boost job creation and promote economic growth. The legal framework should ensure the socially desired minimum standards.
35	The priority which is given to firm agreements, the supplementary regulations of industrial agreements and the law which only apply if no firm agreement has been reached.	Collective bargaining between labour unions and employer organizations reduces negotiation costs, compared with bargaining carried out separately in each firm and strengthens employees’ bargaining position. However, allowing firm agreements can be expected to increase flexibility.
9	Legal limitations of the duration of firm agreements and industrial agreements.	Well-defined, mutually agreed contract periods reduce uncertainty for both firms and workers. A peace obligation would reduce costs of strikes during the contract period.
18	Maintaining of extensions of industrial agreements by the Labour Minister.	Maintaining frequent use of legal extensions would be counterproductive and eliminate part of the gains from other proposal. Eliminating the extensions of industrial agreements would boost competition and encourage job creation and lead to more balanced regional development as firms in economically weaker regions could agree with workers on lower wages.
43	Generalization of the principle of majority agreements in a company.	Due to increased flexibility it would be beneficial to have a negotiation environment in which employees’ representatives would be able to negotiate majority agreements on the company level. However, there is a risk that no binding agreement is reached by majority rule.
38	Provision of standardized firm agreements on the industry level.	This could save negotiation costs for small companies but could even give access to a more favorable contracting environment and impede firm growth beyond some given threshold.

Source: Poutvaara et al. (2016).

Table 2

Content of El Khomri Law Based on the Reform Proposal

Reform Proposal No.	Content of the El Khomri law
30	The El Khomri law aims to softening the legal upper limit of weekly work. Even though the legal duration of work remains 35 weekly hours, the new regulation allows employees in exceptional circumstances to raise the weekly upper limits to 60 hours. Furthermore, there were adoption on the daily legal limit (10 hours increased to 12 hours a day) and new rules on overtime payments. Furthermore, it is easier for companies to dismiss workers on the basis of economic problems. This law should make it easier for especially small and medium-sized enterprises to make economic redundancy.
35	Regarding issues on how work time is organized, due to the El Khomri law, a priority will be given to agreements made between individual employees over industry-wide agreements. This decentralization is a fundamental change in construction of labour law in which company-wide collective bargaining agreements are set above industry-wide collective agreements and over default options in the law. Additionally, the favorability principle is loosened: even in cases where these decentralized agreements result in worse condition than the industry-wide agreements, they are valid for the employees.
18	No legal changes were introduced by the El Khomri law.
43	The majority agreement should gradually become the rule at company level. Before a collective company-level agreement is valid, the agreement must be signed by the representatives of the employer and by the one or several unions, which represent 50% of the workers. However, if there no agreement is reached, any union representing more than 30% of employees is enough to organize a direct referendum of employees on the company agreement
38	Companies which are too small to have union representatives are allowed to agree on, for example, working hours deals with their employees in the same way as a larger company.

Sources: Laulom (2016), Rehfeld and Vincent (2018), Henley and Inman (2016), Boring (2016), European Law Firm (2016), Euronews (2016).

by the Constitutional Council, and took effect on August 9th, 2016 after being signed by President Hollande. Labour unions and other organisations still opposed the law and organised mass protests (Boring 2016). Table 2 summarises the contents of the El Khomri law referring to the mentioned proposals by Combrexelle (2015).

In the latest French presidential elections, Emmanuel Macron promised to pursue further labour market reforms to improve the performance of the French economy. To accelerate the implementation of new reform measures, the new labour minister Muriel Penicaud prepared a framework law. This framework law was passed in parliament by a majority in July 2017. Most of the trade unions opposed this law, which was welcomed by employers’ organisations (Rehfeldt and Vincent 2018). The new framework law and article 38 of the French constitution authorises the government to use ordonnances (government decrees) in the legislative process without lengthy subsequent parliamentary debates. The Macron government introduced five “ordonnances” on the 31 August 2018 with a view to tackling persistently high unemployment rates and to make the country more competitive in the global economy (Greenacre et al 2017). The changes under the new framework law can be summarised under five main topics.

The first topic concerns rules for the negotiation of collective bargaining agreements. Industry level agreements are empowered to cover themes that were previously covered by law. Furthermore, company-level agreements can take precedence over industry level agreements in certain areas (Mercier 2017). This new rule further strengthens the implication of the El Khomri law that company-level agreements are supposed to become the standard norm in certain matters. In the absence of successful negotiations at a company and industry level, legal standards apply (Rehfeldt and Vincent 2018).

Secondly, the ordonnances aim to simplify employee representation. For companies with fewer than 20 employees, and therefore without employee representatives, employers may directly negotiate with the employees. The employer can propose an agreement, which needs to be approved by at least two-thirds of the workers. For companies with fewer than 50 employees, the agreement can be signed either by representatives of the employees, if they represent the majority of votes; or it can be signed by employees mandated by a union. In companies with 50+ employees and without an employee representative, the agreement can be signed by elected representatives. This makes it easier for small and medium-sized companies not to follow standardised firm agreements, but to draft their own company agreements (Rehfeldt and Vincent 2018). Furthermore, companies with 50+ employees no longer need to separately appoint works councils, health and safety commissions and employee representatives. These three bodies are now merged into one body called the social and economic committee (SEC), which has distinct tasks depending on the size of the company (Greenacre et al. 2017).

Thirdly, employers and employees’ trade unions have the possibility to negotiate new terms and conditions for fixed term contracts, for example extended durations within the frame of the collective bargaining agreements. In the absence of successful negotiation at company and industry levels, the national law will continue to apply (Greenacre et al. 2017).

Fourthly, the termination of an employment relationship is made easier for firms by placing limits on the damages granted to employees in case of unfair dismissal. Before the reforms, it was left up to tribunals to decide on the capping of damages for dismissal without legal cause, which could be so high that employers were put off hiring new staff to begin with. The dismissal regulations have now been modified so that the costs of damages are based on seniority, for example (Mercier 2017).

The last topic, which had not been addressed by Combrexelle's proposal and reformed by the El Khomri law, concerns the quasi-automatic extension of branch level agreements. The extension of an agreement is now subject to an evaluation of its potential economic consequences. Furthermore, the agreements must include provisions specifically to small firms (OECD 2018).

A TREND TOWARDS MORE DECENTRALISED BARGAINING IN FRANCE

A central feature of the El Khomri law and the subsequent ordonnances by the Macron government is that they make it possible to shift collective bargaining away from the industry towards the individual company level. Since the financial crisis, many governments in Europe have decentralised collective bargaining to reform labour market structures (Pedersini and Leonardi 2018). In fact, the OECD (2004) states that since the 1970 not a single country has moved towards more centralised bargaining.

France is characterised by a highly institutionalised labour market governed mainly by national legislation. This has become manifest in strongly regulated representativeness, the presence of a legal minimum wage and the mandatory social dialogue at national level. In the past, multi-employer bargaining agreements were often extended by law, instead of considering particular needs of economically weaker regions or companies. The recent labour market reforms mainly affected the so-called vertical coordination of the bargaining structure and an increasingly decentralised bargaining autonomy. This is primarily achieved by loosening the favourability principle. Decentralised agreements can now introduce provisions that are independent and potentially derogate from existing sectoral rules. For specific topics such as minimum wages, job classification systems, or gender equality, which are often horizontally coordinated between bargaining units, the favourability principle still maintains. In SMEs, where no trade unions are present, the agreement may now be concluded by elected employees who are not mandated by unions and agreements can be reached by majority rule.

In Germany, labour market partners agreed during the 1990s to an increase in decentralisation with respect to setting wages, working hours and other aspects of working conditions from the industry or region-wide level to the level of a single firm. These changes were implemented despite the fact that, in general, the system of industry-level wage bargaining remained in place. So-called opening or hardship clauses allowed firms to opt out from bargained contracts on the union level, provided that employee representatives agreed (Hassel 1999). According to Dustmann et al. (2014) these developments led to higher wage flexibility, especially at the lower end of the wage distribution. Export oriented industries profited from

this development, which contributed to Germany's competitiveness on international markets today. Additionally, the so-called Hartz reforms, which were part of the Agenda-2010-programme, were implemented by the German government from the year 2003 onwards. Along with social benefit reforms, this included additional measures to foster labour market flexibility and incentivise employment in so-called mini-jobs, for example (Fabre 2012).

CONCLUSION AND OUTLOOK

Since the financial crisis, European countries have faced a stark divide in their labour market performance. Germany and some other countries have enjoyed fast growth and relatively low unemployment, while others have suffered from high unemployment and disappointing growth performance. In Greece, the outcome has been a disastrous recession that has forced radical cuts in public spending, including slashed salaries for civil servants and significant reductions in public pensions. In France and Italy and several other countries, the crisis has primarily meant stagnation and high youth unemployment.

Yet reforms are possible. Germany reformed its labour market rules and welfare spending to improve its competitiveness, and the reform helped to stimulate economic growth and employment. In recent years, France has started to reform its labour market, searching for ways to learn from the German experience. The first results of these reforms are already visible: The Economist (2018) reports that the share of those aged 15-64 who are employed on permanent contracts has increased during 2018; and that firms intend to hire more permanently than a year ago. Moreover, the number of court cases for unfair dismissal went down by 15%, most probably due to the limit that the recent reforms put on damages that labour courts can award. This reduces the risk and potential costs of firms hiring new employees, particularly on permanent contracts.

It is important to note that learning from the German experience does not mean weakening labour unions, as was the case with Margaret Thatcher's reforms in the United Kingdom or various anti-union laws in the United States. Instead, Germany attaches a great deal of importance to the autonomy of collective bargaining, and has strong employee participation in company boards and supervisory councils. The French government has, instead, often intervened in the labour market. With Macron's reforms, first as minister and subsequently as president, the aim is to move closer to the German system and highlight the role of employment creation.

REFERENCES

- Boring, N. (2016), "Global Legal Monitor – France: controversial Labor Law reform adopted", <http://loc.gov/law/foreign-news/article/france-controversial-labor-law-reform-adopted/> (accessed 17 December 2018).
- Boring, N. (2017), "Global Legal Monitor – France: new labor reforms adopted", <http://www.loc.gov/law/foreign-news/article/france-new-labor-reforms-adopted/> (accessed 17 December 2018).
- Combrexelle, J.-D. (2015), "La négociation collective le travail et l'emploi", Paris, La Documentation Française.
- Dustmann, C., B. Fitzenberger, U. Schönberg and A. Spitz-Oener (2014), "From sick man of Europe to economic superstar: Germany's resurgent economy", *Journal of Economic Perspectives* 28 (1), 167-188.
- Euronews (2016), "French labour laws: how do working conditions compare?", Euronews, 3 March, <https://www.euronews.com/2016/03/09/are-french-grumbings-over-labour-law-reforms-justified> (accessed 17 December 2018).
- European Law Firm (2016), France: "El Khomri Law" – A summary of key regulations, <https://www.european-law-firm.com/news/france-the-introduction-of-el-khomri-law> (accessed 17 December 2018).
- Fabre, A. (2012), "Work in France and Germany: opposite strategies", *European Issues* (260), Fondation Robert Schuman.
- Greenacre, N., A. Jauret, V. Ménard and S. Taylor (2017), "France: Macron's reforms to the French Labor Code", *White&Case*, 27 October, <https://www.whitecase.com/publications/alert/france-macrons-reforms-french-labor-code> (accessed 17 December 2018).
- Henley, J. and P. Inman (2016), "Why have France's labour reforms proved so contentious?", *The Guardian*, 26 May, <https://www.theguardian.com/world/2016/may/26/why-france-labour-reforms-proved-so-contentious> (accessed 17 December 2018).
- Hassel, A. (1999), "The erosion of the German system of industrial relations", *British Journal of Industrial Relations* 37 (3), 483-505.
- IMF (2009), "Recent French export performance: Is there a competitiveness problem?", IMF WP 09/2.
- Laulom, S. (2016), "The Labour Act, another step in the flexibilization of French Labour Law", <http://www.ier.org.uk/blog/labour-act-another-step-flexibilisation-french-labour-law> (accessed 17 December 2018).
- Lisbon European Council (2000), "Presidency Conclusions", https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/001100-r1.en0.htm (accessed 14 January 2019).
- Mercier, T. (2017), "France: What to expect from labour code reform?", BNP Paribas Economic Research / Conjoncture Sept. 2017.
- OECD (2017a), *Employment Outlook 2017 – Collective bargaining in a changing world*, OECD Employment Outlook 2017, OECD Publishing, Paris.
- OECD (2017b), *OECD Economic Surveys: France 2017*, OECD Publishing, Paris.
- OECD (2018), *Employment Outlook 2018 – How does France compare?* OECD Employment Outlook 2018, OECD Publishing, Paris.
- Poutvaara, P., D. Leithold, T. Nikolka, K. Oesingmann and D. Wech, "Étude comparative de l'ifo sur les pouvoirs et la représentativité des représentants de salariés dans l'entreprise en France et en Allemagne", in: Rapport d'information n° 647 (2015-2016) de Mme Annick BILLON, fait au nom de la Délégation aux entreprises, Sénat, Paris, 2016, 77-102. Available online: <http://www.senat.fr/rap/r15-647/r15-64712.html#toc170>,
- Poutvaara, P., D. Leithold, T. Nikolka, K. Oesingmann and D. Wech, (2017), "Comparative study about the powers and the representativeness of employee representatives in French and German companies", ifo Forschungsberichte 84/2017.
- Rehfeldt, U. and C. Vincent (2018), "The decentralization of collective bargaining in France: an escalating process", in S. Leonardi and R. Pedersini, eds., *Multi-employer bargaining under pressure - Decentralisation trends in five European countries*, European Trade Union Institute, Brussels, 151-184.
- The Economist (2018), "Bearing Fruit? Tentative signs that Emmanuel Macron's labour reforms are working", *The Economist*, 8 November, [emmanuel-macrons-labour-reforms-may-be-working](https://www.economist.com/news/europe/2018/11/08/emmanuel-macrons-labour-reforms-may-be-working) (accessed 17 December 2018).
- Worker-participation.eu (2018), Collective Bargaining, <https://www.worker-participation.eu/National-Industrial-Relations/Countries/France/Collective-Bargaining> (accessed 17 December 2018).

Ying Bai and Ruixue Jia When History Matters Little: Political Hierarchy and Regional Development in China, AD 1000–2000



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In AD 1000, Kaifeng was the most prosperous city in China and, with an estimated population of one million, arguably the largest city in the world. By 2015, however, its GDP ranked 129th among Chinese cities and its former glory was long forgotten. Kaifeng's decline is closely related to its status in the political hierarchy, after first losing political prestige as the national capital in the thirteenth century, and subsequently its status of provincial capital in the twentieth century. Kaifeng is just one of many cases of a city whose economic status rises and falls with its position in the political hierarchy in China.

In Bai and Jia (2018), we attempt to understand this politico-economic link by tracing the evolution of provincial capitals and the spatial distribution of economic activity in China from AD1000 to 2000. By documenting changes in economic activity, we complement existing literature focusing on the persistence in economic activity due to locational fundamentals (pioneered by Davis and Weinstein 2002), or the persistent impacts of temporary advantages (exemplified in Bleakley and Lin 2012). By exploiting changes in political status and uncovering some mechanisms, we extend the research relying on cross-sectional variation to understand how politics shapes economic geography (e.g., De Long and Shleifer 1993). Moreover, by investigating when history matters little, we can also better understand why history matters (see Nunn 2009 for an overview): whether the state (or another player) has incentives and the capacity to overcome inertia in the location of economic activity is an important predictor for whether history matters.

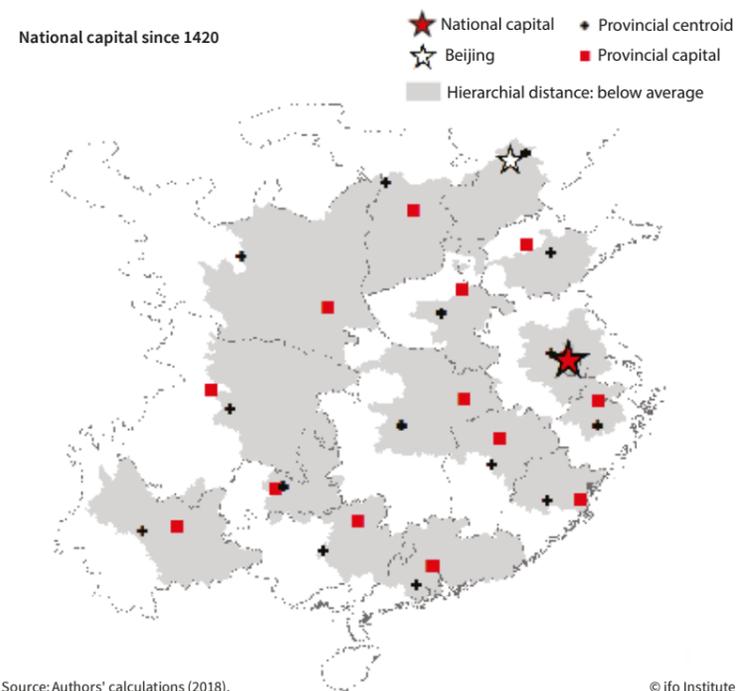
Using data from existing historical and modern censuses, we construct a panel dataset across 261 prefectures for 11 periods (980, 1078, 1102, 1393, 1580, 1776, 1820, 1851,

1910, 1964, and 2000). We find that gaining provincial capital status has a large and positive effect on local economic development, which may not be surprising. A less obvious and more interesting question is whether the economic advantages of capital prefectures still hold after losing capital status. One hypothesis is that losing status matters little because the relocation of economic activity is costly as argued by the path dependence literature mentioned above; the other is that “history matters little” if some players have incentives to incur the fixed costs of relocation, as formalised by Rauch (1993). Empirically, we find support for the latter, even although the relocation decision is mainly driven by political reasoning, rather than economic optimisation. When discussing underlying factors, we find that not only public offices, but also important production factors like human capital and transportation networks alter their geographical location with the change in provincial capital status.

REGIME CHANGES AND PROVINCIAL CAPITAL RELOCATION

As the largest enduring state with a distinctive political hierarchy, China provides a particularly advantageous context for understanding how politics affect economic geography. On the one hand, China underwent six dynastic regime changes during AD1000-2000 that brought about drastic shifts in boundaries and centers of power, with national capitals relocated five times and the method for dividing provinces amended from relying on natural geographical barriers (known as

Figure 1
Hierarchical Distance and Location of Provincial Capitals in the Ming Dynasty

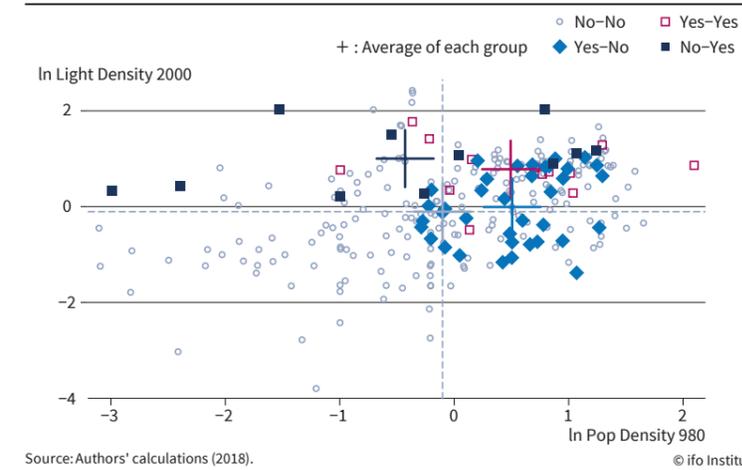


Source: Authors' calculations (2018).

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Figure 2

Population Density in 980 vs. Night Light Density in 2000



Source: Authors' calculations (2018).

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“siting [i.e., following] the forms of mountains and rivers” to intentionally including the natural barriers within provinces, so that boundaries “interlocked like dog's teeth”). Consequently, 63 out of the 261 prefectures defined by the 2000 boundaries were once a provincial capital whose status changed with a new regime. On the other hand, despite regime changes, China's political hierarchical system remained surprisingly stable, where the central government in each regime ruled the vast country by using a three-tier administrative system (province-prefecture-county) and monopolising the power of appointing, reshuffling and removing local officials for each tier. Thanks to its enduring administrative system, China has a long history of governmental censuses whose rich information on population, geography, infrastructure, and bureaucracy allow us to trace the changes in capital status, construct extensive prefecture-level data over time, and examine how both gaining and losing importance in the political hierarchy matters for a prefecture's development.

THE POLITICAL LOGIC OF PROVINCIAL CAPITAL LOCATION

Provincial capitals serve two important roles: they are (1) administrative centres for provincial affairs, and (2) important nodes through which the central government connects with a large number of localities throughout the country to collect/distribute resources and information. Two costs thus become important for the location of a capital for a province: the cost of collecting resources and information within a province and that of delivering some part of them to the national center. Empirically, we can proxy the first part by a prefecture's distance to other prefectures within the same province and the second part by a prefecture's distance to the national capital. We then define the weighted sum of the two distances as “hierarchical distance” and show a prefecture's rank in hierarchical distance within

a province to be a strong predictor of its capital status.

Intuitively, the algorithm of hierarchical distance implies that the provincial capitals deviate from the provincial centroid toward the direction of the national capital. To see this logic, we map the location of provincial capitals regime-by-regime. Figure 1 presents the Ming dynasty as an example to illustrate the logic.

THE IMPORTANCE OF GAINING AND LOSING PROVINCIAL CAPITAL STATUS

As a descriptive pattern, we first look at the 980 and 2000 data, a two-period structure that allows us to depict the main pattern by categorising the prefectures into four groups: (1) capitals in both periods, denoted by “yes-yes”, (2) capitals in 980 but not in 2000, denoted by “yes-no”, capitals in 2000 but not in 980, denoted by “no-yes”, and (4) not capitals in either period, denoted by “no-no”.

In Figure 2, the x-axis indicates the standardised logged population density in 980, while the y-axis indicates the standardised logged night light density in 2000. The data reveal systematic changes as indicated by the four crosses in Figure 2:

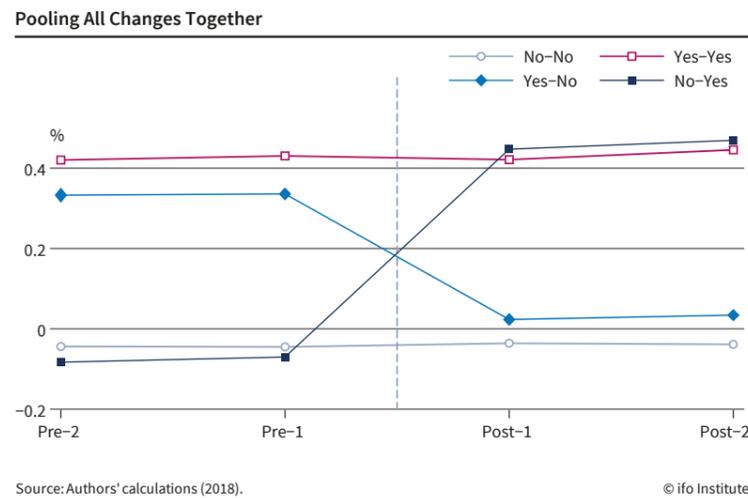
An average “no-yes” prefecture was 0.3 standard deviations below the mean in 980, but transitioned to one standard deviation above the mean in 2000, indicating that gaining capital status is correlated with better economic development.

An average “yes-no” prefecture was 0.5 standard deviations above the mean and comparable to a “yes-yes” prefecture in 980 (when both were provincial capitals), but it nears the mean and is similar to a “no-no” prefecture in 2000 after losing capital status (i.e., its capital status in 980 does not determine its level of economic development in 2000).

Analogous to the analysis above, we can divide the prefectures into four groups every two regimes. This way, we can further visualise the four groups period by period. To compare prefectures with similar characteristics, we first regress the log population density on all of the prefecture characteristics — its geographical variables, including whether a prefecture contains a plain or major river or is on the coast, as well as its slope, elevation, longitude, and latitude, its agricultural variables, including five types of crop suitability, and its macroregion dummies — and obtain the residuals. We then plot the average residuals for the four groups period-by-period (relative to the time of status change) in Figure 3, which again shows systematic changes:

The gaining group (i.e., the “no-yes” prefectures) is similar to its “no-no” peer group before the status

Figure 3



change, but it becomes 48% higher than its “no-no” peer group after gaining capital status;

The losing group (i.e., the “yes-no” prefectures) is about 38% higher than its “no-no” peer group before the status change, but it becomes comparable to the “no-no” peer group after losing capital status.

In Bai and Jia (2018), we examine these patterns more systematically using three approaches: difference-in-differences analysis, an instrument variable approach guided by the algorithm mentioned above (i.e., hierarchical distance), and a matching method. We find the change in capital status is associated with a 40-50% change in population density. Moreover, both the increase and the decrease in population density occur only after gaining and losing capital status. Due to the low frequency of data, we cannot say the exact number of years that it will take for the effects to occur, but the data tell us that they occur within 75 years after a status change. These results are robust to considering lagged population (to deal with mean reversion), controlling for war shocks (which are orthogonal to our instrument), using urbanisation as an alternative outcome, and employing grid-level data. When dividing our data over time according to major technological shocks in the millennium, we find that capital status change matters generally, despite technological progress. If anything, the change in capital status appears to matter even more after 1910.

UNDERLYING FACTORS

What, then, explains the link between political hierarchy and regional economic development? Many factors change along with a prefecture’s political status. Due to the difficulty of enumerating each factor in history and the current age, we focus on certain factors guided by answering two questions important for interpreting our findings. Firstly, is our finding purely driven by public employment (and a possible multiplier effect)? The

answer to this question has implications for whether we can consider the provincial capitals as consumption-intensive “parasite cities.” Secondly, since fixed costs are important for explaining path dependence, is there any evidence that some player incurs the fixed costs?

We first conduct some back-of-envelope analysis using modern data on occupation and discuss the role of public employment (and a possible multiplier effect). Then, we move to human capital, partly because it is an important production factor, and partly because we can

build a panel dataset to examine the impact of capital status change. Finally, we focus on transportation networks across regimes, which are among the most important infrastructure provided by the state.

Public Employment: We find that public employment is indeed part of the channels. But since the aggregate share of public employment in the population accounts for around 3-4% of the population, it is difficult for this channel alone to explain a large part of our baseline finding. One may further argue that the spillover effect of public employment on private employment in China is particularly large. We cannot directly measure the multiplier over time. However, this argument implies a decreasing impact of capital status change over time, because the demand was likely to be more concentrated in capital prefectures in the more distant past, which is not the case in the data.

Change in Human Capital: We would like to examine human capital for three reasons. Firstly, existing studies have documented that human capital exhibits persistence. If we find that human capital varies systematically with political status, it illustrates the importance of political hierarchy in shaping economic factors. Secondly, it is useful to know whether talents move with capital status. If they do, it suggests that the impact of capital status change not only concerns public employment and rent-seeking activity. Finally, it is one of the few important factors we can measure across regimes.

Education in China is historically governed by the imperial examination system (ca. AD605-1905). To measure human capital in history, we employ the number of presented scholars (the highest degree in the imperial examination, known as *Jinshi* in Chinese) in the Qing dynasty. For modern human capital, we use the number of individuals with high school education and above. We normalise the former by population size

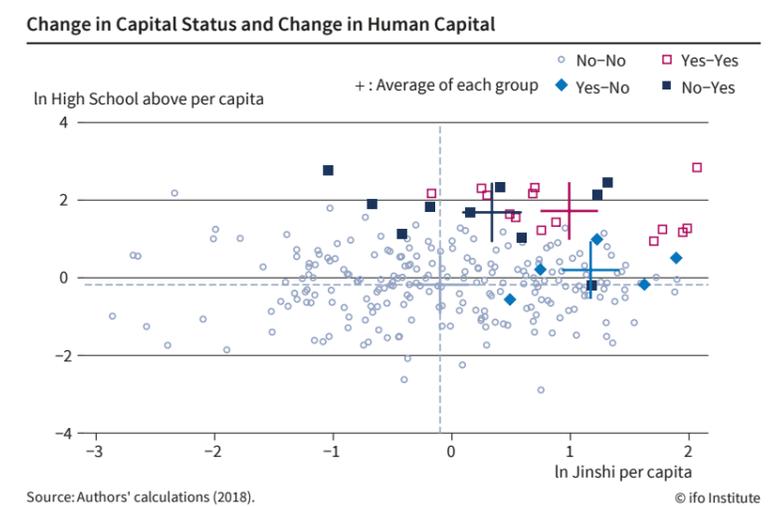
in 1776 (mid-Qing) and the latter by population size in 2000. In line with our descriptive pattern in Figure 2, we divide all the prefectures into four groups based on a prefecture capital status in the Qing and in 2000 (“No-No”, “Yes-Yes”, “Yes-No”, and “No-Yes”). Figure 4 illustrates the pattern, where the x-axis indicates the standardized log *Jinshi* per capita in history, and the y-axis indicates the standardised log individuals with high school or above per capita in 2000. These two measures are positively correlated, indicating some persistence of human capital. However, we also observe that human capital varies systematically within gaining and losing capital status. For instance, those gaining capital status (the “No-Yes” group) are similar to the “Yes-Yes” group in 2000 in terms of modern human capital, even although they were at lower level in the Qing dynasty. By contrast, those losing capital status (the “Yes-No” group) were comparable to the “Yes-Yes” group in the Qing dynasty (when both were capitals), but performed more poorly in 2000, and became more comparable to the “No-No” group.

Change in Transportation Networks: We are interested in transportation networks for reasons similar to those discussed with regard to human capital. On top of these reasons, transportation networks are critical for the state to collect resources and information. Throughout history and up until the present day, the Chinese state has been the largest single investor in transportation and communications facilities. Therefore, by examining the transportation networks, we can gain a better understanding of the role of the state in relocating economic activity.

To assess how transportation networks vary with capital status, we digitise roads and waterway maps for three historical periods (represented by specific years) -- the Song (1078), Ming (1587), and Qing (1820) dynasties-- and the railroad map for the People’s Republic (1990). Figure 5 presents these transportation networks over time.

Empirically, transportation networks experience major changes across regimes for two sets of reasons. Firstly, it is costly to maintain routes. Due to the lack of maintenance, many land routes disappear; several parts of the Grand Canal were ruined for a long period (Brook 1998). Secondly, when a regime replaced the previous one, the ruler decided which parts of the transportation networks needed to be reconstructed, which probably depended on the prefectures’ relative importance in the political hierarchy. Even if some of

Figure 4



the old routes were kept, a prefecture’s centrality in the network was altered by the reconnected or newly-built routes. As a result, the regime change in China provides us with a rare opportunity to systematically investigate changes in the transportation networks.

As already suggested by Figure 5, provincial capitals appear to be the hubs in transportation networks. Empirically, we employ a centrality measure to proxy the spatial importance of different prefectures over time. In line with our baseline outcome, we find that gaining provincial capital status increases centrality, whereas losing capital status implies a loss of centrality. Again, when examining the correlation between capital status and centrality, we find that centrality decreases (increases) only after the loss (gain) of capital status.

These findings show that even transportation networks vary with the political hierarchy. Together with our results on human capital, we find that the impact of capital status change is not limited by public employment. Instead, production factors are also affected. Moreover, since transportation networks are among the most important types of infrastructure, our finding also suggests that the state plays an important role in bearing the fixed cost of relocating economic activity.

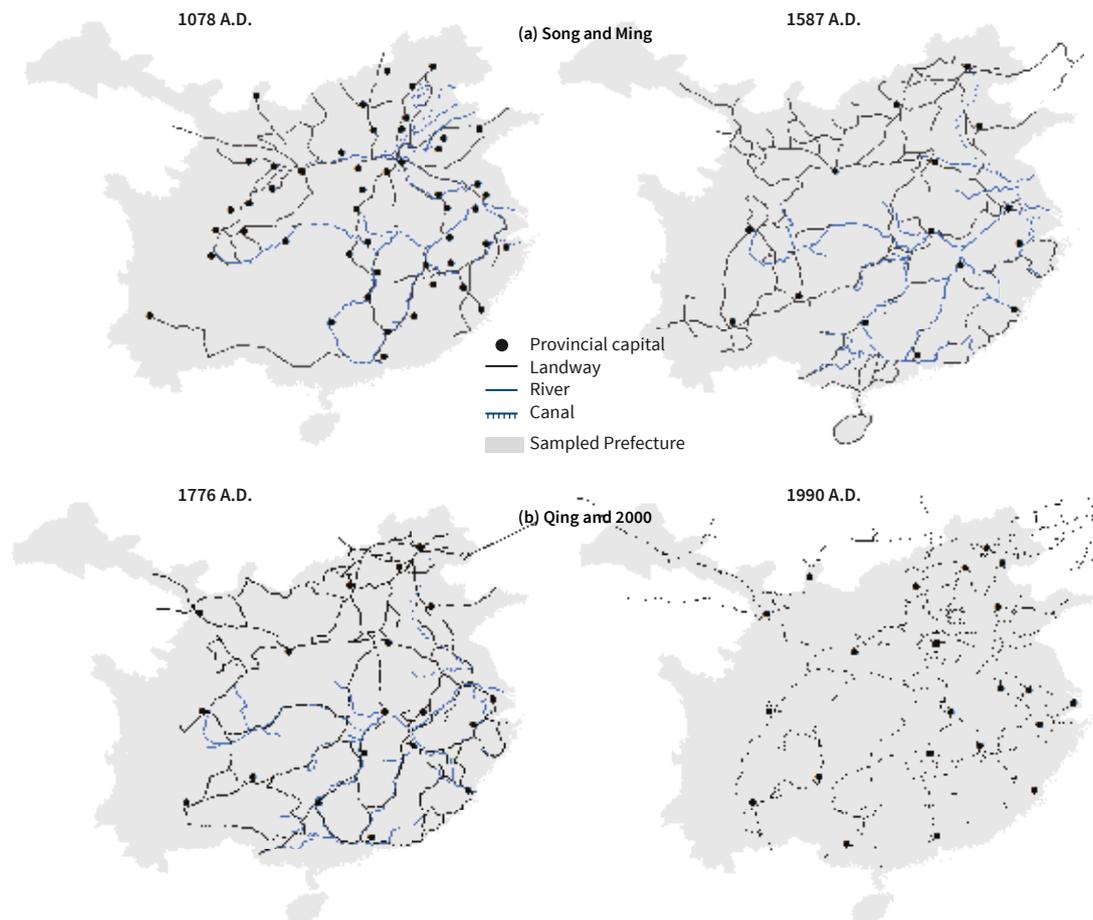
CONCLUDING REMARKS

A combination of an enduring state, a distinctive political hierarchy, and many changes in national and provincial capitals make China a particularly advantageous context for examining the link between politics and economic geography. Given that the first-tier cities in today’s China are typically provincial capitals, it is perhaps not an exaggeration to claim that political hierarchy shapes the country’s urban hierarchy.

The existing literature on path dependence has provided us with abundant examples, which show that

Figure 5

Transportation Networks



Source: Authors' calculations (2018).

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history matters. Yet we also observe changes in economic activity in many contexts, not only in terms of regional development, but also in terms of industrial location within and across countries. By documenting when history matters little, this paper actually offers key insights into why history matters. History would matter more if a state lacked the incentives to relocate its capitals. If China, for instance, were so small and homogeneous that the choice of capitals mattered little, or if the state lacked the capacity to relocate economic activity even if it had the incentive to do so. We hope that such a perspective is useful in interpreting persistence and changes in different contexts.

REFERENCES

- Bai, Y., and R. Jia (2018), "When History Matters Little: Political Hierarchy and Regional Development in China, AD1000–2000", Working Paper, Chinese University of Hong Kong and the University of California, San Diego.
- Bleakley, H., and J. Lin (2012), "Portage and Path Dependence," *Quarterly Journal of Economics* 127(2): 587–644.
- Davis, D., and D. Weinstein (2002), "Bones, Bombs, and Break Points: The Geography of Economic Activity," *American Economic Review* 92(5): 1269–1289.
- De Long, B., and A. Shleifer (1993), "Princes and Merchants: European City Growth before the Industrial Revolution," *Journal of Law and Economics* 36(2): 671–702.
- Nunn, N. (2009), "The Importance of History for Economic Development," *Annual Review of Economics* 1(1): 65–92.
- Rauch J. (1993), "Does History Matter Only When It Matters Little? The Case of City-Industry Location," *Quarterly Journal of Economics* 108(3): 843–867.

Joop Adema, Yvonne Giesing,
Anne Schönauer and Tanja Stitteneder
**Minimum Wages
Across Countries**

INTRODUCTION

Minimum wages are widespread nowadays. Their general aim is to ensure that workers are not paid below their marginal productivity (Eurofound 2018), which may happen if workers have little bargaining power. Hence, it is not surprising that some countries with strong social security and trade unions do not have a minimum wage, since unionisation strengthens the workers' bargaining power. They have other options than to accept a low paid job and are thus less dependent on an institutionalised minimum wage level. However, if minimum wages exceed the productivity of the least productive workers, firms may not employ these workers. Hence, a minimum wage that is set on a relatively high level, can decrease the feasibility of employing workers who are not productive. This, in turn, leads to a reduction in the employment of these workers, and potentially to a decrease in competitiveness of the producers in the respective geographical area (Neumark and Wascher 2006).

Across the world, scholars try to estimate the effects of minimum wages in real world settings, which is important in terms of evaluating the effects of the minimum wage policy. The most commonly encountered benchmark is the effects on employment: it is generally found that employment decreases after introducing a minimum wage (Neumark and Wascher 2006). Several studies find increases in productivity, offsetting negative effects on competitiveness (International Labour Organization 2018). Moreover, Picl and Richter (2014), among others, have found that an increase in minimum wages above the subsistence level can motivate people to enter the labour force. Bossler and Greiner (2016) have analysed the recent introduction of the minimum wage in Germany in 2015, and find small negative effects (-1.9%) on employment and a moderate increase in average wage (+4.8%) for jobs that were paid below the newly-introduced minimum. However, the number of affected workers was less than 10%. The consensus seems to be that introducing a minimum wage at a moderate level is socially beneficial due to the reduced risk of poverty and increased labour supply, but a higher level is harmful due to its negative effects on employment and productivity. Eurofound (2018) gives a more complete overview of the effects of the minimum wage on wages, productivity, employment and other factors.

Since there is no uniform official definition of the minimum wage, we define the statutory minimum

wage throughout this article as the minimum amount of financial reward that a worker receives for working a specified period of time, determined by the (central) government and applicable to the entire geographical jurisdiction and a vast majority of workers. In the absence of a general definition and regulation of the minimum wage, minimum wages should be enshrined in the labour law of each country. Some countries have a de facto minimum level of wages per sector, but this is not 'statutory' as it arises from collective bargaining agreements and is not set by the central government.

In the following sections, we will provide a descriptive overview of minimum wages across the world, focusing on Europe and selected other countries. We begin by elaborating on the history of (statutory) minimum wages, their prevalence, the (relative) level of minimum wages and the short-term trends in the level for the countries concerned. Secondly, we consider the numerous exceptions to minimum wages and how countries determine minimum wages. Furthermore, we discuss the extent to which the minimum wage actually affects labour markets across countries and over time. Ultimately, we will cover some of the recent debates regarding minimum wages by taking a closer look at China, South-Africa and Sweden.

HISTORY

The first country introducing a law to set a legal minimum wage was New Zealand, by adopting the Industrial Conciliation and Arbitration Act in 1894 (wageindicator.org 2018). In Australia, the second country introducing such a law, the Victorian Factories and Shops Act in 1896 set the first minimum wage rates. Section 16 of the Act states: "No person whosoever unless in receipt of a weekly wage of at least two shillings and six pence shall

Figure 1

Timeline

Year of Introduction of the Minimum Wage

Country	Year
New Zealand	1894
Australia	1896
Canada	1918
USA	1938
Brazil	1940
Japan	1947
India	1948
Romania	1949
Spain	1963
Bulgaria	1966
Netherlands	1969
France	1970
Poland	1970
Luxembourg	1973
Malta	1974
Portugal	1974
Belgium	1975
South Korea	1988
Lithuania	1990
Czech Republic	1991
Estonia	1991
Greece	1991
Hungary	1991
Latvia	1991
Slovakia	1991
Albania	1993
China	1994
Serbia	1994
Slovenia	1995
United Kingdom	1999
Ireland	2000
Russia	2000
Croatia	2008
Montenegro	2013
Germany	2015
Turkey	1969/1973*
South Africa	2017**

Note: *In 1969 the minimum wage was introduced in some provinces of Turkey, and in 1973 throughout the country. **In South Africa, the minimum wage was approved in 2017 but has not yet entered into force.

Source: Authors' compilation of various sources (2018).

Figure 2

Statutory Minimum Wages Across the World



Source: Authors' illustration based on various sources.

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be employed in any factory or work-room” (Australian Government 2016). However, this minimum wage was not a universal minimum wage, but instead set minimum wages for six industries. In New Zealand and Australia, the minimum wage was introduced for a similar reason, namely because of campaigns and strikes against the poor working conditions in sweat shops (Verrill 1915). In the United States, Franklin D. Roosevelt first introduced statutory minimum wages nationally in 1938 (Minimum-Wage.org 2018). Members of the European Union started to introduce minimum wages in the second half of the 20th century. Of all the member states that have set a minimum wage, Germany was the last to introduce one in 2015 (Eurostat 2018). In South Africa, the National Minimum Wage Bill was approved in 2017, but has not been enforced yet (The South African 2018; South African Government 2018). A timeline for the introduction of minimum wages of selected countries is shown in Figure 1.

Figure 2 shows that most countries have a statutory minimum wage. There are two types of countries without a statutory minimum wage: progressive countries with high levels of GDP and strong trade unions and sectoral minimum wages, which are determined in collective bargaining agreements per industry; and developing countries. Some of the latter countries only have a minimum wage for public workers, which may even be higher than the average wage in the country, as in Afghanistan, for example (United States 2017). These countries do not effectively have a statutory minimum wage, as the market sectors are not restricted by a minimum wage level. In North Korea, few market forces are at play and trustworthy information about wages is not available (United States 2017). Furthermore, several countries have different minimum wages depending on the industry in which a worker is employed, or sometimes a uniform minimum wage, which only applies to specific industries. In the European Union, 22 countries currently have a statutory minimum wage. Aus-

tria, Denmark, Finland, Italy, Cyprus and Sweden are the exceptions.

MINIMUM WAGE LEVELS

Table 1 shows the main characteristics of minimum wages for a set of selected industrialised countries, as well as some BRIC countries for which data were available. The table lists the minimum wage in the local currency (LCU), the time unit of account (monthly, weekly, daily, hourly), the monthly euro value in 2018, the PPP equivalent in euro in average EU-28 standards, the level of the minimum wage expressed

as a percentage of the country’s median wage, and the date of last change to the system.

The table shows that most countries embrace a system whereby the time unit of account is either hourly or monthly, except for India (daily) and Malta (weekly). The approximately monthly minimum wage in euro terms varies broadly: from 67 euros in the Indian province of Bihar up to 3069 euros in the Swiss Cantons Neuchatêl and Jura. Correcting for prices at the average EU-28 level, this difference decreases: in Bihar it is 215 euros and in Neuchatêl and Jura it is 2,177 euros. Even in terms of a percentage of median wage the differences are large. However, in this relative measure, other countries stand out at both ends: in the USA, the minimum wage is only 34% of the median wage, while in Turkey it reaches 74%. Most countries have recently updated their minimum wage, except for Greece (in 2012 it decreased in absolute terms as a result of the economic downturn) and the USA (2009, although some states have adjusted their minimum level).

However, the comparison between countries is complicated for several reasons. The amounts mentioned are pre-tax figures: disposable household income with the same minimum wage between two countries can be very different. The different time units of account also complicate a meaningful comparison of the numbers, as working hours, national holidays and paid leave days differ.

Minimum wages stated in bigger time units of account for developing countries might thus look higher than they really are: workers may be expected to work longer hours than workers in developed countries. However, the monthly wage says more about how much a worker could earn in total: a worker in a developed country can usually not be paid for more than 40 hours of work. Hence, we report the figures in monthly terms.

Furthermore, many countries make exceptions for specific sectors, young workers and (un)experi-

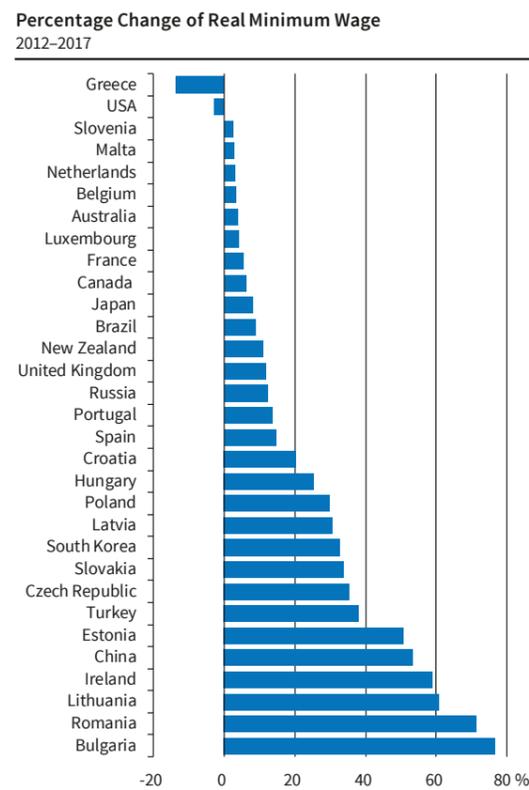
Table 1

Overview of Minimum Wages in Industrialised Countries, 2018

Country	(Statutory) minimum wage in LCU	Unit of account	Monthly euro equivalent	PPP EU 2017 euro equivalent	Percentage of median national wage	Last updated	System
Australia	AUD 18.93	Hourly	2,209	1,726	55%	07.01.2018	National
Austria	None						
Belgium	EUR 1562.59	Monthly	1,563	1,517	47%	06.01.2017	National
Brazil	BRL 954	13 Payments	238	330	not found	not found	National
Bulgaria	BGN 510	Monthly	260	638	not found	01.01.2018	National
Canada	CAD 10.96-15.00	Hourly	1,277 – 1,747	1,181 – 1,616	46%	01.01.2018	Regional
China	RMB 1000-2190	Monthly	130 – 285	220 – 482	not found	not found	Regional
Croatia	HRK 3438.80	Monthly	447	778	not found	01.01.2018	National
Cyprus	None						
Czech Republic	CZK 12200	Monthly	476	743	41%	01.01.2018	National
Denmark	None						
Estonia	EUR 500	Monthly	500	714	41%	01.01.2018	National
Finland	None						
France	EUR 1498.47	Monthly	1,499	1,469	62%	01.01.2018	National
Germany	EUR 8.84	Hourly	1,516	1,516	48%	01.01.2017	National
Greece	EUR 568.08	14 Payments	663	861	48%	14.02.2012	National
Hungary	HUF 138000	Monthly	428	751	53%	01.01.2018	National
Iceland	None						
India	INR 160-423	Daily	67 – 177	215 – 570	not found	not found	Regional
Ireland	EUR 9.55	Hourly	1,652	1,588	46%	01.01.2018	National
Italy	None						
Japan	JPY 762-985	Hourly	1,020 – 1,318	1,010 – 1,306	42%	2018	Regional
Latvia	EUR 430	Monthly	430	672	48%	01.01.2018	National
Lithuania	EUR 400	Monthly	400	678	54%	01.01.2018	National
Luxembourg	EUR 1998.59	Monthly	1,999	1,753	53%	01.01.2017	National
Malta	EUR 172.51	Weekly	748	977	not found	01.01.2018	National
Netherlands	EUR 1578	Monthly	1,578	1,517	47%	01.01.2018	National
New Zealand	NZD 16.5	Hourly	1,808	1,519	60%	04.01.2018	National
Norway	None						
Poland	PLN 2100	13 Payments	523	969	54%	01.01.2018	National
Portugal	EUR 580	14 Payments	677	890	61%	01.01.2018	National
Romania	RON 1900	Monthly	399	924	60%	01.01.2018	National
Russia	RUB 11163	Monthly	145	309	not found	05.01.2018	National
Slovakia	EUR 480	Monthly	480	762	48%	01.01.2018	National
Slovenia	EUR 842.79	Monthly	843	1,095	58%	01.01.2018	National
South Africa	ZAR 20	Hourly	201	386	not found	05.01.2018	National
South Korea	KRW 9200	Hourly	1,248	1,446	53%	01.01.2018	National
Spain	EUR 735.9	14 Payments	859	1,022	40%	01.01.2018	National
Sweden	None						
Switzerland	CHF 20	Hourly	3,069	2,177	not found	2018	Regional
Turkey	TRY 2029.5	Monthly	325	722	74%	01.01.2018	National
United Kingdom	GBP 7.83	Hourly	1,639	1,576	54%	04.01.2018	National
USA	USD 7.25	Hourly	1,230	1,079	34%	07.01.2009	National and Regional

Note: In Switzerland only two regions have a minimum wage. In the USA, there is a federal minimum wage, but states may set a minimum wage above the federal level. In Japan, South Africa, South Korea and India the calculations are based on a working week of 40 hours. For all countries, the monthly euro equivalents are based on own calculations using the exchange rates of 7 November 2018. Sources: Eurostat (2018) and OECD (2018).

Figure 3



Source: Eurostat (2018) and OECD (2018). © ifo Institute

enced workers. We will discuss this later in the report. Ultimately, to assess the relative level of the minimum wage and its implications, one would like to know the undistorted wage distribution. However, this data is not widely gathered, making it hard to compare the actual distorting and social effects between countries.

TRENDS

To further explore minimum wages, it is interesting to consider the changes in recent years. Figure 3 shows the change in real terms of the minimum wage for the countries mentioned in Table 1 that already had a minimum wage in 2012.¹ We observe that, in most countries, the minimum wage has increased over the past five years in real terms. In Eastern European countries and countries that show large GDP growth in particular, the increase is between 20% and 80%. In most developed countries, an increase is observed, but it is fairly moderate (less than 20%). Only Greece and the USA saw their minimum wage decline in real terms. In absolute terms, however, the minimum wage in these countries did not change.

¹ For India, data were not available for 2012.

EXCEPTIONS

As mentioned before, many countries differentiate between the minimum wage level depending on different worker characteristics. Table 2 shows the exceptions to the minimum wage based on age, experience, sectors or other aspects. In Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, Slovenia and Spain there are no exceptions (Eurofound 2018).

The age exceptions are mostly set out in such a way that young workers do not earn the full minimum wage, but receive - depending on their age - a percentage of the minimum wage. For example, in Australia, workers under 16 years, receive 36.8% of the minimum wage, 16 year-old workers receive 47.3%, 17 year-olds 57.8%, 18 year-olds 68.3%, 19 year-olds 82.5% and 20 year-olds receive 97.7% in 2018 (mywage.org 2018).

In some countries, there is a special minimum wage rate for workers who are in training or still in apprentice. For example, in Ireland the minimum wage is adjusted for young workers that are still in the educational system. In the first trimester, the minimum wage is 75% of statutory wage, in the second trimester 80% and in the final trimester 90% (one trimester must be at least one month and no longer than one year). In Luxembourg and Malta, the rate of the minimum wage increases if the employees are more qualified and experienced (Eurofound 2018).

There are different minimum wage rates in countries depending on the sector. For example, in the USA there are different rates for workers, who receive tax-free tips (United States 2018). In Hungary, workers employed in public work programmes, which are programmes for unemployed people or permanent job seekers (Belügyminiztérium 2018), get a wage that is determined separately by the government (Eurofound 2018). In Japan, there are exceptions for workers who perform simple jobs (United States 2018). In New Zealand and Germany, employers may subtract board and lodging cost from the minimum wage, especially for seasonal workers in the agriculture sector (Eurofound 2018; New Zealand Government 2018a).

Other characteristics on which the minimum wage rate is adjusted may be the disability of workers. In New Zealand, for example, a labour inspector may issue wage exceptions permits to employees who have a disability (New Zealand Government 2018b). In Australia, it is regulated such that adults whose productivity is affected by their disability are paid a percentage of the national minimum wage. For example, someone with an assessed work ability of 70% is entitled to 70% of the relevant pay rate (Australian Government 2018a). Other aspects that can increase the minimum wage are working late nights, early mornings, weekends or public holidays, as in Australia (Australian Government 2018b).

Table 2

Exceptions Based on Age, Experience and Sector in 2017 and 2018

Country	Age-specific exceptions	Exceptions related to work experience	Sector-specific exceptions
Australia	Young workers: % of the national minimum wage (a) <16 years: 36.8% (b) 16 years: 47.3% (c) 17 years: 57.8% (d) 18 years: 68.3% (e) 19 years: 82.5% (f) 20 years: 97.7%	Apprentices: % of the national minimum wage (a) 1st year: 55% (b) 2nd year: 65%, (c) 3rd year: 80%, (d) 4th year: 95%; trainees: varies with years of schooling.	(a) Modern award minimum wages (industry-specific) (b) national minimum wage (all industries), used as a 'safety net'
Belgium		Ongoing education, training or apprenticeships: a percentage increase based upon the minimum wage. No general minimum wage for students.	Wage levels are determined by the social partners for each sector; if no minimum wage is specified for the sector the statutory minimum wage applies
Bulgaria	No	No	No
Canada	Varies according to province (e.g. Ontario: different rules for students under 18 years)	Varies according to province (e.g. in Nova Scotia, inexperienced workers receive less)	Employees under province jurisdiction: depends on provinces (e.g. in Ontario, liquor servers get less)
China	Not found	Not found	Not found
Croatia	No	No	No
Czech Republic	No	No	No
Estonia	No	No	No
France	Young workers: % of the national minimum wage (a) 15-16 years: 80% (if you have less than six months of experience in the sector) (b) 17 years: 90%	Ongoing education, training or apprenticeships, e.g. for apprentices: 25-78% of the minimum wage for interprofessional growth	Seasonal workers and foreign workers on seasonal contracts: employers may subtract board and lodging costs from the minimum wage.
Germany			Seasonal workers and foreign workers on seasonal contracts: employers may subtract board and lodging costs from the minimum wage.
Greece	Young workers: a special rate is applicable for those under 25 years of age.		
Hungary	No	Jobs requiring at least a secondary level of education have a guaranteed minimum wage of HUF 185,000 per month.	Workers employed in public works programmes get a wage that is determined separately and only by the government.
India	Varies according to region, there may be different rates for adults, adolescents and children	Varies according to region, there may be different rates for apprentices	Varies according to region, there may be different rates for different scheduled employments
Ireland	Young workers: % of the national minimum wage (a) under 18 years: 70% (b) when in the first year of employment since turning 18 years: 80% (c) employees in their second year of employment and over the age of 19 years: 90%	Ongoing education, training or apprenticeships; young workers over 18: first trimester of training 75% of statutory wage, in the second trimester 80%, final trimester 90%. (Trimester at least 1 month, no more than 1 year)	No
Japan	Not found	Exceptions for workers on trial basis and for workers taking governmentally designated vocational training classes	Exceptions for workers who perform easy and simple jobs
Latvia	No	No	No
Lithuania	No	No	No
Luxembourg	Young workers: % of the national minimum wage (a) 15-16 years 75%, (b) 17 years: 80%	Qualified employees over 18 years: 120% of the national minimum wage	
Malta	Young workers: % of the national minimum wage (a) 16 years: 94% (b) 17 years: 96%	The rate is increased by 1.8% (3.5%) for those who have been employed by the same employer for one (two) years and who were paid the minimum wage.	
Netherlands	Young workers: specific rates of minimum wage for young employees.		
New Zealand	Young workers: applies the starting-out minimum wage which depends on age and experience. Rates for 16- to 17-year-olds cannot be lower than 80% of the adult rate.	Workers in training: applies the training minimum wage. The rate depends on the years they are in the training programme, cannot be lower than 80% of the adult rate.	If accommodation is provided, cost of accommodation will be deducted from national minimum wage (e.g. in the agriculture sector).
Poland	No	No	No
Portugal	No	No	No
Romania	No	No	No
Russia	Varies according to region (e.g. The minimum wage in Moscow is based on local government calculations on the cost of living)	Varies according to region (e.g. The minimum wage in Moscow is based on local government calculations on the cost of living)	Varies according to region (e.g. The minimum wage in Moscow is based on local government calculations on the cost of living)
Slovakia	No	No	No
Slovenia	No	No	No
South Africa	Not found	Depends on different levels of experience	Different sectors: % of the national minimum wage (a) farm workers: 90% (b) domestic workers: 75% (c) employees of expanded public works programmes: 55%. Businesses which cannot afford paying minimum wage can apply for an exemption.
Spain	No	No	No
Turkey	Young workers: lower rates for workers under 16 years old.	Not found	Not found
United Kingdom	Young workers: different rates for: (a) aged 21-24 (b) 18-20 (c) under 18 years but above compulsory school age (d) apprentices aged under 19 or over 19 but in first year of apprenticeship.	Depends on ongoing education, training or apprenticeships.	
USA	Young workers: under the age of 20 during their first 90 consecutive calendar days of employment receive less. After 90 days, full federal minimum wage.	Full-time students in retail or service stores, agriculture, or colleges and universities: not less than 85% of the minimum wage. High school students (>15 years), enrolled in vocational education (shop courses): not less than 75% of the minimum wage.	Different minimum wage rates for workers, who receive tip.

Source: Authors' compilation of various sources (2018).

DETERMINATION

In most countries, the government sets the level of the minimum wage. However, normally the government follows consultation from other bodies. In some countries, the determination takes place in a tripartite setting, or expert committees. Outside of the tripartite or expert committee, in some countries trade unions, or employers' organisations, for example, can play a significant role by consulting the government. Some countries also rely on an indexation mechanism, depending on several components, such as the inflation rate or the consumer price index, which generally automatically update the minimum wage. Table 3 gives an overview of all highlighted countries.

Role of the government: As mentioned before, in most countries, the government has the power to set the level of the minimum wage. In 2017, for example, the majority of EU member states decided on the final level of the minimum wage by taking into consideration the recommendations of other players or mechanisms. By contrast, in some EU member states (Czech Republic, Poland, Portugal, Romania, Slovakia and Slovenia) the government consulted other parties, but because they did not reach an agreement, the government decided unilaterally on the level of minimum wage (Eurofound 2018).

Tripartite: In some countries consultation takes place in tripartite bodies. Those tripartite bodies normally consist of the government, unions and employers. In 2017, most EU member states were consulted about the level of the minimum wage by a tripartite body. Some of the tripartite bodies provided a non-binding recommendation (Eurofound 2018). However, tripartite bodies are not only important in the process of determining the minimum wage in EU member states, but also, for example, in Japan and Turkey (wageindicator.org 2018). In Turkey, the tripartite body, called the Minimum Wage Determination committee, even sets the minimum wage rates of the country, which, in turn, only needs to be announced by the government. The body is composed of fifteen members; an

equal number of representatives of the government, trade union and employers' organisation. The decisions are taken under the majority of votes of its members (International Labour Office 2014).

Independent expert committee: In some countries, for instance in Australia, Brazil, France, or Germany, an independent expert committee is established to consult the government about the level of the minimum wage. In Australia, this committee is called Fair Work Australia's Minimum Wage Panel. There are five Commissioners from a range of backgrounds, including economics, business, social justice, workplace relations, academia and community service. Each financial year Fair Work Australia's Minimum Wage Panel conducts an annual review and decides, based on this review, the level of minimum wage. The review considers written submissions from interested organisations and individuals, consultations before the Expert Panel and research commissioned by the Panel. The decision is then incorporated in the minimum wages changes, which are carried out by either the States or the Federal Tribunal (Australian Government 2018c).

Outside of tripartite or expert committee: Trade unions and employers' organisations can also play a significant role in the determination process of the minimum wage level. In 2017, trade unions and employers' organisations negotiated the level of the minimum wage, independently of any tripartite or expert committee, for example in Bulgaria, France, Hungary, Latvia and the United Kingdom. However, in Hungary and Bulgaria trade unions and employers' organisations did not reach a consensus on the level of minimum wage in 2017 (Eurofound 2018).

Indexation mechanism: In Belgium, Brazil, in some states in Canada, China, India, the Netherlands, Malta and Turkey, an indexation mechanism to adjust the minimum wage level is normally used. In China, for instance, this indexation mechanism includes regional economic factors, including average living expenses and wages, social security contribution, unemployment rates and the level of development (wageindicator.org 2018).

Table 3

Bodies Involved in the Determination Process of the Minimum Wage Level

Government	Independent expert Committee	Tripartite (government, unions, employers)	Examples for bodies outside the tripartite or expert committee		
			Social partners jointly	Trade unions	Employers' organisations
Australia, Belgium, Brazil, Bulgaria, Canada, China, Croatia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Ireland, Japan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, South Africa, Spain, United Kingdom, USA	Australia, Brazil, France, Germany, India, Ireland, Malta, Romania, South Africa, South Korea, United Kingdom	Bulgaria, Croatia, Czech Republic, Hungary, Japan, Latvia, Lithuania, Malta, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey	Belgium, Luxembourg, France, Estonia, Latvia, Romania	Bulgaria, China, France, Hungary, India, Japan, Latvia, New Zealand, Portugal, Romania	Bulgaria, China, France, Hungary, India, Latvia, Portugal, Romania

Source: Authors' compilation of various sources (2018).

COVERAGE

In the light of the absence of minimum wages in several countries, and the fact that some large countries have very different minimum wages despite major wealth differences, it may be worth considering how much impact the applied minimum wage has. However, although the minimum wage as a percentage of the median wage gives a hint, it does not allow us to conclude how many workers the minimum wage affects and how big this effect is.

A better indicator would be the number of people receiving exactly or slightly more than the minimum wage. However, although statistics on household labour income are widespread, statistics on individual worker pay distributions are scarcely available. However, cross-country comparisons are difficult, as some countries include part-time workers earning equal to or less than the minimum wage on a monthly basis in this figure, whereas others do not. The latter only take the workers earning an hourly amount less than or equal to the minimum wage into account. Furthermore, the above mentioned exceptions make it more difficult to compare countries.

The OECD reports the number of workers earning less than 105% of the minimum wage in 2010 and 2014 in various countries. The cross-country statistics are partly harmonised and only count workers above 21 to prevent various exceptions to affect these numbers. In 2014, it ranged from 0% in Belgium (despite having a relatively medium level of minimum wage) up to 43% in Turkey (which has a relatively high minimum wage). High figures can indicate that there are distorting effects (if the minimum wage is strictly enforced) compared to the non-regulated scenario: many workers only get paid the minimum wage, whereas they might have had a lower wage in the non-regulated case. Nine countries had a share of 5% or less, implying that the minimum wage probably has very small distorting effects in those countries. All of the latter countries also set their minimum wage at lower than half of their median wage.

Eurofound (2018) attempted to list the percentage of working people receiving the minimum wage from various national sources. In European countries, this percentage ranges between roughly 3% and 40%. What

Table 4

Various Indicators of Coverage of the Statutory Minimum Wage

Country	Level in % of median wage (2018)	Less than 105% (2010)	Less than 105% (2014)	Eurofound (2018)	Date Eurofound (2018)
Belgium	47%	0%	0%	3%	-
Bulgaria	-	3%	9%	17.70%	-
Croatia	-	10%	7%	3-13%	-
Czech Republic	41%	2%	2%	3.60%	2016
Estonia	41%	4%	3%	19-25%	-
France	62%	8%	8%	10.60%	2017
Germany	48%	-	-	5%	2015
Greece	48%	6%	8%	-	-
Hungary	53%	3%	6%	14%	2015
Ireland	46%	9%	4%	10%	2016
Latvia	48%	12%	8%	18%	2017
Lithuania	54%	14%	8%	20.20%	2016
Luxembourg	53%	10%	6%	12.30%	2016
Malta	-	4%	3%	3.40%	2015
Netherlands	47%	3%	3%	6.60%	2016
Poland	54%	8%	12%	10%	2015
Portugal	61%	17%	13%	23%	2017
Romania	60%	4%	16%	40%	2017
Slovakia	48%	5%	3%	5-6%	2018
Slovenia	58%	19%	19%	5.40%	2016
Spain	40%	1%	1%	12.62%	2015
Turkey	74%	43%	-	-	-
United Kingdom	54%	5%	4%	6.40%	2017

Source: OECD (2018) and Eurofound (2018).

is remarkable is that the share of workers earning close to the medium wage in some Eastern European countries (including Romania, Bulgaria, Estonia) rose quickly in recent years. One possible explanation could be the sharp increase (see Figure 2) in the minimum wage. However, GDP also increased at a fast pace, which may have taken place at the same time as changes in income distribution (due to the full adoption of Romania and Bulgaria into the EU single market for free capital and labour in 2014), not pushing up wages for manual labour very much, but increasing them more in other sectors.

DEBATES OVER MINIMUM WAGE IN CHINA, SOUTH AFRICA AND SWEDEN

In recent years the minimum wage has been widely discussed. In the following, three countries are selected to be reviewed in further detail: one is China, where there is a minimum wage, the second is South Africa – where the National Minimum Wage Bill has been approved,

but has not yet entered into force and the third country is Sweden, which does not have a minimum wage.

China, as a developing country, is an interesting example of the conflicts that can be triggered by raising minimum wage levels in 2018. In 2018, all 17 provinces and municipalities raised the minimum wage level, whereas in 2017, only nine provinces increased it. General wages, however, have not increased naturally through market mechanisms. Although the demand for workers is high, wages in general are not rising. One reason is that the urban employers have been able to attract workers from rural areas, keeping the labour supply high (Cai 2017). Therefore, it is suggested that the increase in the level of minimum wage is now a policy of Chinese President Xi Jinping, who pledged to wipe out poverty by 2020 and is now putting pressure on provinces making sure that the minimum wage acts as a safety-net (Cai 2017). However, there is a fear that with rising labour costs, many investors are choosing to relocate the manufacturing of low-value and labour-intensive products to provinces of China, or to other low-wage countries like Vietnam (Koty 2018). Opponents are afraid that China will lose its comparative advantage given the abundance of low-wage labour outside of China. Furthermore, opponents also argue that raising the minimum wage can decrease opportunities for low-wage workers (Fang and Lin 2013). Overall it must be said that, even with the increase in the minimum wage, China has one of the lowest minimum wage levels in the world (see Table 1).

In South Africa, the minimum wage was approved by the cabinet in November 2017 and meant to be introduced in May 2018 (Winning 2018). However, it has not been enforced yet (The South African 2018). According to the government, its introduction was delayed due to request from interested parties for changes to the Bill. Several important issues were raised in public hearings, which South Africa's parliament will consider including in the Bill (South African Government 2018). The original reason for introducing the minimum wage was to positively intervene in addressing the poor. The minimum wage bill is considered as a part of an effort by President Cyril Ramaphosa to tackle strikes and wage inequality (Roelf 2018). However, opponents remain unsure, if the minimum wage bill will increase unemployment, since some employers will not be able to afford higher wages. Thousands of union members protested against the bill, saying the bill is inadequate. The proposed minimum wage will destroy jobs for the marginal workers and prevent them from entering the labour market (Roelf 2018).

In Sweden, the minimum wage is not regulated by law. Instead, it is subject to bargaining between employers and trade unions and is one part of the collective agreements. Sectoral minimum wages mainly cover service sectors like hotels, restaurants and retails. By international standards, sectoral minimum wages are relatively high and have been increased concurrently – by almost 60% between 1995 and 2016. One

reason is that the labour market relies on powerful social partners and coordinated wage bargaining, which, in turn, gives Swedish workers a strong negotiating position (Thorwaldsson 2018; Skedinger 2008). Additionally, Sweden does not have the phenomenon of the “working poor”. Low-income workers can rely on social assistance, which is so high that the income of households with children without a labour income may be higher than the sectoral minimum wage in a service sector (Skedinger 2008). Despite having a high minimum wage, Sweden's unemployment rate is still low. Therefore, Thorwaldsson (2018), the President of the Swedish Trade Union Confederation, concludes that Sweden is an example that contradicts the argument that higher real wages necessarily lead to more unemployment (Thorwaldsson 2018).

SUMMARY

Government-set minimum wage levels have been around for over 100 years. Nowadays, the statutory minimum wage is considered an important policy instrument to prevent workers from being underpaid without harming employment when set at an appropriate level. Thus, most countries have a statutory minimum wage and in most countries the level has been raised in recent years. However, the absolute level of a minimum wage says little about what effect it has. By representing minimum wage as a percentage of median wage or reporting the number of workers earning close to the minimum wage, we shed light on the stringency of the various minimum wage policies. Furthermore, variety in the implementation of the minimum wage in terms of which groups are exempt from the minimum wage and the differences appearing in how and by whom the level is determined has been discussed. Although the principle of the statutory minimum wage is well-established, it remains a continuous matter of debate: both in countries that have adopted it such as China, but also in countries where a strong movement is calling for the introduction of a minimum wage, as in South Africa. Ultimately, some countries like Sweden prove that there are other paths to a de facto minimum wage that achieves the same goals.

REFERENCES

Australian Government (2016), Sir Richard Kirby Archives - The history of the Australian Minimum Wage, <https://www.fwc.gov.au/sir-richard-kirby-archives/exhibitions/history-min-wage/first-min-wage> (accessed 7 December 2018).

Australian Government (2018a), Employees with disability pay rates, <https://www.fairwork.gov.au/pay/minimum-wages/employees-with-disability-pay-rates> (accessed 7 December 2018).

Australian Government (2018b), Working on public holidays, <https://www.fairwork.gov.au/leave/public-holidays/working-on-public-holidays> (accessed 7 December 2018).

Australian Government (2018c), Fair Work Commission: Australia's national workplace relations tribunal, <https://www.fwc.gov.au/> (accessed 7 December 2018).

Belügyminisztérium (2018), Information on the current status of Public Work Scheme (PWS) in Hungary, <https://kozfoglalkoztatás.kormany.hu/>

[download/8/3a/51000/Information%20on%20the%20current%20status%20of%20Public%20Work%20Scheme%20\(PWS\)%20in%20Hungary.pdf](download/8/3a/51000/Information%20on%20the%20current%20status%20of%20Public%20Work%20Scheme%20(PWS)%20in%20Hungary.pdf) (accessed 7 December 2018).

Bossler, M. and H. Gerner (2016), “Employment effects of the new: Evidence from establishment-level micro data”, IAB Discussion Paper no.10.

Cai, J. (2017), “Minimum Wages on the March in China as Labour Pool Shrinks”, South China Morning Post, 13 October, <https://www.scmp.com/news/china/economy/article/2115121/minimum-wages-march-china-labour-pool-shrinks> (accessed 7 December 2018).

Eurofound (2018), Statutory minimum wages 2018, Publications Office of the European Union, Luxembourg.

Eurostat (2018), Minimum Wage Statistics, http://ec.europa.eu/eurostat/cache/metadata/Annexes/earn_minw_esms_an2.doc (accessed 7 December 2018).

Fang, T. and C. Lin (2013), Minimum Wages and Employment in China, <https://www.hhs.se/contentassets/249bdc81268543db9e223585f-4d53e5a/minimum-wages-and-employment-in-china.pdf> (accessed 7 December 2018).

International Labour Office (2014), Minimum wage systems, International Labour Office, Geneva.

International Labour Organization (2018), Minimum wages and productivity: a brief review of the literature, https://www.ilo.org/global/topics/wages/minimum-wages/monitoring/WCMS_476157/lang--en/index.htm (accessed 7 December 2018).

Koty, A. C. (2018), “Guangdong's Minimum Wages to Increase July 1”, China Briefing, 27 June, <http://www.china-briefing.com/news/guangdong-s-minimum-wages-rise-july-1/> (accessed 7 December 2018).

Minimum-Wage.org (2018), Minimum Wage History, <https://www.minimum-wage.org/articles/history> (accessed 7 December 2018).

mywage.org (2018), Minimum Wages in Australia with effect from 01-07-2018 to 30-06-2019, mywage.org: <https://mywage.org/australia/salary/minimum-wage/> (accessed 7 December 2018).

Neumark, D. and W. Wascher, W. (2006), “Minimum Wages and Employment: A Review of Evidence from the New Minimum Wage Research”, NBER Working Paper no. 12663.

New Zealand Government (2018a), Ministry of Business, Innovation and Employment - Hours and Wages - Agricultural-industry, <https://www.employment.govt.nz/hours-and-wages/pay/minimum-wage/agricultural-industry/> (accessed 7 December 2018).

New Zealand Government (2018b), Ministry of Business, Innovation and Employment - Hours and Wages - Exemptions, <https://www.employment.govt.nz/hours-and-wages/pay/minimum-wage/minimum-wage-exemptions/> (accessed 7 December 2018).

Picl, M. and Richter, P. (2014), “Minimální mzda a její vliv na nezaměstnanost v ČR.”, Acta Oeconomica Pragensia 6, 51-66.

Roelf, W. (2018), “South African Parliament Approves National Minimum Wage Bill”, Reuters, 29 May, <https://www.reuters.com/article/us-safrica-economy-wages/south-african-parliament-approves-national-minimum-wage-bill-idUSKCN11U20Z> (accessed 7 December 2018).

Skedinger, P. (2008), Sweden: A Minimum Wage Model in Need of Modification?, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.493.6418&rep=rep1&type=pdf> (accessed 7 December 2018).

South African Government (2018), Labour on National Minimum Wage Bill, <https://www.gov.za/speeches/labour-labour-amendment-bills-specific-reference-national-minimum-wage-bill-26-mar-2018> (accessed 7 December 2018).

The South African (2018), “National Minimum Wage: Cyril Ramaphosa sets date”, SAnews, 7 December, <https://www.thesouthafrican.com/national-minimum-wage-cyril-ramaphosa-date-south-africa/> (accessed 11 December 2018).

Thorwaldsson, K.-P. (2018), “Sweden's Secret to Keeping Wages High”, World Economic Forum, 15 Januar, <https://www.weforum.org/agenda/2018/01/swedens-secret-keeping-wages-high/> (accessed 7 December 2018).

United States (2017), Country Reports on Human Rights Practices for, <https://www.state.gov/j/drl/rls/hrrpt/humanrightsreport/index.htm> (accessed 7 December 2018).

United States (2018), Wage and Hour Division (WHD), <https://www.dol.gov/whd/minwage/q-a.htm#full> (accessed 7 December 2018).

Verrill, C. H. (1915), Minimum-Wage Legislation in the United States and Foreign Countries, Government Printing Office, Washington.

wageindicator.org (2018), Wage Indicator, <https://wageindicator.org/salary/minimum-wage/> (accessed 7 December).

Winning, A. (2018), Introduction of Minimum Wage in South Africa delayed, Ministry says. Reuters, 20 April, <https://af.reuters.com/article/africaTech/idAFKBN1HR217-OZATP> (accessed 7 December).

New at DICE Database

RECENT ENTRIES TO THE DICE DATABASE

In the fourth quarter of 2018, the DICE Database received a number of new entries, consisting partly of new topics and partly of updates, including:

- Overview of minimum wages in 2018 in industrialised countries
- Share of employees earning less than 105 % of the minimum wage, October 2010 and 2014
- Bodies involved in the determination of the minimum wage level across countries

Forthcoming Conferences

CESifo Area Conference on Public Sector Economics 28–30 March 2019, Munich

This annual area conference is intended to give an overview of the current research undertaken by members of the Public Sector Economics area of the CESifo network and to stimulate interaction and co-operation between area members. All CESifo research network members are invited to submit their papers, which may deal with any topic in Public Economics. The keynote lecture “Cognition, Heuristics, and Decisions to Insure Against Uncertain Longevity” will be delivered by Erzo F.P. Luttmer (Dartmouth College).

Scientific organiser: Rick van der Ploeg

CESifo Area Conference on Applied Microeconomics 22–23 March 2019, Munich

This CESifo Area Conference is designed to bring together CESifo members to present and discuss their ongoing research, and to stimulate interaction and co-operation between them. All CESifo research network members are invited to submit their papers, which may deal with any topic within the broad domain of Applied Microeconomics (industrial organisation, experimental and behavioural economics, market regulation, banking and finance, auctions). The keynote lecture will be delivered by Costas Meghir (Yale University). Please refer to the full call for papers for further details.

Scientific organiser: Christian Gollier

CESifo Area Conference on Employment and Social Protection

26–27 April 2019, Munich

This conference aims to bring together CESifo members to present and discuss their ongoing research, and to stimulate interaction and co-operation between them. All CESifo Research Network members are invited to submit their papers, which may deal with any

topic within the domains of employment and social protection. The area has a wide scope of relevant research. It covers positive and normative research questions that are usually pursued in economic research on social policy, family policy and labour market policy. It also covers research questions dealing with inequality, redistribution and the political economy of redistribution and conflict. The keynote lecture will be delivered by Ingvild Almas (IIES, Stockholm University, and NHH, Bergen).

Scientific organiser: Kai A. Konrad

Workshop on Banking and Institutions 4–5 April 2019, Munich

This workshop is jointly organised by the ifo Institute, Center for Economic Studies (CES), Bank of Finland Institute for Economies in Transition (BOFIT) and LaRGE Research Center (University of Strasbourg), and will investigate the interactions between institutions and banks, including the lessons to be learnt from banking crises. The workshop organisers invite researchers to submit papers covering issues in all areas linking banking and institutions. The keynote lecture will be delivered by Hans Degryse (KU Leuven).

Scientific organisers: Christa Hainz, Zuzana Fungacova, Laurent Weill

3rd Doctoral Workshop on the Economics of Digitisation

3–4 May 2019, Louvain-la-Neuve, Belgium

Hosted by Université Catholique de Louvain (UCLouvain), this two-day international workshop will bring together doctoral students involved in research in the field of the Economics of Digitisation with both a theoretical and empirical focus. The workshop to be held in Louvain-la-Neuve is a joint initiative of CESifo Group Munich, Liege Competition and Innovation Institute, Telecom Paris Tech, Toulouse School of Economics, and UCLouvain. The keynote lecture will be delivered by Catherine Tucker (MIT).

Local organiser: Paul Belleflamme (UCLouvain)

New Books on Institutions

Industries without Smokestacks - Industrialization in Africa Reconsidered

Richard Newfarmer, John Page, and Finn Tarp
Oxford University Press, 2018

The Future of National Development Banks

Stephany Griffith-Jones and José Antonio Ocampo
Oxford University Press, 2018

Towards Gender Equity in Development

Siwan Anderson, Lori Beaman, and Jean-Philippe Platteau
Oxford University Press, 2018