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Article

Employment Effects of Minimum Wages

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Minimum Wage

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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.

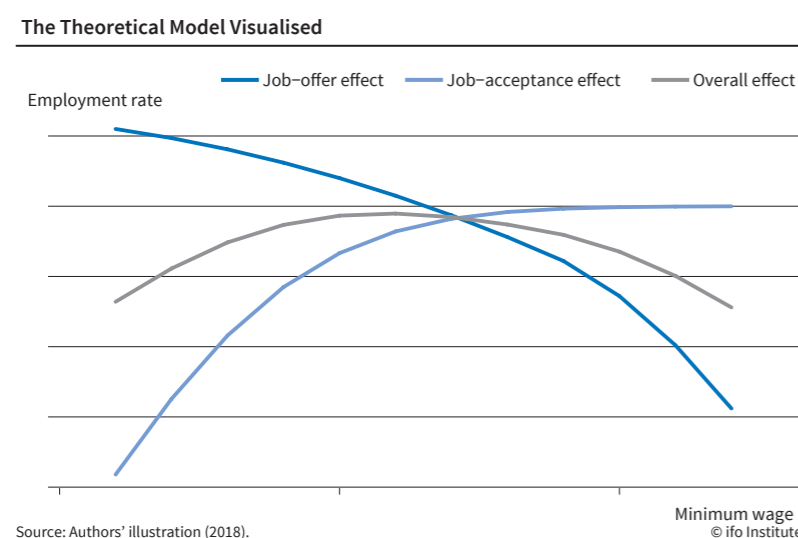
Firstly, an increase in the average productivity of workers would, all other things being equal, incentivise firms to hire more workers and weaken the negative job-offer effect. Consequently, the level of the minimum wage at which the employment effect becomes negative would be higher. Secondly, an increase 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-

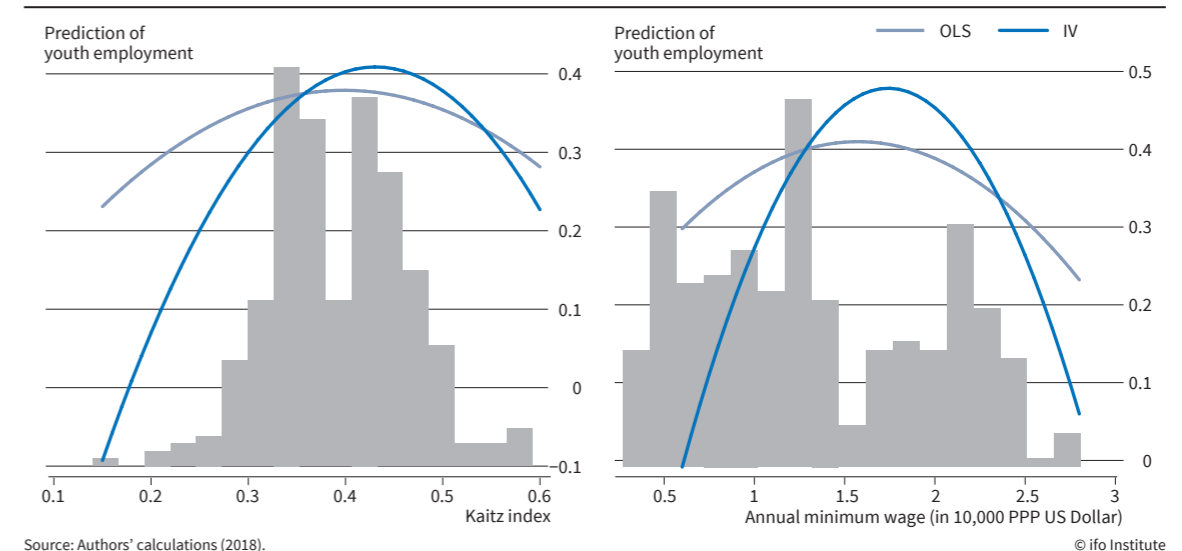
Figure 1



Source: Authors’ illustration (2018).

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

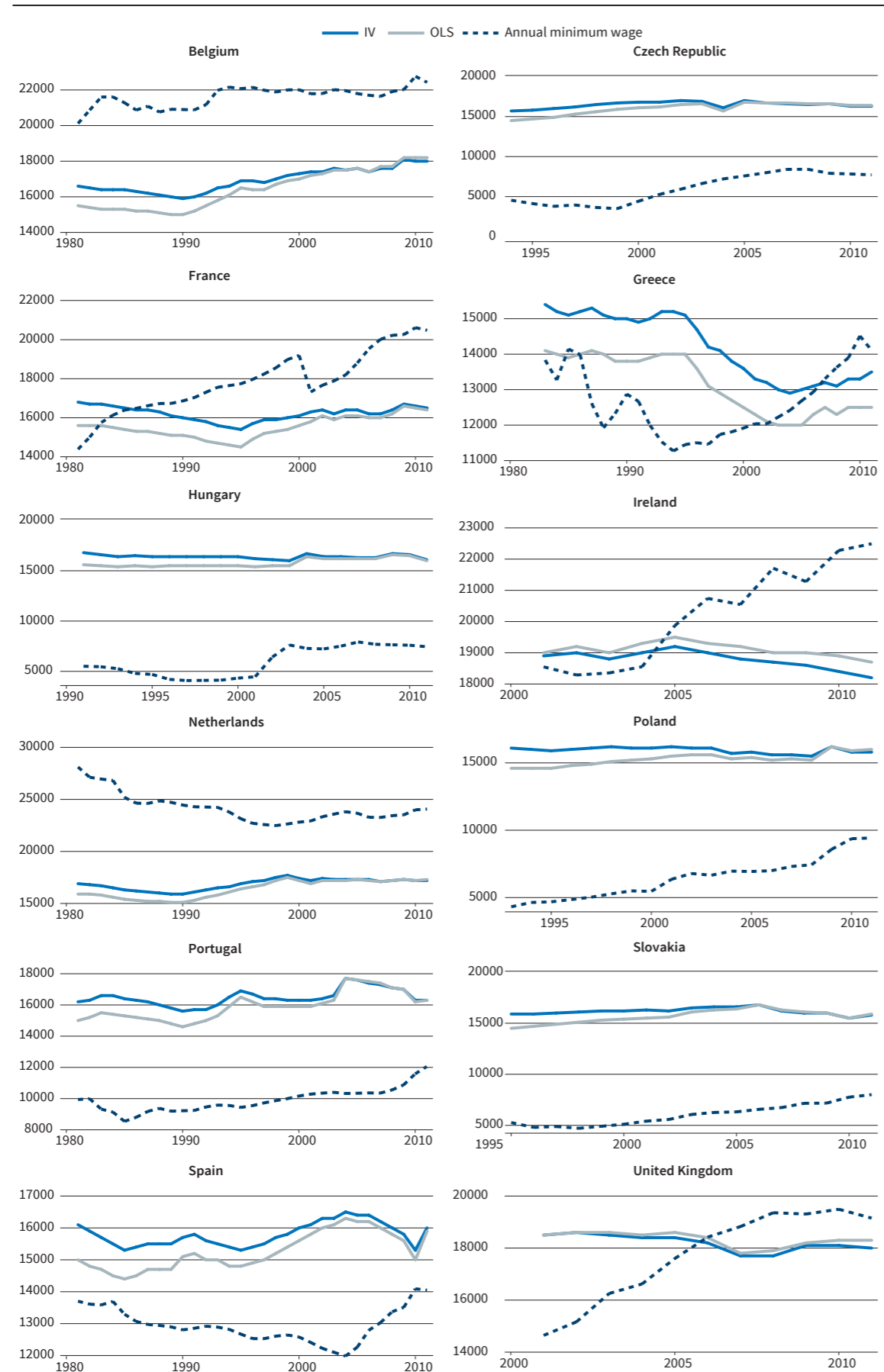
We find strong empirical evidence of a non-linear employment effect of minimum wages in our data set. Figure 2 reveals this non-linear relationship between the minimum wage and employment of young workers for both minimum wage measures. The maximum employment is achieved at a Kaitz Index of 0.39 (0.48 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.

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