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What accounts for differences in minimum wage growth between EU member states?

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Content

Abstract

There are considerable differences in minimum wage growth between EU member states that have statutory minimum wages. Using a novel dataset and a quantitative research design, the article tests whether the growth difference between EU member states can be explained by a catch-up dynamic in new EU member states, by different growth models in old and new EU member states or by a different composition and behaviour of actors responsible for the adjustment of minimum wages in the two groups of countries. The article advances the theory and the empirical knowledge of minimum wage policies and their determinants. The results show that growth differences are caused mainly by diverging strategies of actors in old and new EU member states. This points to fundamental institutional differences in the political economies of the two groups of countries, which remain underexamined in both research and policy-making.

Keywords: Minimum wages, Labor market institutions, European Union, Political economy
JEL Classification: J38, P16, P511 Introduction

1 Introduction

Twenty-one of the 27 EU member states – that is, a majority – have statutory minimum wages. The remaining six have collectively negotiated minimum wages. Differences in the nature of these two types of minimum wage regimes have been widely noted (Boeri, 2012; Garnero et al., 2015b; Fernández-Macías and Vacas-Soriano, 2016). However, there is also considerable variety within the group of EU member states that have statutory minimum wages. This concerns variation in the way minimum wages are adjusted.

For example, Schulten (2014) distinguishes between four types of adjustment regimes and Visser's ICTWSS database classifies countries according to seven types of statutory minimum wage adjustment patterns (Visser, 2019). Eurofound (2019) profiles the different national adjustment mechanisms for the minimum wage with an even larger number of variables for actors and decision criteria. The variety also concerns the scope of minimum wage adjustments. Member states that acceded to the EU before 2004 display much more muted minimum wage growth than those that acceded to the EU in 2004 or later.

This article asks whether there is a connection between the institutional variation in minimum wage adjustment and the differences in minimum wage growth. It tests whether different minimum wage growth rates are the result of a catch-up process. This seems especially pertinent in the context of the accession of new EU member states, which enjoyed accelerated economic growth after joining the internal market. The article also examines whether macro-economic growth imperatives, in particular the dependence of GDP growth on net exports or on consumption, affect minimum wage policy as a result of the need for muted or accelerated wage growth. Finally, it tests hypotheses on how actors such as government and social partners may affect minimum wage policy, for example, by introducing electoral, policy or redistributive biases into minimum wage adjustments.

The variation in minimum wage adjustment regimes across EU member states is not surprising in light of overall variation in political economies inside the EU. EU member states are marked by persistent differences in the areas of labour markets, industrial relations and government regulation, despite the interdependencies created by EU integration, most notably in the context of the internal market and the currency union. The patterns of institutional continuity and change resulting from forces of convergence on the one hand and idiosyncratic historical trajectories and distinctive interests and power distributions among actors on the other hand have been analysed and documented in various fields of comparative political economy, including industrial relations (e.g. Ferner and Hyman, 1998; Streeck, 1998), the literature on varieties of capitalism (e.g. Hall and Soskice, 2001), and welfare state, European integration and transition studies (e.g. Scharpf, 2002; Cernat, 2006; Nölke and Vliegenthart, 2009; Höpner and Schäfer, 2010; Bohle and Greskovits, 2012). Minimum wage policies do not feature prominently in any of these analyses.

Statutory minimum wages are a widely researched topic in labour economics, where the main focus is the employment effects of the minimum wage (see for example Card and Krueger, 1994; Neumark and Wascher, 2008; Dolton et al., 2015; Caliendo et al., 2018). In political science and economic sociology, research on the minimum wage is focused mainly on the politics of its introduction and its interaction with industrial relations (see for example Grimshaw and Bosch, 2013; Mabbett, 2016; Meyer, 2016; Marx and Starke, 2017). Less researched are the nature and impact of the factors in setting the minimum wage once it is introduced. The exceptions are studies by Boeri (2012) and by Arpaia et al. (2017) who both examine different aspects of adjustment regimes in their impact on minimum wage growth.

With continuing efforts towards EU-wide coordination of minimum wage policy and a legislative initiative by the EU Commission under way (European Commission, 2020), a proper understanding of the determinants of minimum wage growth in EU member states is also a boon for effective policy formulation. If adjustment differentials in minimum wages were a mere result of different economic development speeds, there would not be a strong case for policy intervention to begin with, as minimum wage levels would become harmonized by economic convergence over time anyway. If growth strategies were inherently linked with minimum wage policy, any initiatives for harmonizing minimum wages that ignored this link would represent a danger to economic growth. Finally, if actors were found to determine minimum wage growth, policy proposals would have to acknowledge their motives and intentions and assess compatibility of these with the stated policy objectives.

The article is structured as follows: It first presents the development of minimum wages across EU member states. It then develops hypotheses to explain the differences in minimum wage growth based on economic development rates, growth models and actor interests. After describing the data and the method, I examine the hypotheses descriptively and in multivariate analyses and discuss the results. The concluding section summarizes the findings and suggests areas for further research.

2 Different minimum wage trajectories in old and new EU member states

The study comprises 18 EU member states with statutory minimum wages. Missing are four EU member states (Bulgaria, Croatia, Germany and Malta) that also have a statutory minimum wage but that are excluded from the dataset due to missing or (in the case of Germany which introduced its minimum wage only in 2015) too few data points. Included is the United Kingdom which was an EU member state throughout the observation period. The time period covered spans 2000 to 2017. The outcome variable of interest is the growth of the gross real minimum wage. Its value determines whether the minimum wage has grown over and above inflation and whether minimum wage recipients receive real (hourly/monthly) wage gains before taxes and transfers.

Overall, the average real hourly (monthly) minimum wage growth across the sample was 3.8 per cent (3.3 per cent) per year (cf. Table 1). It was higher than the average real wage growth per year, which was just above 2 per cent across the sample. Average inflation was 3 per cent per year. GDP grew at 2.7 per cent and employment at 0.6 per cent per year. The average Kaitz index, which is the ratio of the minimum wage to the median wage of full-time employees, was just under 48 per cent, meaning that minimum wages amounted to approximately 48 per cent of the median wages across the sample.

Tab 1: Country indicators

Country	Hourly real minimum wage growth	Monthly real minimum wage growth	Average real wage growth	GDP growth	CPI	Employment growth	Net export/ GDP	Consumption/ GDP	Kaitz index	Actors
Greece	-0.2	-0.4	-0.2	0.2	2.2	-0.2	-7.5	67.7	46.7	SP/Go
Belgium	0.0	0.0	0.3	1.6	2.0	0.8	1.9	51.7	50.5	In
Netherlands	0.3	0.2	0.4	1.5	1.9	0.5	8.1	46.2	48.4	In
Luxembourg	0.8	0.8	0.6	3.0	2.3	2.5	31.1	33.0	54.0	In
Spain	0.8	0.8	0.0	1.8	2.2	1.5	-0.4	57.0	37.5	SP/Go
France	1.1	0.4	0.8	1.4	1.6	0.7	-0.4	53.9	63.1	In
Portugal	1.4	1.4	0.1	0.7	2.0	0.0	-5.1	64.2	50.7	SP/Go
Ireland	1.5	1.5	1.3	5.0	1.8	1.8	13.7	43.6	49.3	In/Go/Ex
UK	1.9	2.1	1.1	1.9	2.0	1.0	-2.1	64.5	45.8	Ex
Slovenia	2.8	2.7	1.5	2.3	3.3	0.6	1.6	54.4	56.8	In
Lithuania	4.9	4.2	4.6	4.2	2.5	-0.4	-3.4	64.8	48.3	SP
Poland	5.2	3.9	2.0	3.7	2.7	0.6	-0.8	61.1	45.5	Go
Slovak Rep.	5.6	4.5	2.3	3.9	3.5	1.0	-1.7	57.4	44.8	SP
Czech Rep.	5.7	4.8	2.5	2.9	2.1	0.6	2.6	49.0	38.5	Go
Hungary	6.3	6.3	1.5	2.3	4.5	0.9	2.8	53.7	49.2	SP
Latvia	6.5	6.4	6.0	3.9	3.7	-0.3	-7.7	61.2	44.2	SP
Estonia	7.0	7.0	4.9	4.1	3.6	0.6	-0.2	52.0	38.8	SP
Romania	16.0	13.4	7.5	4.0	10.2	-0.6	-3.7	60.5	44.2	Go
Total	3.8	3.3	2.1	2.7	3.0	0.6	1.6	55.3	47.6	

Notes: Growth variables and inflation (CPI): change in per cent from previous year, average 2000-2017. Net export/GDP: share of net exports of goods and services in gross domestic product at constant prices, average 2000-2017. Consumption/GDP: share of private final consumption in gross domestic product at constant prices, average 2000-2017. Kaitz index: nominal minimum wage in per cent of median wage, average 2000-2017. Total is the unweighted average across countries.

SP=Social partners, Go=Government, Ex=Expert Committee, In=Indexation.

Source: Eurofound (2018a), WSI (2019), Eurostat, OECD, AMECO database; own calculations.

Table 1 shows countries in ascending order of minimum wage growth. The sample countries line up along the axis of old and new membership of the EU. While the nine countries in the sample that became members of the EU before 2004 (old EU member states) form the upper half of the table, with lower growth rates, the countries that became members of the EU in 2004 or after (new EU member states) form the lower half of the table, with higher growth rates. On average, the hourly (monthly) minimum wage in old EU member states grew by 0.8 per cent (0.8 per cent) per year. The average hourly (monthly) minimum wage in new EU member states grew by 6.7 per cent (5.9 per cent) per year.

There are two outliers in the sample. Greece is the only country that displays negative real minimum wage growth over the observation period, a result of the drastic reduction in the nominal minimum wage in 2012 as part of the memorandum of understanding for receiving financial assistance from the EU and the IMF in the wake of the Eurozone crisis. Romania, on the other end, had the strongest real minimum wage growth on average, with individual increases of more than 80 per cent at the beginning of the observation period, when the country was not yet a member of the EU.

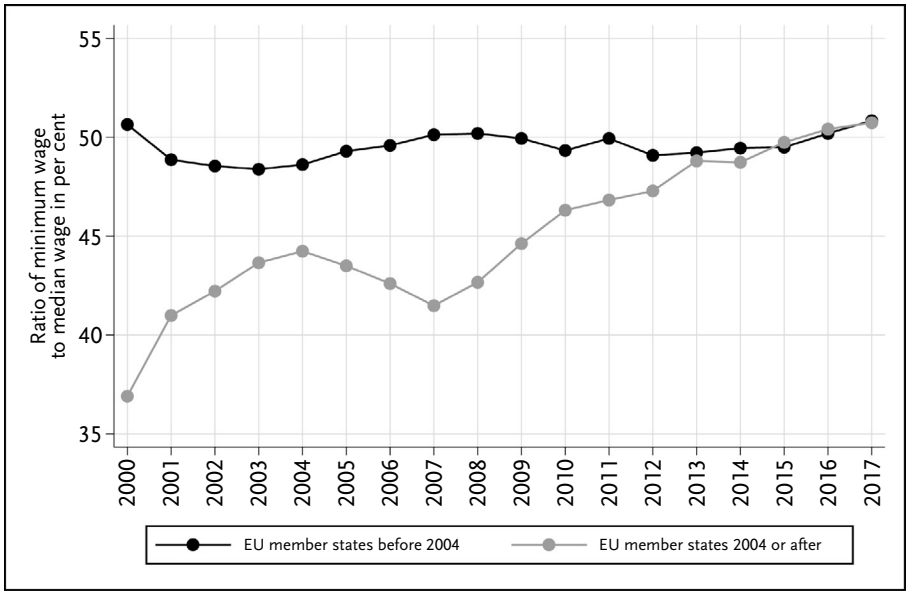

Fig 1: Kaitz index 2000-2017

Note: The Kaitz index comprises data on full time employees only.
Source: OECD; own calculations.

The result of the different magnitudes of minimum wage growth in old and new EU member states is a convergence of the ratio of minimum wages to median wages at an average level of approximately 51 per cent in 2017 (cf. Figure 1). While the average Kaitz index in old EU member states was approximately 14 percentage points higher than that in new EU member states in 2000, this difference had vanished by the end of the observation period. What are possible explanations for the different developments in old and new EU member states? In the following, the economic catch-up of new EU member states, the imperatives of growth models and the influence of actors are discussed as potential explanations.

3 Explanatory approach A: A dynamic catch-up process

With the accession of new EU member states to the EU and to the single market, their economies grew at a higher rate than in old EU member states (see Table 1) and their GDP per capita also grew at a higher rate than the EU average (Alcidi, 2019). As a result, the minimum wage may have grown in response to this fast economic growth. Minimum wage adjustments may thus be correlated with the overall state of economic conditions. Countries with above-average incomes may display relatively lower minimum wage adjustments as the result of the plateauing of economic development. Countries with below-average incomes may display relatively higher minimum wage adjustments as the result of a catch-up dynamic.

We should therefore expect higher minimum wage growth in countries with lower GDP per capita, and lower minimum wage growth in countries with higher GDP per capita. If GDP per capita can significantly explain a large part of the difference in minimum wage growth between old and new EU member states, this hypothesis cannot be rejected.

4 Explanatory approach B: An effect of growth models on the minimum wage

The growth model approach to comparative political economy (Baccaro and Pontusson, 2016; Hassel et al., 2020) characterizes the different ways that advanced capitalist economies generate growth. The post-WWII welfare states of Western Europe all relied on wage-led demand for their economies to grow. Real wage growth led to rising household incomes translating to higher consumer demand, which in turn allowed firms to expand production. With the oil price shock and stagflation in the 1970s and with capital mobility and international competition increasing throughout the following decades, national incomes shifted from labour to capital across OECD countries. With the decline in the wage share, the wage-led growth model reached its limits.

In principle, consumer demand, if not supported through real wage growth, can also be supported through credit or government transfers (Crouch, 2009). Alternative drivers of demand are investment, government consumption and net exports (Baccaro and Pontusson, 2016). Baccaro and Pontusson show that countries have chosen different sets of these available growth strategies, with the UK opting for a model relying on household consumption, whereas Germany opted for a model dependent on exports (see also Höpner, 2019). The two other cases in their study, Italy and Sweden, are less clear-cut and, in the case of Sweden, more balanced in terms of their growth strategy. For purposes of this article, the authors' observations on the connection of growth models, wages and household incomes are particularly relevant.

If growth models impact wage developments according to growth priorities, it seems plausible that their influence also extends to minimum wage adjustments. In the case of consumption-led growth, minimum wages may constitute an important support for consumer demand, especially if a sizable portion of the labour force is working at the minimum wage. If the propensity to consume is higher for low-income households than for high-income households, a proposition that empirical studies have to some extent supported (Aitken et al., 2014; Arpaia et al., 2017), a higher minimum wage may also have a relatively higher impact on consumption than a proportional increase in income for high earners. A consumption-led growth model may thus positively affect minimum wage growth.

In the case of export-led growth, the inverse logic applies, as restraint in minimum wage adjustments may support export-led growth. Export industries do not normally belong to the low-wage sector of the economy and therefore do not usually display a high share of minimum wage workers. Through the knock-on effect on the price level of low wages in the services sector, where minimum wages are usually most common, restraint in minimum wages may facilitate wage restraint further up the pay scale in export industries (Palier and Thelen, 2010; Hassel, 2014). In this sense, an export-led growth model may negatively impact minimum wage growth.

For growth models to explain the relatively stronger growth of the minimum wage in new EU member states, they would have to display a bias towards a consumption-dependent growth model that correlates with minimum wage growth. In contrast, the lower growth of the minimum wage in old EU member states would have to be correlated with a clear bias towards an export-dependent growth model.

5 Explanatory approach C: Actors and their interest in the minimum wage

Minimum wage adjustments are policy decisions that require discretionary action by actors (sometimes indirectly by establishing an adjustment rule). The size of adjustments may primarily vary with the type of actor responsible for it. The difference in adjustment rates between old and new EU member states may thus be explained by the dominance of different types of actors in old and new EU member states.

Several authors have developed typologies to describe minimum wage adjustment mechanisms (Boeri, 2012; Schulten, 2014; Garnero et al., 2015a; Eurofound, 2016; Arpaia et al., 2017; Eurofound, 2018b; Visser, 2019). The prime purpose of these typologies is to reduce the diversity of real types and arrive at classifications of minimum wage regimes. In all of these typologies, sets of actors are used as criteria to identify regimes. Boeri (2012) and Arpaia et al. (2017) have drawn up typologies specifically to examine the connection between actors and minimum wage outcomes. They suggest that minimum wage adjustments vary systematically with the involved actors and the adjustment processes. According to the results of Boeri (2012), trade union involvement has a positive effect on minimum wage adjustments in comparison to adjustments without the participation of trade unions. According to Arpaia et al. (2017), who examine 17 EU member states with statutory minimum wages, rules-based adjustment regimes display lower minimum wage adjustments than non-rules-based adjustment regimes. According to the authors, rules lower the likelihood that adjustments follow criteria other than economic fundamentals, especially by offering policy-makers the chance to engage in opportunistic behaviour in the face of elections.

To formulate hypotheses that can be tested empirically, I distinguish four actor constellations in minimum wage adjustments: adjustments that are solely in the hands of the government, those that involve social partners, those that are administered by expert committees and those that follow indexation rules.

From a political economy point of view, adjusting the minimum wage is a distributional conflict between labour and capital and between workers and businesses. It is in workers' interest to receive higher wages, and it is in businesses' interest to limit labour costs. It has been shown empirically that trade unions prompt a compression of the wage distribution (Freeman and Medoff, 1984; Baccaro, 2011; Ahlquist, 2017). Pushing up the minimum wage is one lever to achieve this (Freeman, 1996). For employers, the obvious interest is to keep labour costs down and therefore to keep minimum wage adjustments to a minimum. We assume that these conflicting interests are represented by trade unions and employers' associations and that both promote their own interest when they are involved in adjusting the minimum wage.

The power distribution between trade unions and employers depends on their organizational strength and other institutional power resources (e.g. labour law). Union density and coverage of collective agreements indicate the organizational strength of trade unions. We should expect minimum wage adjustments involving social partners to rise with increasing union density and collective coverage. The higher adjustments in new EU member states could thus be caused by high union strength. For this to be true, trade unions' organizational strength would have to be higher in new EU member states than in old EU member states, an empirically questionable proposition to start with, and social partners would have to be involved in minimum wage adjustments frequently enough to matter.

If governments are solely responsible for adjusting the minimum wage, they may manage the distributional trade-off between capital and labour in a neutral fashion. Governments may also follow a genuine agenda of their own, however. In particular, governments may use minimum wage raises as a tool for re-election. Arpaia et al. (2017) point out that their empirical findings suggest that the presence of elections leads to more redistributive minimum wage adjustments, i.e., higher adjustments than the adjustments in periods without elections (ibid., p. 17). We would thus expect minimum wage increases to be higher as a result of an election. To explain the divergent minimum wage growth paths in old and new EU member states, governments in new EU member states would have to be more responsive to elections than those in old EU member states.

In contrast, the economic policy orientation of the government may have a substantial influence on minimum wages. Right-leaning governments may favour supply-side policies and a lower minimum wage and left-leaning governments may favour a Keynesian demand-side approach with higher minimum wages. As a result, we would expect minimum wage raises to be higher the more left-leaning the economic policy orientation of a government is. Again, to explain the different minimum wage policies in old and new EU member states, economic policy in new EU member states would have to be systematically more left-leaning.

Expert commissions and indexation are more technocratic ways of resolving the distributional issue of adjusting the minimum wage. Expert committees, such as the Low Pay Commission in the UK, are made up of independent scientists and members with business and trade union backgrounds. They commit to adjusting the minimum wage based on scientific evaluations and economic projections. Indexation in turn

automates the adjustment process to a large extent and limits discretionary interventions by linking the minimum wage to macroeconomic parameters.[1] It usually follows average wage growth and/or inflation to allow minimum wage workers to partake in overall economic growth and to keep their real wages stable. As a result, both types of adjustment are unlikely to produce minimum wage adjustments that diverge substantially from economic fundamentals.

If adjustments by social partners and governments follow the above hypotheses and introduce redistributive, electoral or policy biases, and those of expert commissions and indexation follow macroeconomic parameters, then average adjustments driven by social partners and governments can be expected to be higher than those driven by experts and indexation. If new EU member states display a higher number of adjustments pushed by governments or social partners than old EU member states, this could explain the higher minimum wage growth in new EU member states.

6 Data and method

The data combine information on minimum wage levels and macroeconomic parameters with information on actors, elections and the political orientation of governments. The information on hourly minimum wage levels stems from the WSI minimum wage database of the Hans Böckler Foundation (WSI, 2019). Information on monthly minimum wage levels comes from Eurostat. Information on macroeconomic parameters is taken from Eurostat, from the Organisation for Economic Co-operation and Development (OECD) and from the AMECO macroeconomic database of the European Commission's Directorate General for Economic and Financial Affairs. Information on actors and processes stems from Eurofound's EurWORK database on wages, working time and collective disputes (Eurofound, 2018a). Information on the elections and policy orientation of governments comes from the Database of Political Institutions (DPI) of the Inter-American Development Bank (Cruz et al., 2018).

While the variables and their values were generally employed as listed in the respective source databases, the actor variable was constructed from the EurWORK database. The EurWORK database offers variables to clearly identify indexation and experts, and it is also possible to identify cases with exclusive government responsibility. The variable for social partner involvement required the pooling of various Eurofound variables, however. Specifically, it was assembled from Eurofound's variables on tripartite setting, joint social partner involvement and separate trade union and employer involvement. The four types of actors are mutually exclusive. Where the results were inconclusive, an assessment was made on the basis of all available variable values and the existing literature on the countries.[2]
Countries are uniquely assigned to each of the four types for each year. The sample comprises 323 observations (country/year cells).

The following linear model was used to describe the relationship between the outcome variable and the various explanatory variables:

$$\Delta RMW_{it} = \beta_1 GDPPC_{it} + \beta_2 GrM_{it} + \beta_3 Actors_{it} + \beta_4 Pol_{it} + \beta_5 Econ_{it} + \delta_t + \mu_{it}$$

ΔRMW denotes minimum wage growth for country i in year t. β_1 to β_5 are the coefficients of interest. They indicate the influence of their respective groups of variables. δ_t designates year fixed effects, i.e., the difference of year t relative to the base year 2000 that is identical across all countries; μ_{it} is the error term. Variable $GDPPC_{it}$ represents GDP per capita for country i in year t. GrM_{it} represents the growth model variables, which are the contributions of net exports and private consumption to GDP growth respectively.[3] The variable group $Actors_{it}$ represents the actors responsible for minimum wage adjustment. Pol_{it} contains the variables for the economic policy orientation of the government and for an election in the previous year. $Econ_{it}$ contains consumer price inflation (CPI) and average real wage growth, the two variables that influence the real and the relative value of the minimum wage in the wage distribution respectively, as well as employment growth.

In a second step, interaction terms of $Actors_{it}$ and the non-actor variables for elections, policy orientation, the growth model variables, inflation, real wage growth and employment growth are each added to the above

model. This interaction analysis allows us to investigate whether and how each actor interacts with each of these non-actor variables. It follows the intuition that non-actor variables can impact the minimum wage through the actors only, i.e., if actors incorporate them in their adjustment decisions.

An ordinary least squares (OLS) estimation was employed with no constant and with standard errors clustered by country to account for the fact that observations within the same country are not fully independent of each other but serially correlated. Missing data on economic policy orientation and GDP per capita in some new EU member states were imputed using multiple imputation by chained equations (cf. White et al., 2011). To test the robustness of the results, the model was applied to hourly and monthly minimum wage growth, which are reported in separate data sources. This also accounts for the fact that the minimum wage is set by the hour in some countries (e.g. the UK, Ireland, France) and by the month in others.

7 Descriptive results

The potential explanatory factors developed in the hypotheses are first examined on the basis of descriptive data. Table 2 lists relevant indicators separately for old and new EU member states. Differences in GDP per capita between the two groups of countries are large. New EU member states show an average GDP per capita that is only half that of old EU member states, lending plausibility to the catch-up hypothesis. Union strength as measured by union density is higher in old EU member states, and considerably so when measured by collective coverage. It thus seems unlikely that union strength is behind the strong minimum wage growth in new EU member states. It also seems unlikely that a more left-leaning economic policy orientation is a decisive factor. Although economic policy is on average slightly more left-leaning in new EU member states, the difference from old EU member states seems too minor to cause minimum wage growth to diverge so markedly. In contrast, the indicators for export- and consumption-dependency support the growth model hypotheses. Both the respective shares in GDP and the respective contributions to GDP growth of net exports and of private consumption show a higher reliance on private consumption of new EU member states and a higher reliance on net exports of old EU member states.

Tab 2: Economic and political indicators (2000-2017 averages)

	EU-MS before 2004	EU-MS 2004 or after
GDP per capita (euros)	31,583.00	16,413.00
Union density (% of all employees)	26.5	18.1
Adjusted collective coverage (% of employees with the right to bargain)	72.7	36.9
Orientation of economic policy (1=right, 3=left)	1.98	2.14
Share of net exports in GDP (%)	4.4	-1.2
Contribution of net exports to GDP growth (% of GDP of preceding year)	0.48	0.04
Share of private consumption in GDP (%)	53.5	57.1
Contribution of private consumption to GDP growth (% of GDP of preceding year)	0.74	2.04

Note: Missing values in individual years across sample for the variables union density, adjusted collective coverage and orientation of economic policy.
Sources: Cruz et al. (2018), Visser (2019), Eurostat, AMECO database; own calculations.

Table 3 shows minimum wage growth rates by actors in descending order, separately for old and new EU member states. Following our hypotheses, the variables for government and social partners should be associated with higher growth rates than the variables for expert commissions and indexation.

Additionally, minimum wages should be more frequently adjusted by social partners and governments in new EU member states than in old EU member states. With respect to new EU member states, these expectations are met. Adjustments driven by government and social partners display considerably higher growth rates than those driven by indexation. Both actors are more frequently responsible for minimum wage policy than their peers in old EU member states, where indexation is the most common adjustment regime. Old EU member states do not fit expectations, however. Government-driven adjustments display the lowest growth rates of all, contrary to the hypotheses.

Tab 3: Real minimum wage growth according to actors (change in per cent from previous year, average 2000-2017)

EU-MS before 2004			
Actor	**Hourly real mw growth**	**Monthly real mw growth**	**N**
Social partners	2.3	2.2	27
Experts	2.0	2.1	21
Indexation	0.7	0.5	85
Government	-1.0	-1.0	28
Total	0.8	0.8	161

EU-MS 2004 or after			
Actor	**Hourly real mw growth**	**Monthly real mw growth**	**N**
Government	9.0	7.4	54
Social partners	6.1	5.7	90
Indexation	2.8	2.7	18
Experts	-/-	-/-	0
Total	6.7	5.9	162

Sources: Eurofound (2018a), WSI (2019), Eurostat; own calculations.

The descriptive evidence thus gives us a picture of only partial support for the hypotheses formulated earlier. While the catch-up and the growth model hypotheses seem to hold up, the relationship between actors and minimum wage growth seems to be more complicated than hypothesized. To test whether those variables that show promise in the descriptive evidence are also significantly correlated with minimum wage growth and to further scrutinize the influence of actors, regression analyses are employed next.

8 Results from multivariate analyses

I first look at the full sample to test the catch-up hypothesis. The effects of GDP per capita, if present, would result from differences between new and old EU member states in the entire sample. I then look at the two groups of countries separately to examine the growth model hypotheses and the actor hypotheses. Both sets of hypotheses predict diverging effects for old and new EU member states which makes it necessary to examine these subsamples separately. To inspect the actor hypotheses more closely, I finally look at the interaction effects between actor variables and non-actor variables, again separately for old and new EU member states.

Table 4 shows the results for hourly minimum wage growth for the entire sample (columns 1 and 2), for the sub-sample of old EU member states (columns 3 and 4) and for the sub-sample of new EU member states (columns 5 and 6), each with and without the outliers Greece and Romania. The outliers affect the results visibly and alter various effect signs, sizes and significances. To avoid bias emanating from these two outliers, I focus in the following on the results without them.

If the catch-up hypothesis were an explanatory factor for the difference in growth rates, the effect would have to appear in the full sample where the large variance in GDP per capita between old and new EU member states is present. The effects of GDP per capita in column 2 are small and only weakly significant (just beyond the 10 per cent significance threshold). If all other variables are kept constant, an additional 1,000 euros in GDP per capita leads to minimum wage growth that is 0.02 percentage points lower. This means that as GDP per capita grows, the growth of minimum wages slows down, but only to a small degree. The effect is not enough to explain all or even a major part of the difference in growth rates between old and new EU member states.

The two growth model variables, the contribution of net exports and of private consumption to GDP growth, respectively, show small negative and nonsignificant effects in column 2. For the full sample, there is thus no indication that growth models affect minimum wage growth in either direction. The coefficients of the actor variables are positive but nonsignificant in column 2. There is also no indication that either the orientation of economic policy or elections have an independent effect on minimum wage growth.

CPI and average real wage growth are the only variables that have a statistically significant impact on minimum wage growth across the full sample. In both cases, the effects are positive. For every percentage point of inflation, the real minimum wage grows by 0.83 percentage points. For every percentage point of average real wage growth, the minimum wage grows by 0.49 percentage points.

Tab 4: Regression results for hourly real minimum wage growth

Hourly real mw growth	Full sample		Old EU member states		New EU member states	
	All	w/o EL, RO	All	w/o EL	All	w/o RO
	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	-0.03 (0.020)	-0.02 (0.013)	-0.00 (0.017)	0.02 (0.013)	-0.09 (0.327)	0.17 (0.220)
GDP growth from net exports	0.10 (0.204)	-0.04 (0.170)	-0.19** (0.060)	-0.18** (0.068)	0.37 (0.354)	0.24 (0.391)
GDP growth from consumption	0.45 (0.379)	-0.06 (0.372)	-0.02 (0.636)	0.92** (0.374)	0.48 (0.484)	0.05 (0.590)
Social partners	-2.03 (4.342)	2.82 (1.682)	0.08 (0.818)	0.01 (1.725)	-3.25 (9.617)	6.80 (3.638)
Government	-1.78 (4.043)	2.36 (2.321)	-2.06** (0.789)	-2.31* (1.193)	-1.73 (9.409)	7.76* (3.776)
Experts	-2.75 (4.171)	1.47 (1.705)	-0.42 (0.940)	-1.33 (1.406)	-/-	-/-
Indexation	-2.93 (3.917)	0.88 (1.653)	-1.32 (0.827)	-2.05 (1.205)	-4.68 (8.555)	4.09 (3.399)
Orientation of economic policy	1.03 (0.817)	0.48 (0.706)	0.31** (0.128)	0.30 (0.293)	1.12 (1.435)	0.11 (1.252)
Elections in previous year	-0.31 (0.832)	-0.52 (0.704)	0.00 (0.595)	0.55 (0.389)	-1.04 (1.992)	-1.26 (1.893)
CPI	0.87*** (0.087)	0.83*** (0.182)	-0.16 (0.307)	-0.46*** (0.123)	0.79*** (0.139)	0.90* (0.363)
Average real wage growth	0.42*** (0.127)	0.49** (0.223)	0.42 (0.263)	0.09 (0.130)	0.45** (0.161)	0.54 (0.299)
Employment growth	-0.23 (0.152)	-0.13 (0.160)	0.18 (0.226)	-0.11 (0.130)	-0.26 (0.353)	-0.22 (0.439)
Year FE	X	X	X	X	X	X
Observations	323	287	161	143	162	144
R^2			0.47	0.64		
Adjusted R^2			0.35	0.55		

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by country in parentheses.*
R^2 and adjusted R^2 are not computed for imputed datasets.
Source: Cruz et al. (2018), Eurofound (2018a), WSI (2019), Eurostat, OECD, AMECO database; own calculations.

It is noteworthy that the effects of inflation diverge in direction in the separate subsamples of both groups of countries (columns 4 and 6). In old EU member states, inflation reduces the real value of the minimum wage, as one would expect. Every percentage point of inflation reduces the growth of the real minimum wage by 0.46 percentage points (column 4). The nominal minimum wage is thus reduced by inflation to 54 per cent of its value. In contrast, in new EU member states inflation positively affects minimum wage growth. Every percentage point of inflation leads to an increase in the real hourly minimum wage of 0.90 percentage points (column 6). In other words, inflation is overcompensated by minimum wage growth.

The hypotheses for the influence of growth models and of actors assume distinct effects for old and new EU member states. Splitting the sample and computing the effects separately for each group of countries brings to light noteworthy differences. For old EU member states, the growth model variables show statistically significant effects. An additional percentage point of GDP growth from net exports leads to minimum wage growth that is 0.18 percentage points lower (column 4). An additional percentage point of GDP growth from private consumption leads to a 0.92 percentage point rise in minimum wages. No such correlation is observable for new EU member states (column 6).

With respect to actors, in both old and new EU member states governments have a statistically significant impact on minimum wage adjustments. The effects are diagonally opposed. In old EU member states, the effect is highly negative. If the government is responsible for minimum wage adjustment, its growth is 2.3 percentage points lower than otherwise (column 4). This is also the lowest growth rate among all actors. In new EU member states, the effect is distinctly positive. Government adjustment increases minimum wage growth by 7.8 percentage points (column 6). This is the highest growth rate among all actors. As a result, to explain the overall difference in growth rates between the two groups of countries, the different roles that governments play in minimum wage growth are clearly a crucial factor.

The interaction effects between the actor and the non-actor variables allow us to further investigate the divergent patterns between the two groups of countries. Tables 5 and 6 display interaction effects for old and new EU member states, without the outliers Greece and Romania, respectively (for results including the outliers, see Tables A2 and A3 in the appendix). Since government had a statistically significant impact on adjustments in the main analysis, the main focus is on the interaction between government and the non-actor variables.

Tab 5: Interaction effects for EU member states before 2004

Hourly real mw growth	EU member states before 2004 w/o EL						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Orientation of economic policy	Elections in previous year	GDP growth from net exports	GDP growth from consumption	CPI	Average real wage growth	Employment growth
Social partners	0.01	1.61	0.25	-0.74*	-0.07	-0.35	-0.14
	(0.313)	(2.050)	(0.344)	(0.340)	(0.348)	(0.250)	(0.143)
Government	0.93**	1.47*	1.01**	-0.90***	-0.03	-0.42*	-0.36***
	(0.358)	(0.682)	(0.335)	(0.163)	(0.308)	(0.200)	(0.088)
Experts	0.17	0.69	-0.04	-0.37	-0.29	-0.36*	0.10
	(0.259)	(1.469)	(0.161)	(0.243)	(0.218)	(0.183)	(0.175)
Indexation	0.06	-0.01	-0.18	1.43**	-0.40**	0.35	0.01
	(0.337)	(0.424)	(0.182)	(0.455)	(0.156)	(0.190)	(0.135)
Year FE	X	X	X	X	X	X	X
Observations	143	143	143	143	143	143	143
R^2	0.65	0.65	0.66	0.66	0.64	0.65	0.65
Adjusted R^2	0.54	0.55	0.56	0.56	0.54	0.55	0.55

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors in parentheses. Models include all control variables of the linear model shown in Table 4.*
Source: Cruz et al. (2018), Eurofound (2018a), WSI (2019), Eurostat, OECD, AMECO database; own calculations.

In old EU member states, government interacts positively with the orientation of economic policy, with past elections and with GDP growth from net exports (columns 1 to 3 of Table 5). It interacts negatively with GDP growth from consumption, inflation, average wage growth and employment growth (columns 4 to 7 of Table 5). All of these effects are statistically significant, except for that of inflation. With respect to our initial hypotheses regarding the behaviour of governments, we can observe that a left-leaning economic policy orientation and past elections indeed positively affect minimum wage growth, as hypothesized. As these effects are relevant only when governments adjust the minimum wage, they do not appear at all or appear only weakly in the main analysis. The interactions with the growth model variables display signs contrary to the hypotheses and also contrary to the respective results in the main analysis. Government adjustments in old EU member states thus do not accommodate growth priorities. They are also not in lockstep with average wage growth or with employment growth. On the contrary, the interaction effects in columns 6 and 7 suggest a negative response to both.

In new EU member states, government interacts positively with GDP growth from consumption, with inflation, with average wage growth and with employment growth (columns 4 to 7 of Table 6). In all cases, the effects are statistically significant. Government interacts negatively with GDP growth from net exports and with past elections and the orientation of economic policy. Only the effect of the interaction with GDP growth from net exports is statistically significant. The minimum wage is thus obviously not widely used as an electoral tool by governments. This refutes our presumption that the growth difference between the two groups of countries could be caused by a higher responsiveness to elections by governments in new EU member states. The opposite is the case. Nor is the declared economic policy orientation a significant driving force behind minimum wage growth. Minimum wage growth is driven instead by the governments' multiplying of inflation, average wage growth and employment growth. The result of this is a minimum wage policy that overshoots inflation and average wage growth.

Tab 6: Interaction effects for EU member states 2004 or after

Hourly real mw growth	EU member states 2004 or after w/o RO						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Orientation of economic policy	Elections in previous year	GDP growth from net exports	GDP growth from consumption	CPI	Average real wage growth	Employment growth
Social partners	-3.25**	-0.63	-0.81	1.56**	1.37***	1.16***	2.18***
	(0.934)	(1.147)	(0.765)	(0.525)	(0.299)	(0.296)	(0.525)
Government	-1.19	-2.77	-2.06**	3.61**	1.61***	2.09***	3.27***
	(2.789)	(2.449)	(0.698)	(1.044)	(0.266)	(0.491)	(0.603)
Experts	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Indexation	2.61	-0.17	1.14*	-1.47	-0.36	-0.72**	-2.32***
	(1.406)	(2.681)	(0.478)	(0.901)	(0.359)	(0.240)	(0.303)
Year FE	X	X	X	X	X	X	X
Observations	144	144	144	144	144	144	144
R^2							
Adjusted R^2							

Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors in parentheses. R2 and adjusted R2 are not computed for imputed datasets.
Models include all control variables of the linear model shown in Table 4.
Source: Cruz et al. (2018), Eurofound (2018a), WSI (2019), Eurostat, OECD, AMECO database; own calculations.

9 Discussion of results

While the results clearly reject the hypothesis that stronger minimum wage growth in new EU member states is driven by a catch-up dynamic in GDP per capita, the results for the growth model variables and the actor variables can benefit from some further dissection. The growth model hypothesis that a higher share of net exports in GDP growth subdues minimum wage growth, and vice versa for private consumption, was found to apply to old EU member states only. As a result, the growth model hypothesis cannot explain the growth differential between the two groups of countries, because there is no dominance of one growth model in the old and another in new EU member states. The results for old EU member states nevertheless lend support to the hypothesis that there is a link between minimum wage development and growth models. The sub-sample contains cases where rising net exports and slow minimum wage growth are correlated and cases where rising private consumption and accelerating minimum wage growth are correlated.

As seen in Table 5, the significant effects of the growth model variables for old EU member states in the main analysis do not result from government adjustments. Instead, the effects are the result of indexation adjustments. They account for the majority of cases in old EU member states. With the Netherlands, Luxembourg, Ireland and Belgium, the group of countries with indexation adjustments comprises economies with above-average dependency on net exports (cf. Table 2). France is the only country in the group that displays a below-average share of net exports. This polarization within the group is the likely force behind the effects. It must be stressed, however, that the direction of influence remains unclear. Especially with consumption, it is conceivable that causation runs from the minimum wage to consumption rather than the other way around.

With respect to actors, the negative government effect in old EU member states is driven mainly by cases of conservative rule in Spain and Portugal. Real minimum wages fell under conservative leadership in the years 2000 to 2004 in Spain and then again under conservative leadership in the years of the Eurozone crisis in both Spain (2011-2013) and Portugal (2012 and 2013). The negative main effect is thus a result of policies of minimum wage deflation by conservative governments, and in later years during the Eurozone crisis, in combination with EU institutions demanding internal devaluation policies from both countries (ECB, 2012). The negative effect of government is further cemented by the fact that the actor driving minimum wage adjustments switched from government to social partners when social-democratic governments took over from conservative governments in Spain in 2004 and in Portugal in 2005 and in 2015. Thus, there is conservative rule behind most cases of government adjustment, while the effect of social-democratic rule is mostly nested within cases of social partner involvement. Social-democratic rule without social partner involvement is limited to a few country/year cells, and its effect is captured by the positive effect of a left-leaning economic policy orientation.

When we look at the new EU member states, social partner involvement displays a very similar pattern to government-driven adjustment. This suggests that both actors follow the same objectives. Alternatively, it may be the result of the fact that governments often play a crucial role within the category of social partner involvement. In Lithuania and Slovakia, for example, social partners participate in the adjustment process, but it is the government that adjusts the minimum wage if social partners cannot reach an agreement (Schulten and Müller, 2020). In light of the relative lack of organizational strength of social partners across almost all new EU member states (OECD, 2019; Visser, 2019), de facto government adjustment may be behind many of the cases classified in the category of social partner involvement. This would mean that minimum wages are adjusted by the government not only in countries such as Poland and the Czech Republic, but also in most new EU member states that have social partner involvement.

10 Robustness of results

The analyses for monthly real minimum wage growth (cf. Table A1 in the appendix, and Tables A5 and A7 in the appendix) largely confirm the results emanating from hourly real minimum wage growth. The signs and sizes of coefficients are in line with those in the hourly results. The statistical significance is less pronounced, however, and diverges occasionally from that in the hourly results. As the sample size is small, the estimates lack precision and conventional levels of significance are a high benchmark for coefficients to clear to begin

with. As the overall pattern of effects remains the same, there is no reason to think that the discussed effects are critically biased by the specific datasets. There is one exception, however, which is the correlation with inflation in new EU member states. With monthly minimum wage data, the effect of inflation on minimum wage growth in the main analysis is not significant, though still positive (cf. Table A1 in appendix). The interaction between government and inflation also does not show a significant effect and is practically zero (cf. Table A7 in the appendix). As a consequence, it contrasts with the effect found with hourly data. We should thus be cautious about giving governments credit for improving the real income position of minimum wage earners to the extent suggested by the hourly data.

11 Conclusion

The EU has two worlds of minimum wages. In both worlds, the minimum wage occupies a specific but very different place in the political economy. This article identifies the differences between these two worlds and tested hypotheses to explain them. The empirical data show that it is not the catch-up of new EU member states that explains their higher minimimum wage growth. The results also show that minimum wage growth in new EU member states can not be traced back to their higher reliance on consumption for GDP growth. Instead, the role of actors turns out to be the most powerful explanation.

Old EU member states are marked by stagnant minimum wages that remained largely unchanged in real terms over the observation period. Indexation is the most frequently used mode of adjusting the minimum wage. Government in these countries has the most deflationary effect on minimum wage growth. Elections and a left-leaning economic policy orientation counter this effect somewhat. The deflationary effect is traceable to conservative rule and to austerity policies during the Eurozone crisis. In contrast, minimum wage growth in new EU member states is positive and large, exceeding both average wage growth and inflation. Unlike in old EU member states, it is not influenced by elections or the declared economic policy orientation. By boosting minimum wages, increasing their real value and compressing the wage scale from below, governments in new EU member states have enacted a de facto fairly left-leaning minimum wage policy and done the exact opposite of their peers in the old EU member states.

This divergence between old and new EU member states puts the spotlight on the importance of the institutional context in which minimum wage adjustments take place and how old and new EU member states differ in this respect. In contrast to our initial hypotheses, there is more uniformity in actors' adjustment patterns within groups of countries than within types of actors. This is true for all actors, especially for adjustments by government. To clearly identify the institutional factors responsible for this result, further research will be necessary. Three institutional differences between the two groups of countries stand out and offer themselves for further investigation, however. These are the currency regime, the scope of social policies and the strength of industrial relations.

With the exception of the UK, all old EU member states are part of the Eurozone and thus have no access to exchange rate adaptations to compensate for a change in real labour costs in their foreign trade. As a result, in the case of imbalances, wages have to adapt, as seen with the deflationary minimum wage policies in some old EU member states during the Eurozone crisis. In contrast, new EU member states still have national currencies, or became members of the Eurozone only in the course of the observation period. Given a flexible exchange rate regime, national currencies can neutralize increases in real labour costs in foreign trade by depreciating the currency. Assuming that minimum wages represent a significant enough share of overall labour costs to require adjustments at all, national currencies allow member states outside the Eurozone to take recourse to external depreciation while member states inside the Eurozone have to deflate internally. This offers non-Eurozone members a degree of freedom in minimum wage policy that Eurozone members do not have.

Another important institutional difference is the existence and scope of social policies that support incomes in addition to the minimum wage. Welfare benefits supplement the minimum wage as a poverty-reducing instrument, in particular by securing a minimum level of subsistence. If such benefits are absent or restricted in their availability, the minimum wage becomes the only available instrument for poverty reduction. Although minimum wages do not reach beyond job holders and are thus severely limited in addressing common causes of poverty such as unemployment, governments may use them as a substitute for more

encompassing and targeted benefits that require much larger administrative and budgetary commitments than those needed for implementing a minimum wage. Ronchi (2018) shows that the budgetary welfare effort for social protection policies is markedly lower in new EU member states than in old EU member states. New EU member states' minimum wage policies may thus result from an anti-poverty drive that eschews the social guarantees of the more comprehensive Western European welfare states.

Finally, collective bargaining institutions are much stronger in old than in new EU member states. Collective coverage in new EU member states on average comprises only a good third of employees. Wage negotiations widely lack the support of strong unions. At the same time, the share of low-wage workers is higher in new EU member states than in old member states. In this context, governments may use the minimum wage as an income policy instrument to not only regulate the wage floor but also to support the entire wage grid, either directly by enacting multiple minimum wages according to qualification (as, e.g., in Hungary) or by relying on ripple effects of the minimum wage into higher wage brackets. While this may be in the interest of comparatively weak unions in new EU member states, stronger unions in old EU member states may object to such activist minimum wage policies as interference with their right to free collective bargaining. As a result, the average government in old EU member states may see neither the need nor the opportunity to implement an activist minimum wage policy, while for the average government in new EU member states, there may be both.

To better understand the interaction between minimum wage and other policy fields, further research will have to focus especially on the political economies of new EU member states. The results for electoral, policy and redistributive biases of actors and for growth model effects in new EU member states have shown that the hypotheses generated for this article have significantly less explanatory power for new than for old EU member states. The characteristics of the interplay between institutional contexts, actor strategies and macroeconomic conditions in new EU member states have largely escaped the radar of current comparative political economy so far.

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Appendix

Tab A1: Regression results for monthly real minimum wage growth

Monthly real mw growth	Full sample		Old EU member states		New EU member states	
	All	w/o EL, RO	All	w/o EL	All	w/o RO
	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	-0.04*	-0.03	0.01	0.01	-0.20	0.11
	(0.022)	(0.019)	(0.010)	(0.009)	(0.319)	(0.244)
GDP growth from net exports	0.07	-0.08	-0.14**	-0.11*	0.23	0.05
	(0.195)	(0.158)	(0.054)	(0.060)	(0.393)	(0.441)
GDP growth from consumption	0.34	-0.32	0.31	0.77*	0.24	-0.37
	(0.414)	(0.308)	(0.401)	(0.365)	(0.554)	(0.568)
Social partners	-2.75	1.78	0.43	-0.17	-6.57	4.51
	(4.154)	(1.661)	(1.001)	(1.775)	(9.241)	(3.440)
Government	-2.97	0.57	-1.76*	-2.18	-5.69	4.23
	(3.548)	(1.823)	(0.913)	(1.159)	(8.893)	(3.540)
Experts	-3.51	0.33	-0.04	-1.22	-/-	-/-
	(3.907)	(1.419)	(1.239)	(1.423)		
Indexation	-3.91	-0.53	-1.20	-2.19	-7.28	2.10
	(3.606)	(1.335)	(1.141)	(1.244)	(8.096)	(3.035)
Orientation of economic policy	0.73	0.31	0.11	0.38**	0.89	-0.07
	(0.771)	(0.669)	(0.242)	(0.158)	(1.418)	(1.285)
Elections in previous year	0.04	-0.34	0.32	0.63	-0.69	-1.21
	(0.864)	(0.666)	(0.557)	(0.588)	(1.804)	(1.558)
CPI	0.53***	0.44**	-0.24	-0.38**	0.46***	0.45
	(0.080)	(0.178)	(0.216)	(0.133)	(0.122)	(0.365)
Average real wage growth	0.45***	0.58**	0.29**	0.17	0.50**	0.64*
	(0.120)	(0.208)	(0.116)	(0.136)	(0.148)	(0.281)
Employment growth	0.03	0.17	-0.18	-0.03	0.09	0.23
	(0.163)	(0.169)	(0.218)	(0.123)	(0.262)	(0.399)
Year FE	X	X	X	X	X	X
Observations	323	287	161	143	162	144
R^2			0.59	0.64		
Adjusted R^2			0.50	0.55		

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by country in parentheses. R2 and adjusted R2 are not computed for imputed datasets.*
Source: Cruz et al. (2018), Eurofound (2018a), Eurostat, OECD, AMECO database; own calculations.

Tab A2: Interaction effects for hourly real minimum wage growth and EU member states before 2004 including outlier Greece

Hourly real mw growth	EU member states before 2004						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Orientation of economic policy	Elections in previous year	GDP growth from net exports	GDP growth from consumption	CPI	Average real wage growth	Employment growth
Social partners	-0.04	2.39*	0.20	-0.68**	-0.19	-0.65**	-0.02
	(0.386)	(1.094)	(0.321)	(0.275)	(0.216)	(0.234)	(0.289)
Government	0.83**	-1.72	0.64	-0.62**	0.51	0.30	0.04
	(0.348)	(2.521)	(0.372)	(0.217)	(0.392)	(0.575)	(0.301)
Experts	0.03	1.09	-0.02	0.20	-0.39**	-0.21	0.45
	(0.229)	(0.996)	(0.162)	(0.552)	(0.158)	(0.201)	(0.261)
Indexation	0.11	-0.30	-0.20	0.51	-0.21	0.54**	0.16
	(0.226)	(0.326)	(0.165)	(0.773)	(0.262)	(0.233)	(0.126)
Year FE	X	X	X	X	X	X	X
Observations	161	161	161	161	161	161	161
R^2	0.48	0.50	0.48	0.49	0.48	0.52	0.47
Adjusted R^2	0.34	0.37	0.35	0.36	0.35	0.41	0.34

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors in parentheses. Models include all control variables of the linear model shown in Table 4.*
Source: Cruz et al. (2018), Eurofound (2018a), WSI (2019), Eurostat, OECD, AMECO database; own calculations.

Tab A3: Interaction effects for hourly real minimum wage growth and EU member states 2004 or after including outlier Romania

Hourly real mw growth	EU member states 2004 or after						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Orientation of economic policy	Elections in previous year	GDP growth from net exports	GDP growth from consumption	CPI	Average real wage growth	Employment growth
Social partners	-2.53	-0.27	-1.17	2.11**	1.35***	1.23***	1.77**
	(1.401)	(0.717)	(0.623)	(0.721)	(0.282)	(0.247)	(0.596)
Government	3.16	2.27	-1.77***	2.81***	1.05***	1.37***	2.33***
	(4.160)	(4.458)	(0.462)	(0.689)	(0.289)	(0.252)	(0.592)
Experts	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Indexation	1.82	-1.72	1.62**	-1.81*	-0.28	-0.86***	-2.02***
	(1.558)	(2.672)	(0.627)	(0.870)	(0.358)	(0.229)	(0.472)
Year FE	X	X	X	X	X	X	X
Observations	162	162	162	162	162	162	162
R^2							
Adjusted R^2							

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors in parentheses. R2 and adjusted R2 are not computed for imputed datasets. Models include all control variables of the linear model shown in Table 4.*
Source: Cruz et al. (2018), Eurofound (2018a), WSI (2019), Eurostat, OECD, AMECO database; own calculations.

Tab A4: Interaction effects for monthly real minimum wage growth and EU member states before 2004 including outlier Greece

Monthly real mw growth	EU member states before 2004						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Orientation of economic policy	Elections in previous year	GDP growth from net exports	GDP growth from consumption	CPI	Average real wage growth	Employment growth
Social partners	-0.48 (0.298)	0.97 (0.980)	0.16 (0.235)	-0.88*** (0.244)	-0.39 (0.242)	-0.64** (0.272)	-0.37* (0.184)
Government	-0.28 (0.630)	0.11 (0.895)	0.06 (0.578)	-0.17 (0.499)	0.26 (0.277)	0.10 (0.482)	0.07 (0.345)
Experts	-0.17 (0.230)	2.12* (0.966)	-0.21** (0.063)	0.03 (0.393)	-0.53* (0.271)	-0.19 (0.259)	0.03 (0.221)
Indexation	0.33 (0.169)	-0.18 (0.412)	-0.03 (0.066)	0.93* (0.443)	-0.17 (0.245)	0.47* (0.237)	0.16 (0.121)
Year FE	X	X	X	X	X	X	X
Observations	161	161	161	161	161	161	161
R^2	0.59	0.60	0.60	0.62	0.61	0.64	0.61
Adjusted R^2	0.49	0.50	0.50	0.53	0.51	0.55	0.51

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors in parentheses. Models include all control variables of the linear model shown in table 4.*
Source: Cruz et al. (2018), Eurofound (2018a), Eurostat, OECD, AMECO database; own calculations.

Tab A5: Interaction effects for monthly real minimum wage growth and EU member states before 2004 without outlier Greece

Monthly real mw growth	EU member states before 2004 w/o EL						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Orientation of economic policy	Elections in previous year	GDP growth from net exports	GDP growth from consumption	CPI	Average real wage growth	Employment growth
Social partners	-0.36 (0.327)	1.42 (1.496)	0.19 (0.334)	-0.74 (0.465)	-0.13 (0.286)	-0.42 (0.331)	-0.28 (0.161)
Government	0.51* (0.243)	0.83 (1.015)	0.64 (0.361)	-0.74** (0.263)	-0.09 (0.269)	-0.41 (0.298)	-0.33*** (0.090)
Experts	-0.17 (0.252)	2.26* (1.110)	-0.25** (0.074)	-0.22 (0.416)	-0.44 (0.236)	-0.36 (0.261)	-0.05 (0.141)
Indexation	0.35 (0.239)	-0.06 (0.531)	0.03 (0.087)	1.19* (0.541)	-0.29* (0.136)	0.44* (0.221)	0.09 (0.115)
Year FE	X	X	X	X	X	X	X
Observations	143	143	143	143	143	143	143
R^2	0.65	0.66	0.66	0.66	0.65	0.66	0.66
Adjusted R^2	0.55	0.56	0.57	0.57	0.55	0.56	0.56

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors in parentheses. Models include all control variables of the linear model shown in table 4.*
Source: Cruz et al. (2018), Eurofound (2018a), Eurostat, OECD, AMECO database; own calculations.

Tab A6: Interaction effects for monthly real minimum wage growth and EU member states 2004 or after including outlier Romania

Monthly real mw growth	EU member states 2004 or after						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Orientation of economic policy	Elections in previous year	GDP growth from net exports	GDP growth from consumption	CPI	Average real wage growth	Employment growth
Social partners	-2.54**	1.05	-1.61**	1.46**	0.68	0.65***	1.06
	(1.029)	(0.620)	(0.533)	(0.450)	(0.389)	(0.163)	(0.557)
Government	2.79	3.95	-1.94***	2.11***	0.28	0.75***	1.76**
	(3.680)	(4.411)	(0.428)	(0.441)	(0.246)	(0.203)	(0.685)
Experts	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Indexation	1.70	-2.64	1.87***	-1.40*	0.12	-0.20	-1.05**
	(1.237)	(2.372)	(0.447)	(0.584)	(0.327)	(0.154)	(0.428)
Year FE	X	X	X	X	X	X	X
Observations	162	162	162	162	162	162	162
R^2							
Adjusted R^2							

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors in parentheses. R2 and adjusted R2 are not computed for imputed datasets. Models include all control variables of the linear model shown in Table 4.*
Source: Cruz et al. (2018), Eurofound (2018a), Eurostat, OECD, AMECO database; own calculations.

Tab A7: Interaction effects for monthly real minimum wage growth and EU member states 2004 or after without outlier Romania

Monthly real mw growth	EU member states 2004 or after w/o RO						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Orientation of economic policy	Elections in previous year	GDP growth from net exports	GDP growth from consumption	CPI	Average real wage growth	Employment growth
Social Partners	-3.13***	0.52	-1.58*	1.17**	0.79	0.67**	1.47**
	(0.765)	(1.135)	(0.747)	(0.324)	(0.405)	(0.235)	(0.482)
Government	-1.15	-0.86	-1.95***	2.86**	0.01	1.48**	3.02***
	(2.993)	(2.409)	(0.399)	(0.888)	(0.275)	(0.468)	(0.567)
Experts	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Indexation	2.34	-1.28	1.60***	-1.51*	-0.20	-0.12	-1.32***
	(1.360)	(2.418)	(0.379)	(0.620)	(0.361)	(0.187)	(0.335)
Year FE	X	X	X	X	X	X	X
Observations	144	144	144	144	144	144	144
R^2							
Adjusted R^2							

*Note: *p<0.1 **p<0.05 ***p<0.01. Standard errors in parentheses. R2 and adjusted R2 are not computed for imputed datasets. Models include all control variables of the linear model shown in table 4.*
Source: Cruz et al. (2018), Eurofound (2018a), Eurostat, OECD, AMECO database; own calculations

Endnotes

[1] In the Netherlands, for example, government intervention is possible only under certain conditions specified in the minimum wage law (Art. 14 of Wet *minimumloon en minimumvakantiebijslag*).

[2] France is an example: Its minimum wage follows an indexation rule, but the government has the option to add to the indexation result a so-called coup de pouce as it sees fit. In addition, there is a social partner committee and the Groupe d'Experts, an expert body, both of which have an advisory role in the adjustment process. In Eurofound's database, there is a positive value for more than one of these actors in most years. In the context of this project, actor categories must be mutually exclusive, however. For France, the indexation mechanism was considered the dominant one, as coups de pouce played no significant role in the observation period, and the other two actors play only an advisory role by definition (Groupe d'experts SMIC, 2017; Gautié and Laroche, 2018).

[3] Contribution of net export/private consumption to GDP growth at constant prices are flow variables. They display more variability over time than the stock variables net exports/private consumption as share of GDP. For this reason, they were the preferred choice for this analysis. It is assumed that they affect growth model preferences in the same way as stock variables.

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