Original Article

Coordination, inclusiveness and wage inequality between median- and bottom-income workers

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Abstract   What explains cross-national variation in wage inequality? Research in comparative political economy stresses the importance of the welfare state and wage coordination in reducing not only disposable income inequality but also gross earnings inequality. However, the cross-national variation in gross earnings inequality between median- and low-income workers is at odds with this conventional wisdom: the German coordinated market economy is now more unequal in this type of inequality than the United Kingdom, a liberal market economy. To solve this puzzle, I argue that non-inclusive coordination benefits median but not bottom-income workers and is as a result associated with higher – rather than lower – wage inequality. I find support for this argument using a large *N* quantitative analysis of wage inequality in a panel of Western European countries. Results are robust to the inclusion of numerous controls, country fixed effects, and also hold in a larger sample of OECD countries. Taken together these findings force us to reconsider the relationship between coordination and wage inequality at the bottom of the income distribution.
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Introduction

One of the most profound changes of the past three decades in the developed world is the significant rise in inequality after its relative decline in the post war years (Kenworthy and Pontusson, 2005). To explain the pattern and evolution of inequality, the economics literature stresses that a shift in the demand for skilled – relative to unskilled – workers has raised the wage skill premium of skilled – relative to non-skilled – workers (Gottschalk and Smeeding, 1997, p. 647).[1] However, wage inequality has increased even within skills group (Gottschalk and Smeeding, 1997, p. 645) and inequality in literacy explains only a small part of the variation in earnings inequality (Blau and Kahn, 2002; Freeman and Devroye, 2002). Despite common trends in

technology, openness and education, there are important cross-national differences in gross earnings inequality even among comparatively similar Western European Economies.

Explaining fully the cross-national variation in wage inequality therefore requires a political and institutional explanation (Gottschalk and Smeeding, 1997). This is particularly true for the case of wage inequality between the 5th and the bottom 10th gross earnings deciles that has received significant attention in recent research in comparative political economy (for example, Iversen, 1999; Pontusson *et al*, 2002; Rueda, 2008). Findings confirm the importance of welfare state institutions, unions, partisanship and varieties of capitalism (VoC) in explaining inequality.

While valuable, the theoretical expectations of this literature now seem at odds with more recent cross-national patterns in this type of inequality. Specifically, some coordinated market economies (CMEs), which were portrayed as an equally efficient – but more egalitarian – type of capitalism compared with their liberal counterparts (Hall and Soskice, 2001), have experienced particularly steep rises in wage inequality between the 5th and the bottom 10th gross earnings deciles. Using this measure, Germany is now more unequal than the United Kingdom, a typical liberal market economy (LME). Similarly, Denmark that is characterized by generous welfare state policies and a strong union movement (Esping-Andersen, 1990) now has higher levels of wage inequality at the bottom of the income distribution than Belgium or France.[2]

To solve this puzzle, I argue that the higher levels of wage inequality one observes in some CMEs calls for a reconceptualization of the effect of coordination. Following the VoC literature (Hall and Soskice, 2001), my starting point is that coordination on average enhances the productivity and wage bargaining power of employees. However, I argue further that one must distinguish between the degree of coordination of institutions and their degree of inclusiveness (cf. Thelen, 2012, p. 142; Thelen, 2014). As a result, the degree to which coordination can theoretically be expected to affect distinct parts of the income distribution depends crucially on the degree of inclusiveness, understood here as how inclusive the 'coordinating actor' – that is, unions – is.

The higher coordination and the lower the inclusiveness, the bigger the income gap between median-income workers – that benefit from the beneficial wage enhancing effects of coordination – and low-income workers – that do not benefit from coordination. Where coordination is high but inclusiveness only covers median-income workers and not bottom-income-decile workers, it is associated with higher wage inequality between those two groups. But where coordination is high and inclusive, it is associated with lower wage inequality. Distinguishing between inclusiveness and coordination suggests that high coordination is consistent with lower wage inequality only where unions are encompassing (for example, Sweden). Where economic coordination is high but unions are less inclusive (for example, Germany), coordination is associated with higher wage inequality. Findings from

several quantitative regression analyses of wage inequality in a panel of Western European countries in the last three decades strongly support my argument. The findings are robust to the inclusion of low coordination OECD countries. Taken together these results force us to rethink the relationship between coordination and wage inequality at the bottom of the income distribution.

The rest of this article enfolds as follows. The next section confronts the expectations from the literature to recent patterns of wage inequality and presents my argument. The following section then identifies other key factors that influence inequality, discusses the data and presents my empirical model. In the subsequent section, I present the results from quantitative regression analyses that are consistent with my argument and discuss how these results match the experience of several European countries. The final section concludes with some implications for further research.

Power Resources, Coordination and the Puzzle of Wage Inequality at the Bottom of the Income Distribution

Political and institutional determinants of wage inequality

Two main approaches in comparative political economy have purported to explain patterns of wage inequality. The first, referred to as the power resource approach (Korpi, 2006), stresses the impact of the ideology of the political party in power on the level of inequality. Left control of the government can directly affect household disposable income through redistribution. Left-wing parties can also indirectly affect the wage distribution by decommodifying labour: more generous social benefits increase the reservation wage of workers and in turn reduce wage inequality. This argument is therefore contingent on whether the left does indeed increase welfare state spending. While some studies find that the left increases welfare state spending (Garrett, 1998) and that policies that reduce wage inequality are themselves undertaken more by left-wing government (Rueda, 2008), other authors contend that partisan differences over the welfare state are fading (Huber *et al*, 1999; Pierson, 2001).

Besides political parties and welfare state policies, studies of wage inequality have also focused on the role of unions. While in principle unions could raise wage inequality by increasing the wage premium for union members only, while leaving the wages of non-unionized workers unchanged, empirical evidence suggests that the presence of unions has overall equalizing effects (Freeman, 1980, 1982; Swensson, 1989; Freeman, 1993). Similarly, a high coverage of wage bargaining agreements mitigates the degree of wage inequality (Freeman and Katz, 1995; Fortin and Lemieux, 1997; see Traxler and Brandl, 2009, for a review of the evidence).

An alternative comparative political economy approach to explain inequality builds on the seminal contribution of the VoC literature, which analyses the relation

between the type of capitalism and economic outcomes (Hall and Soskice, 2001). CMEs are argued to be as efficient as their liberal counterparts while achieving more egalitarian outcomes. They are crucially characterized by more coordinating wage bargaining institutions and more centralized unions than LMEs. Wage bargaining and union centralization, which are highest in CMEs, have in turn been shown to have significant negative effects on wage inequality (Wallerstein, 1999; Card *et al*, 2003).

CMEs are also characterized by more developed vocational education systems. This allows 'students who are not academically strong' to nevertheless access jobs that provide them 'with a stable economic future', thereby minimizing wage inequality at the bottom of the income distribution (Estevez-Abe *et al*, 2001, pp. 156, 157). Rueda and Pontusson (2000) further show how the type of capitalism may also mediate the influence of various factors on wage inequality. Their analysis confirms wage bargaining centralization reduces wage inequality but the effect of centralization is stronger in CMEs. Union density is found to have a consistent (negative) effect on inequality in both LMEs and CMEs (ibid, p. 379).

The puzzle of inequality at the bottom of the income distribution

Previous studies by Iversen (1999), Pontusson *et al* (2002) and Rueda (2008) have looked specifically at wage inequality between the median- and the bottom-income deciles. Their results all show a strong and significant negative effect of wage bargaining centralization on wage inequality. Minimum wages, higher government employment and union density also reduce wage inequality. Unemployment and corporatism have ambiguous effects with the negative effect being significant only in certain specifications. The coefficient for partisanship, trade, the size of female labour force or of private sector services and monetary policy are not statistically significant (Iversen, 1999; Pontusson *et al*, 2002; Rueda, 2008).

Given these expectations, European countries exhibited a surprising cross-national variation in this measure of wage inequality in 2005 (see Table 1). Whereas prior expectations seem consistent with wage inequality between the top- and bottom-income deciles, a number of puzzling features are apparent when considering wage inequality between median- and bottom-income-decile workers. Denmark, despite its generous welfare state policies and strong union movement, has a higher wage inequality than countries with a Bismarckian welfare regime such as Belgium and France (Esping-Andersen, 1990).

The power resource approach and the welfare state regime literature suggest that countries with generous welfare state policies and a strong labour movement should have lower wage inequality (Esping-Andersen, 1990; Korpi, 2006). However, Denmark had a higher level of union density than France, Belgium and Norway, and it had a higher expenditure on total public and mandatory private social expenditure as a per cent of GDP than Belgium. Similarly, the higher degree of centralization in

Table 1: Pattern of wage inequality and current findings on determinants of wage inequality between 5th and bottom-income deciles

Country	50/10 wage inequality	90/10 wage inequality	Union density	Centralization[c]	Trade openness	Public sector employees
Germany	1.95	3.42	21.64	0.50	76.92	24.54
Ireland	1.83	3.73	36.81	0.45	151.55	24.55
The United Kingdom	1.82	3.61	29.27	0.30	56.17	26.31
Austria	1.70	3.25	33.00	0.76	104.40	24.58
Spain	1.67	3.47	14.98	0.46	56.64	19.81
Netherlands	1.65	2.90	21.92	0.60	130.72	28.06
Portugal	1.61	4.30	NA	NA	64.96	22.34
Italy	1.61	2.5[d]	33.77	0.35	51.96	22.75
Denmark	1.53	2.64	71.70	0.44	93.07	32.33
France	1.47	2.90	8.01	0.24	53.35	30.08
Norway	1.46	2.11	54.87	0.52	72.80	NA
Finland	1.42	2.48	72.43	0.43	79.49	30.76
Belgium	1.40	2.488	52.86	0.48	156.44	32.58
Sweden	1.35	2.23	76.04	0.53	89.04	34.23
Iversen (1999)			0/-	—	0	NA
Pontusson *et al* (2002)			-	—	0[a]	—[b]
Rueda (2008)			NA	—	0[a]	–/-[b]

[a]Use trade with least developed countries to test the effect of openness.
[b]Use government employees to proxy the size of public sector employment.
[c]Centralization of wage bargaining.
[d]2004 value.
Note: Values displayed are for 2005. 50/10 Inequality refers to wage inequality between the median- and bottom-income deciles. 90/10 Inequality refers to wage inequality between the top- and bottom-income deciles. Centralization and wage coordination are higher for higher values of the index. —, –, - negative effect at the 1, 5 and 10 per cent significance levels; 0 no significant effect. When results differ between specifications, both results are mentioned separated by /.
Source of variables: See Supplementary Appendix available online for data sources and description. Source for results of previous studies: see Iversen (1999), Pontusson *et al* (2002), Rueda (2008).

Denmark than in France and Finland is hard to reconcile with the expectation from the literature that wage centralization reduces wage inequality. Last but not least, one cannot make sense of this higher inequality in Denmark with either openness which was higher in Belgium, or with the size of its public sector which was higher than in Finland and France.

Even more striking, Germany, the archetype of a CME, has a higher wage inequality than LMEs such as Ireland and the United Kingdom. The higher degree of coordination generally attributed to Germany is reflected by its higher degree of centralization and coordination (for a comparative index of economic coordination,

see Hall and Gingerich, 2004). In sum, there is surprising variation in wage inequality both within and across welfare regimes and types of capitalism. This variation cannot be easily explained by the power resource or the VoC literatures nor is it *a priori* consistent with the findings of the three studies reviewed in Table 1.

Solving the puzzle of wage inequality

Solving this puzzle requires reconceptualising the conditions under which coordination leads to lower wage inequality. The VoC literature expects CMEs to be more successful in mitigating wage inequality between median- and low-income workers because of more coordinated wage bargaining and a greater ability to raise the skills of low-income workers. Estevez-Abe *et al* (2001, p. 177) for instance argue that wage inequality should be expected to be lower in CMEs because 'young workers who are not academically inclined have career opportunities [in CMEs] that are largely missing in general skill systems [LMEs]'. The expectation from this literature is that CMEs should be associated with more egalitarian outcomes than non-CMEs.

However, this is *prima facie* at odds with patterns of wage inequality at the lower end of the income distribution. Indeed, this type of wage inequality is now higher in Germany than in the United Kingdom. If differences in skill systems necessarily meant that low-education workers fare relatively better in CMEs than their counterparts in LMEs, we would expect the gap in wages between medium- and low-education workers to be lower in CMEs. In fact, the results from the 2006 Eurostat's structure earnings survey contradicts this expectation: the gap between the gross hourly earnings of low relative to medium-education workers was about 55 per cent in Germany and 47 per cent in Austria compared with 30 per cent for the United Kingdom and 10 per cent for Ireland. Similarly, almost 50 per cent of German low-education full-time earners were low-wage earners[3] compared with slightly above 40 per cent for the United Kingdom.[4] This directly contradicts the claim that inequality is lower in CMEs than LMEs because low-skill workers fare better relative to median-skill workers.

While having a specific skills system and high coordination might be conducive to lower wage inequality, it is clearly not sufficient. To understand why coordination might lead to greater wage inequality, it is important to distinguish the degree of coordination of an economy from the inclusiveness of its coordinating institutions. In making a conceptual distinction between the coordinating and equalizing effects of institutions, I follow the distinction developed by Swank *et al* (2008, p. 8) between coordination, the 'extent to which actors rely on non-market coordination', and egalitarianism, 'egalitarian income and employment' (also see Thelen, 2014). As a result, both 'high levels of equality with liberalization' and 'declining solidarity in the context of continued significant coordination' represent possible paths (Thelen, 2012, p. 137). In turn, I argue that the degree of inclusiveness or 'solidarity' of

coordination is crucially determined by the structure of the union movement: where unions are encompassing, coordination will be inclusive and will therefore benefit both median- and low-income workers. Where unions are not inclusive, coordination will benefit mostly median-income workers and wage inequality will therefore be higher.

The neoclassic economics literature has long showed that unions bargain higher wages for their members as opposed to non-members, a process commonly referred to as 'union wage gap' (Borjas, 2005, p. 428). There is a large body of evidence to substantiate the claim that there exists such a union wage premium (Freeman, 1984; Budd and Na, 1994; Hirsch, 2004). Coordination can reasonably be expected to lead to a bigger union wage gap by increasing both the bargaining power and productivity of workers. But where it is not inclusive, it only benefits median-income workers, while leaving the wages of bottom-income workers unchanged.

Inclusiveness is crucial because there are two contradicting effects at work. On the one hand, unionized workers earn more, everything else being equal, than their non-unionized counterparts and this effect is likely to be especially strong where coordination is high, but on the other hand, unions reduce wage inequality between their members (Freeman and Medoff, 1984) and we know that their ability to do so has been more marked in CMEs (Hall and Soskice, 2001; Hancké *et al*, 2007). Which effect is strongest therefore depends ultimately on the degree of inclusiveness of coordination. I expect that high – and non-inclusive – coordination raises the wages of median-income workers more than low – and non-inclusive – coordination. As in both cases bottom-income-decile workers are unaffected, but non-inclusive coordination does raise the wage of median-income workers, wage inequality should be higher in the high and non-inclusive coordination case than in the low and non-inclusive coordination case. Conversely, countries where coordination is high and inclusive will exhibit less wage inequality between median- and bottom-income-decile workers than countries with low coordination.

Are unions doing the coordination likely to be inclusive and represent low- and medium-income workers equally well? If unions are more likely to unionize median- and high-income workers than low-income workers, only unions which cover the vast majority of the workforce would have low-income workers among their ranks. Existing evidence documents the overrepresentation of the top quintile relative to the bottom quintile in most European countries (Becher and Pontusson, 2011: Table 2). Checchi *et al* (2007, pp. 17, 18) show that 'trade unions mainly attract workers from the intermediate earnings group' and the probability of union membership falls as the income of the worker is further away from the median. This effect is stronger for workers with incomes below the median than those with incomes above the median and holds for the vast majority of European countries in their sample. If unions often do not count among their members low-income workers, higher coordination should increase the wages of median-income workers more than of low-income workers and

should therefore lead to greater wage inequality between median- and low-income workers.

Because my expectation is that the effect of economic coordination on wage inequality is contingent on the degree of inclusiveness, and the degree of inclusiveness of different coordinated countries has not evolved in the same direction (Thelen, 2012), one cannot predict *a priori* the effect of coordination. High coordination should be associated with higher wage inequality only if it enhances the productivity and bargaining power of median-income workers, but with lower wage inequality if it is inclusive.

The impact of coordination on the bottom part of the income distribution is – by itself, when ignoring inclusiveness – indeterminate and hence ultimately an empirical question. When considering inclusiveness, one can derive more specific expectations. In countries where high coordination is inclusive of all workers, coordination affects both bottom- and median-income workers and hence should be associated with lower wage inequality. Where coordination is not inclusive and only enhances the bargaining power of median-income workers, it should be associated with greater wage inequality.

Testing the Effect of Coordination: The Mediating Role of Inclusiveness

Key independent variables

Coordination
To test the effect of coordination I focus on the degree of wage coordination. This is adequate because wage coordination is most directly relevant to wage inequality in the domain of wage bargaining. It is also better than the alternative which would be to use a broader indicator of economic coordination such as the Hall Gingerich (2004) index of coordination. While the latter would provide a reasonable alternative proxy, it is time invariant and does not cover a sufficient number of countries. Instead, I rely on Visser's (2013) data that codes wage coordination between 1 (company level) and 5 (economy-wide bargaining). I create a coordination index that takes value 1 if the Visser's wage coordination index scores 4 or 5 (high centralized wage coordination), and 0 otherwise (that is, where the index score 1 denotes fragmented wage bargaining, 2 little or no pattern bargaining, or 3 informal firm or industry level bargaining).[5] The rationale for dichotomising this variable is that wage bargaining should only reduce wage inequality when it is highly centralized and coordinated, whereas there is no *a priori* reason to expect differences between fragmented wage bargaining and little or no pattern bargaining.

If the expectations from VoC are correct, this index should be negatively associated with wage inequality. By contrast, I expect this variable to be either insignificant because some coordinated economies have become less inclusive while

others have not, or positively associated with wage inequality if economic coordination has become non-inclusive in most countries.

Inclusiveness

My argument predicts that the effect of coordination on wage inequality is contingent on inclusiveness. I therefore need to allow for the interaction between coordination and inclusiveness. How should we measure inclusiveness? Ideally one could use a measure of inclusiveness that captures the degree of unionization of low-income workers. Figure 1 plots wage inequality at the bottom of the income distribution and unionization of the bottom-income quintile for several Western European countries. The scatterplot shows that there is a negative relationship between union inclusiveness of the bottom-income quintile and wage inequality. The figure also displays whether countries have high coordination (dark circles) or low coordination (grey diamonds). Consistent with my expectations, this shows that countries with high coordination and low inclusiveness exhibit higher wage inequality (the subgroup average is 1.82) than those with low coordination and low inclusiveness (the subgroup average is 1.60), whereas countries with high inclusiveness and high coordination exhibit the lowest wage inequality (the subgroup average is 1.46).
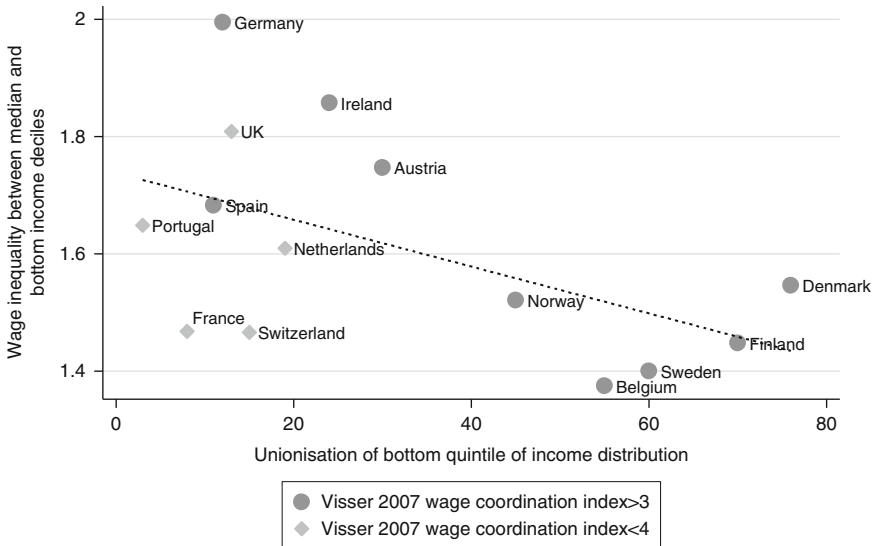

Figure 1: Unionization of bottom-income quintile, wage coordination and wage inequality between median- and bottom-income deciles.
Source: Unionization of bottom-income quintile using 2006 and 2008 European Social Survey – see Figure 2 for sources. For wage inequality and wage coordination, the year 2007 is used – see discussion in text and the online Supplementary Appendix.

Unfortunately, there is no yearly data for the unionization of the bottom-income quintile for a large number of countries in the past decades. As a proxy for inclusiveness I rely instead on union density because only unions with high union density are likely to represent low-income workers in the coordination process. Figure 2 plots unionization of the bottom-income quintile and union density. Most countries are close to the 45 degree line and the correlation between the two variables is 0.96 (*P*-value: 0.0000). The correlation between union density and union density of workers strictly below the median income is also 0.96 (*P*-value: 0.0000) and overall union density is also highly correlated with union density of low-income occupations such as operators (see Supplementary Appendix 2). My expectation is that coordination increases wage inequality where union density is low but reduces wage inequality where union density is high.[6]

However, in many countries, the coverage of wage bargaining is higher than union density. As a result, union density is at best a good measure of 'input inclusiveness' (which actors are *doing* the coordinating) but not of 'output inclusiveness' (which actors are *being* coordinated). I therefore also test the mediating role of wage bargaining coverage defined as the share of the workforce that is covered by a wage bargaining.[7]
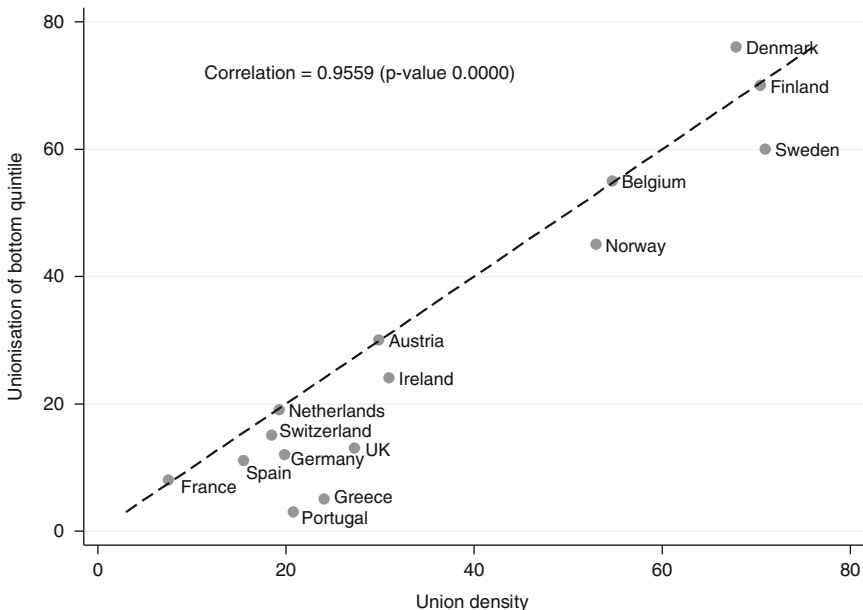

Figure 2: Union density and unionization of bottom-income quintile.
Source: Unionization of bottom-income quintile is calculated using the 2006 and 2008 waves of the European Social Survey and is taken from Pontusson (2013). Union density is for the year 2007 and is taken from Visser (2013) (see Supplementary Appendix for details of definition and source).

Finally, the effect of coordination on wage inequality also depends on 'institutional inclusiveness' that captures how the effect of coordination is mediated by institutions that affect the wages of bottom-income workers. In many European countries, there are provisions for statutory minimum wage that require employers to pay a minimum wage to all workers. Thus, inclusiveness should have an especially strong mediating effect in countries that either do not have statutory minimum wages or where the level of the minimum wage is low. As a result, I also examine the effect of the relative level of the minimum wage (relative to the median wage).

Controls

A first control is labour market dualization that captures differences in the 'rights, entitlements, and services provided' to insiders in permanent full-time employment and outsiders in precarious work or unemployment (Emmenegger *et al*, 2012, p. 10; see also Iversen and Soskice, 2009; Palier and Thelen, 2010; Vlandas, 2013a). To my knowledge, no attempts have so far been made to assess the quantitative effects of policy dualism on developments in wage inequality so I devise my own index of dualization. Here I focus on temporary work: the bigger the size of the temporary work sector and the less temporary workers are protected, the more dualized a labour market. I expect labour market dualization to lead to greater wage inequality among permanent workers. I create an index of dualization that is obtained by calculating the ratio of temporary work (as a share of the total labour force) divided by the index of employment protection legislation (EPL) for temporary workers.

In the power resource approach, the strength of the labour movement is a key determinant of labour market policies, such as generous unemployment benefits, and outcomes, such as lower unemployment and lower inequality (Stephens, 1979; Korpi, 1983; Esping-Andersen, 1999; Korpi, 2006). Left-wing parties are seen to represent the interests of labour and hence will expand welfare state institutions in a way that is conducive to workers' interests. The effect of policies that the left generally expands – for instance total social expenditures, benefit generosity, labour market policies and so on – are then seen to lead to more egalitarian distributive outcomes (Bradley *et al*, 2003). The argument therefore has two observable implications: (i) that the left expands welfare state policies – which is contested (Rueda, 2007; Vlandas, 2013b) – and (ii) that this leads to lower inequality. Given the lack of a clear causal mechanism linking the left to wage inequality, I do not include a control for the left in the baseline model (though I include it as a robustness check). As the effect of the left operates through welfare state policies, I test for the effect of various welfare state policies on wage inequality.

A vast literature has argued that the welfare state serves to decommodify labour which should *ceteris paribus* reduce wage inequality (Esping-Andersen, 1990).

To investigate the impact of decommodifying welfare state policies on wage inequality, I focus on the unemployment benefit replacement rate in the first year of unemployment which is an important determinant of workers' reservation wage.[8] However, welfare states have also undergone profound reforms of the design of existing policies, for instance through activation (Clasen and Clegg, 2006; Daguerre, 2007), and new policies that are recommodifying such as in-work benefits have been introduced (Pierson, 2001; Leppik, 2006; Vlandas, 2013c). Recommodifying labour market policies (RLMP) should be associated with higher rather than lower wage inequality because they incentivize workers to accept low-income jobs. I focus on a subset of active labour market programs – spending on employment incentives and rehabilitation as a percentage of GDP – that incentivize unemployed workers to return to employment.

Finally, I include several economic controls. While openness can be expected to increase wage inequality (Wood, 1994), the expectations for growth and unemployment are less clear. To the extent that unemployment puts downward pressure on low-income workers, this could raise wage inequality. On the other hand, if low skill workers are priced out of the labour market as a result of institutions that prevent wages from falling too low (for example, minimum wage regulation) then unemployment might be negatively correlated with wage inequality among employed workers (though not overall income inequality). Last but not least, I control for real GDP growth to account for the macroeconomic context (consistent with previous literature – for example, Brady, 2003 or OECD, 2011 that uses instead the output gap).

Empirical model, preliminary statistical tests and estimation method

To maximize comparability, my analysis first runs regressions on a sample of 14 Western European countries that are all part of the European Union, but I also report regression results for a larger sample of OECD countries. My sample covers the period 1977–2009, though the precise period depends partly on the specification and I therefore indicate for each regression model the time period that is covered.[9] The baseline regression that is estimated for i countries in t years is as follows:

$$\begin{aligned}
\text{Inequality}_{i,t} =\ & \beta_0 + \beta_1 \text{Coordination}_{i,t} + \beta_2 \text{Union Density}_{i,t} + \beta_3 \text{Dualization}_{i,t} \\
& + \beta_4 \text{Unemployment Benefits}_{i,t} + \beta_5 \text{RLMP}_{i,t} \\
& + \beta_6 \text{Relative Minimum Wage}_{i,t} + \beta_7 \text{Unemployment Rate}_{i,t} \\
& + \beta_8 \text{Trade Openness}_{i,t} + \beta_9 \text{GDP Growth}_{i,t} + \varepsilon_{i,t}
\end{aligned}$$

More details on all the variables and their sources as well as descriptive statistics can be found in the Online Appendix. A number of preliminary statistical tests were carried out to identify the correct estimation method.[10] The null hypothesis that all the panels contain a unit root is rejected, so I conclude that

non-stationarity is not a problem. I nevertheless include a trend to control for time dynamics because non-stationary tests lack power (and I also try some specifications with time dummies).

Heteroskedasticity and auto-correlation are present so the appropriate estimation method is robust standard error clustered by country. Multicollinearity tests were also undertaken on the main independent variables: variance inflation factors for my independent variables suggested multicollinearity is not a concern. The Hausman test suggests that country fixed effects should be included. However, I still run some regressions without fixed effects as these risks absorbing the cross-national variation that I seek to explain. As Plümper *et al* (2005, p. 331) point out, 'unit dummies completely absorb differences in the level of independent variables across units'. Thus, the 'level effect' of my coordination variable is suppressed when including fixed country effects (ibid, p. 333). While the effect of a change in coordination on wage inequality is also theoretically relevant, my main interest here is about the effect of differences in the level of coordination and of inclusiveness across countries on wage inequality, which is why I also run random effects models.

Empirical Analysis

The determinants of wage inequality in Western Europe

Table 2 presents the regression results.[11] I first report the results for a parsimonious model that includes my economic controls and coordination (Column 1). None of the variables are significant. As expected, coordination has no independent effect on wage inequality. In Column 2, I add union density and my dualization index: both have the expected signs (negative and positive, respectively) and are statistically significant.[12]

In Column 4, I substitute my dualization index by an index capturing the EPL of temporary work, which has better data availability as this index is more readily available than the share of temporary workers. The coefficient for this variable is significant and negative suggesting that higher regulation of temporary work is associated with lower wage inequality. Column 5 introduces country fixed effects: the regulation of the temporary work sector remains significant indicating that it also explains within country variation, whereas union density loses significance suggesting that it is the level of union density that has an effect on cross-national variation (see Plümper *et al*, 2005, p. 333).

I then introduce the unemployment benefit replacement rate that has a statistically significant negative association with wage inequality (Column 6), including when country fixed effects are included (Column 7). Relative minimum wages are also associated with lower wage inequality but spending on RLMP has a positive association with wage inequality (Columns 8 and 9). Last but not least, consistent

Table 2: The determinants of wage inequality in Western Europe

Columns	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unemployment rate	-0.00526	-0.00864	-0.00832	-0.00225	-0.00650	-0.00305	-0.00718	-0.00402	-0.00416
(lagged once)	(0.003)	(0.006)	(0.005)	(0.004)	(0.005)	(0.003)	(0.004)	(0.003)	(0.003)
Real GDP growth	0.00167	0.00580	0.00481	0.00608	0.00546	0.00476	0.00510	0.00444	0.00560
(lagged once)	(0.002)	(0.009)	(0.008)	(0.006)	(0.004)	(0.006)	(0.004)	(0.006)	(0.006)
Trade openness	0.00087	0.00049	0.00151	-0.00015	0.00080	-0.00028	0.00046	0.00018	0.00016
(lagged once)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Coordination index	0.00906	0.04822*	0.04685	0.02699	0.03130	0.02407	0.02927	0.02177	0.02036
(dummy variable)	(0.016)	(0.028)	(0.028)	(0.024)	(0.022)	(0.026)	(0.024)	(0.025)	(0.024)
Union density	—	-0.00329***	0.00262	-0.00328***	0.00428	-0.00287***	0.00462	-0.00491***	-0.00513***
(from 0 to 100)		(0.001)	(0.005)	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)	(0.001)
Dualization index	—	0.00690***	0.00496**	—	—	—	—	—	—
		(0.002)	(0.002)						
EPL	—	—	—	-0.03446***	-0.02779*	-0.03803***	-0.03395**	-0.02846***	-0.02565***
(temporary work)				(0.014)	(0.015)	(0.011)	(0.011)	(0.010)	(0.009)
UBRR	—	—	—	—	—	-0.21604***	-0.17224*	-0.18391**	-0.28012**
						(0.082)	(0.096)	(0.085)	(0.121)
Relative minimum	—	—	—	—	—	—	—	-0.26343**	-0.28771*
Wage (from 0 to 1)								(0.131)	(0.151)
RLMP	—	—	—	—	—	—	—	—	0.08726*
									(0.049)

Trend	−0.00008	−0.00327	−0.00124	−0.00298	−0.00090	−0.00332*	−0.00112	−0.00316*	−0.00351*
Constant	1.55744***	1.73764***	1.39368***	1.88069***	1.43920***	2.02684***	1.57579***	2.08715***	2.13454***
Time period	1977–2011	1986–2009	1986–2009	1986–2009	1986–2009	1986–2009	1986–2009	1986–2009	1986–2009
Observations	280	190	190	210	210	210	210	210	202
Number of countries	14	14	14	14	14	14	14	14	14
Country FE included	No	No	Yes	No	Yes	No	Yes	No	No
Trend included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 within	0.07	0.11	0.14	0.05	0.11	0.07	0.13	0.12	0.14
R^2 between	0.00	0.67	0.04	0.76	0.12	0.78	0.05	0.80	0.78
R^2 overall	0.00	0.52	0.03	0.60	0.13	0.67	0.06	0.74	0.73

***$P<0.01$; **$P<0.05$; *$P<0.1$.
Note: Robust standard errors clustered by country in parentheses. RLMP stands for recommodifying labour market policies. UBRR stands for unemployment benefit replacement rate.

with my expectation, the index of coordination has no statistically significant effect on wage inequality throughout.

I carry out a number of stability tests in Table A4.1 in online Appendix 4. When removing the control for minimum wages, RLMP loses statistical significance, but the other key independent variables remain significant. The results remain stable when time dummies are included instead of the trend. When I substitute EPL of temporary work by the dualization index, the results are unchanged. The control of the cabinet by the left has no impact, in line with the expectation that the effect of partisanship occurs through welfare state policies and regulations. Several other variables are not found to be statistically significant: stock market capitalization as a percentage of GDP; EPL of regular workers; educational attainment of the total population aged 15 and over; inflation; and the share of foreign born population. Last but not least, I replace my dichotomous measure of wage coordination with the initial 5-points scale and the results are unchanged. None of these variables therefore alter my main results, though the coefficient of coordination becomes significantly positive in some cases. In line with my expectations, unemployment benefit replacement rates and union density have a negative impact on wage inequality. Higher dualization (or lower temporary work regulation) is associated with higher wage inequality throughout. The findings for spending on RLMP is more mixed with statistical significance disappearing when relative minimum wages are excluded from the analysis. Coordination is either found to be insignificant or to have a significant positive effect on wage inequality.

Contextualizing the effect of coordination in Western Europe

My results so far suggest that coordination has either no effect or a positive effect on wage inequality, contradicting the expectations of VoC, but consistent with Germany's high wage inequality. To test whether this positive effect is contingent on the degree of inclusiveness, I create a separate interaction term between coordination and union density. The results when this interaction term is included are reported in Column 1 in Table 3. The unemployment benefit replacement rate, EPL of temporary work and the minimum wage all have significant negative association with wage inequality, as was the case before. By contrast, the coefficient for RLMP loses significance.

As one cannot readily interpret interaction terms from the table (Brambor *et al*, 2006), Figure 3 plots the average marginal effect of coordination on wage inequality at different levels of union density. The figure suggests that economic coordination only reduces wage inequality where union density is high. Below 80 per cent union density, the effect of coordination on wage inequality becomes insignificant; though note that most of the confidence interval lies in positive part of the y axis. The results are the same if 'output inclusiveness' – wage bargaining coverage – is used instead of union density (see Supplementary Figure A4.2 in online Appendix).

Table 3: Interaction between coordination, union density and minimum wages

Column	(1)	(2)
Unemployment rate *(lagged once)*	−0.00492	−0.00121
	(0.003)	(0.003)
Real GDP growth *(lagged once)*	0.00631	0.00963
	(0.007)	(0.009)
Trade openness *(lagged once)*	−0.00001	−0.00003
	(0.001)	(0.001)
Coordination index *(dummy variable)*	0.09595	0.32240***
	(0.058)	(0.057)
Union density *(from 0 to 100)*	−0.00454***	−0.00534***
	(0.001)	(0.002)
Coordination*Union density	−0.00138*	−0.00431***
	(0.001)	(0.001)
Relative minimum wage	−0.29374*	−0.21939
	(0.156)	(0.347)
Coordination*Relative minimum wage	—	−0.55674**
		(0.240)
Union density*Relative minimum wage	—	0.00760
		(0.010)
Coordination*Relative minimum wage*Union density	—	0.00066
		(0.009)
EPL *(temporary contracts)*	−0.02867***	−0.06248***
	(0.009)	(0.014)
UBRR	−0.27402**	−0.24943**
	(0.112)	(0.126)
RLMP	0.07790	0.07247
	(0.048)	(0.058)
Constant	2.11772***	2.19403***
Time period	1986–2009	1986–2009
Observations	202	202
Number of countries	14	14
Country fixed effects included	No	No
Trend included	Yes	Yes
R^2 within	0.15	0.19
R^2 between	0.78	0.87
R^2 overall	0.75	0.80

***$P<0.01$; **$P<0.05$; *$P<0.1$.
Note: Robust standard errors clustered by country in parentheses. UBRR stands for unemployment benefit replacement rate.

In Column 2, I allow for the interaction of union density and coordination with the relative minimum wage – that is, a triple interaction term – to investigate how inclusiveness mediates the effect of coordination in countries that do not have a
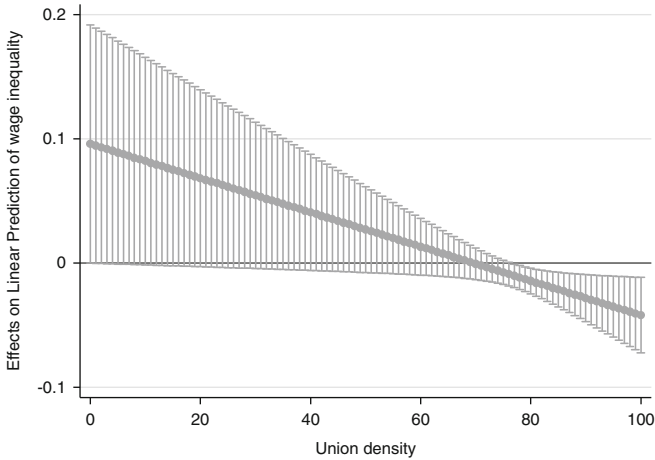
Figure 3: Average marginal effect of coordination on wage inequality in Western Europe at different levels of union density.
Note: Shaded area represents 90 per cent confidence interval. The average marginal effect of coordination for different levels of union density is calculated using the results from Column 1, Table 3.

statutory minimum wage (that is, where 'institutional inclusiveness' is low). High EPL of temporary work and high unemployment benefit replacement rates continue to have a negative association with wage inequality. Figure 4 plots the average marginal effect of coordination on wage inequality. The 90 per cent confidence interval is much narrower. Coordination continues to be negatively associated with wage inequality where union density is high, despite the absence of a statutory minimum wage. In contrast to the case where all countries were considered, coordination now is associated with statistically significant higher wage inequality where union density is under 70 per cent.

Extending the sample to 20 OECD countries

At this point of my analysis, two potential objections should be addressed. The first objection is that excluding from the analysis low coordination countries outside Europe, which often exhibit high wage inequality, biases the results in a way that would explain the surprising lack of statistical significance of coordination. While the puzzle is about Western European countries and those countries share similarities and constraints, thereby making them a good sample to test my argument, extending the analysis to other OECD countries is necessary to investigate whether the results change and test the external validity of my analysis. A second objection is that one observable implication of my argument concerning the effect of coordination was not tested.
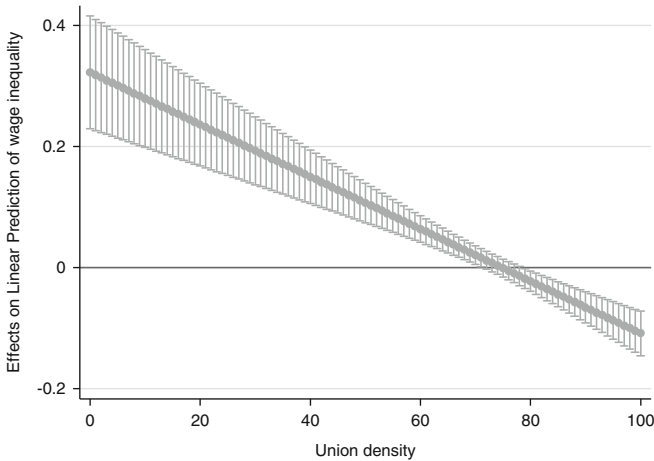
Figure 4: Average marginal effect of coordination on wage inequality in Western Europe at different levels of union density where there is no statutory minimum wage.
Note: Shaded area represents 90 per cent confidence interval. The average marginal effect of coordination for different levels of union density where there are no minimum wage regulations is calculated using the results from Column 2, Table 3.

Indeed, if coordination always raises the wages of median-income workers but only increases the wages of the bottom-income-decile workers if coordination is inclusive, we should expect that coordination is associated with lower wage inequality between the median and the top-income decile.

To address both objections, I extend my sample to include an additional six OECD countries outside of Europe for which data is available: Japan, the United States, Australia, Canada, Switzerland and New Zealand; and I also test the effect of coordination on a measure of wage inequality in the upper half of the income distribution. Creating a sample with a consistent coverage across all 20 OECD countries[13] partly limits my ability to test the effect of dualization because temporary work is not consistently available for such a sample.[14] Instead, I test the effect of temporary work regulation. The results for this larger sample are the same and can be seen in Table 4: relative minimum wage and the unemployment benefit replacement rate are associated with lower wage inequality, but union density is no longer statistically significant. Surprisingly, the unemployment rate is negatively associated with wage inequality consistent with the notion that low unemployment may mean that previously unemployed people with very low human capital now enter the job market and earn very low wages. In other words, this lower unemployment may be associated with higher wage inequality at the bottom of the income distribution despite reducing overall income inequality.[15]

Table 4: The determinants of wage inequality in the bottom and top of the income distribution in OECD countries

Column	(1)	(2)	(3)	(4)
Dependent variable	Ratio of earnings decile limits of the 5th decile and the 1st decile		Ratio of earnings decile limits of the 9th decile and the 5th decile	
Coordination index	0.00810	0.00758	−0.01866***	−0.01859**
(dummy variable)	(0.013)	(0.012)	(0.007)	(0.007)
Union density	−0.00061	0.00027	−0.00224***	−0.00209**
(from 0 to 100)	(0.001)	(0.001)	(0.001)	(0.001)
Relative minimum wage	−0.23319**	−0.24795*	−0.14759*	−0.15303
(from 0 to 1)	(0.118)	(0.131)	(0.089)	(0.091)
UBRR	−0.22144***	−0.22657***	−0.19349***	−0.19881***
	(0.070)	(0.069)	(0.064)	(0.064)
Unemployment rate	−0.00616***	−0.00661***	−0.00628***	−0.00638***
(lagged)	(0.002)	(0.002)	(0.002)	(0.002)
Real GDP growth	0.00305	0.00316	0.00233	0.00239
(lagged)	(0.002)	(0.002)	(0.002)	(0.002)
Trade openness	0.00040	0.00052	−0.00122**	−0.00126**
(lagged)	(0.001)	(0.001)	(0.001)	(0.001)
Trend	−0.00036	0.00006	0.00596***	0.00605***
	(0.001)	(0.001)	(0.002)	(0.002)
Constant	1.84737***	1.82581***	2.04068***	2.02413***
	(0.122)	(0.121)	(0.101)	(0.066)
Observations	387	387	387	387
Time period	1975–2009	1975–2009	1975–2009	1975–2009
Number of countries	20	20	20	20
Country fixed effects	No	Yes	No	Yes
Year fixed effects	No	No	No	No
Trend	Yes	Yes	Yes	Yes
R^2 within	0.22	0.23	0.71	0.71
R^2 between	0.00	0.03	0.06	0.05
R^2 overall	0.01	0.01	0.21	0.19

***$P<0.01$; **$P<0.05$; *$P<0.1$.
Note: Robust standard errors clustered by country in parentheses. UBRR stands for unemployment benefit replacement rate.

Results when the ratio between top- and median-income deciles is used as the dependent variable are shown in Columns 3 and 4. Consistent with my expectation that wage coordination has an unambiguously positive effect on the median decile, coordination is negatively associated with this measure of wage inequality. Similarly, union density has a statistically significant negative coefficient. However, the interaction term between union density and coordination is not significant for this dependent variable, consistent with my argument that higher union density helps low-income workers to be better represented but does not affect dynamics between top- and median-income workers (not shown, results available from author).

Finally, we can investigate various interaction effects (for reasons of space the full results are available in the online Supplementary Appendix 5). Wage coordination is only associated with higher wage inequality where union density is under 60 per cent (Figure 5). To investigate the impact of 'output inclusiveness' I interact coordination with bargaining coverage instead of union density: the results suggest coordination only reduces wage inequality when 'output inclusiveness' is high (Figure 6). Where there is no statutory minimum wage (that is, 'institutional inclusiveness' is low), the effect of coordination on wage inequality is sharper: below 60 per cent coordination has a positive significant association with inequality, above 85 per cent the association becomes negative (Figure 7). Both the non-interacted and the interacted results are robust to the inclusion of various additional variables as well as different operationalisation of openness and left power and unemployment benefits (see Supplementary Appendix 6). Finally, interacting union density with a 5 points instead of a dichotomous index of wage coordination does not change the results (see Supplementary Figure A7.4 in Appendix 7).

Going back to the country cases

Though the specific experience of no single country case can perfectly match the results from a large N regression analysis, it is instructive to map how developments in several countries in my key variables relate to wage inquality. In the following paragraphs, I very briefly contrast the experience of Germany, the United Kingdom, Denmark, France and Sweden.
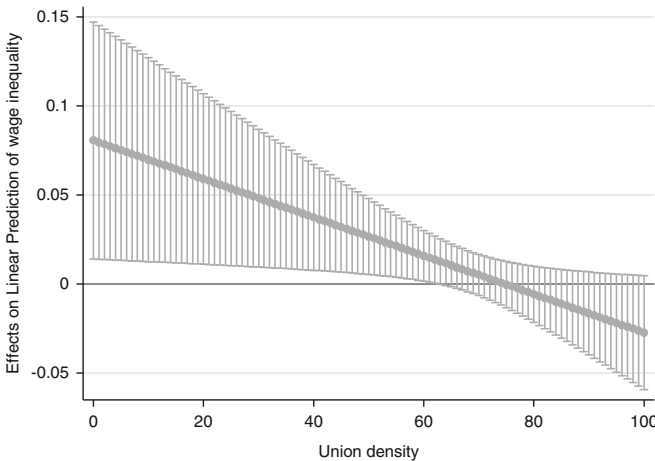

Figure 5: Average marginal effect of coordination on wage inequality in OECD countries at different levels of union density.
Note: Shaded area represents 90 per cent confidence interval, plot of marginal effects using Column 1, Supplementary Table A5.1.
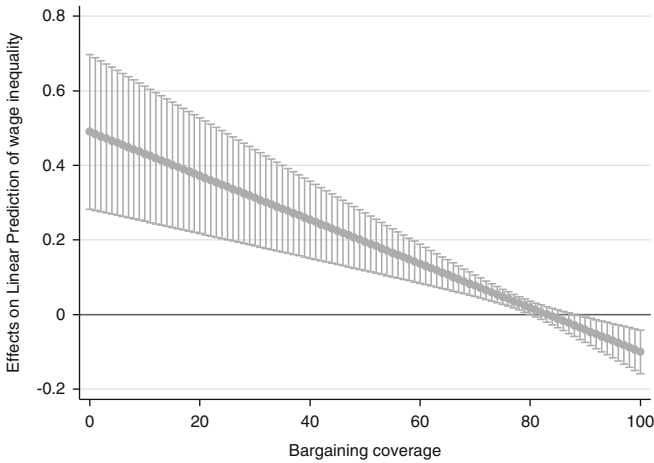
Figure 6: Average marginal effect of wage coordination on wage inequality in OECD countries at different levels of bargaining coverage.
Note: Shaded area represents 90 per cent confidence interval. Plot of marginal effects using same regression model as in Column 1, Supplementary Table A5.1, but substituting union density by bargaining coverage.
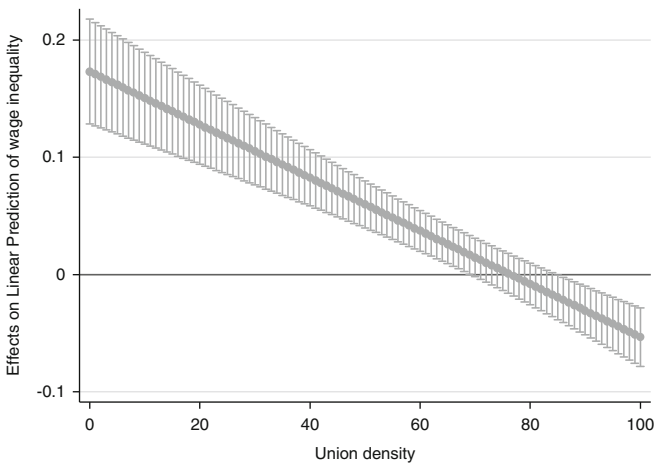

Figure 7: Average marginal effect of coordination on wage inequality in OECD countries at different levels of union density where there is no statutory national minimum wage.
Note: Shaded area represents 90 per cent confidence interval. Plot of marginal effects using Column 2, Supplementary Table A5.1, where the relative minimum wage is 0 (that is, there are no national statutory minimum wage).

Between 1985 and 2005, Germany's coordination index stayed nearly all the time at 4, union density fell from 34.7 to 21.7 per cent, unemployment benefit replacement rate fell marginally from 63 to 60 per cent, spending on employment incentives increased from 0.13 to 0.17 per cent of GDP, and EPL for temporary workers fell from 3.75 to 1.25, while temporary work increased by 40 per cent (from 10 to 14.2 per cent). In the absence of a statutory minimum wage, these trends led to an increase in wage inequality. Thus, for instance, between 1995 and 2005, Germany's ratio between median- and bottom-income deciles increased from 1.71 to 2. Thus, high coordination combined with low input, output and institutional inclusiveness has resulted in higher wage inequality between median- and bottom-income workers.

In the United Kingdom, union density fell from 43.7 per cent in 1975 to 27.1 per cent in 2005. While coordination was sometimes 4 in the 1970s, it was consistently 1 from the 1980s onwards. Unemployment benefits decreased drastically (replacement rate fell from 47 per cent in 1975 to 25 per cent in 1985 and 21 per cent in 1995, and to 18 per cent in 2005). EPL of temporary workers and spending on employment incentives are both low in comparative terms. While the wage inequality ratio increased between 1975 and 1995 (from 1.79 to 1.84), the introduction of the minimum wage in the late 1990s, and the absence of a positive effect of high coordination on the median wage, meant that the ratio between the median- and bottom-income workers fell to 1.83 in 2005. Thus low coordination combined with institutional, but not input or output inclusiveness, has resulted in lower wage inequality in the United Kingdom.

In Denmark, wage inequality increased from 1.41 to 1.53 between 1985 and 2005, while union density fell from 78.2 to 71.7 per cent, EPL for temporary workers fell from 3.13 to 1.38 and temporary work remained around 10 per cent. At the same time Denmark spent an increasing amount on employment incentives and the unemployment benefits replacement rate fell from 74 per cent in 1985 to 57 per cent in 2005. We can contrast the experience of Denmark with that of France where wage inequality fell from 1.74 in 1975 to 1.46 in 2005, despite low coordination and union density falling from 22.2 to 7.7 per cent over the period. But France's unemployment benefits replacement rate increased from 44 per cent in the mid-1970s to around 70 per cent from the mid-1980s onwards, and the minimum wage as a ratio of median earnings increased from 35 per cent in mid-1970s to more than 40 per cent in 1990s. Thus, France despite having low coordination and lower input inclusiveness has managed with its higher output (high bargaining coverage) and institutional inclusiveness to have lower wage inequality than Denmark that had high coordination but lacked inclusiveness.

Sweden is a highly coordinated country that retained high levels of input inclusiveness. Though it has low institutional inclusiveness (no statutory minimum wage), union density actually increased from 74.5 per cent in 1975 to 81.3 per cent in 1985 and 86.6 per cent in 1995, whereas unemployment benefit replacement rates stayed around 80 per cent in 1970s, 1980s and 1990s. As a result, the ratio median- to bottom-income deciles remained under 1.4 throughout the whole period.

Conclusion

This article has investigated the political, institutional and economic determinants of wage inequality between median and bottom gross earnings deciles. The cross-national variation in this type of wage inequality across Western Europe seemed at odds with the main approaches in comparative political economy. Whereas the VoC literature has underscored the potential for CMEs to be as efficient as LMEs while achieving more egalitarian outcomes, Germany now has higher wage inequality between median- and bottom-income workers than the United Kingdom (see Table 1).

To solve this puzzle, I argued that coordination might not reduce wage inequality where it is not inclusive: if it increases the productivity and bargaining power of median-income workers much more than of low-income workers, coordination should be associated with higher rather than lower wage inequality between median and bottom gross earnings deciles. Therefore, coordination can only be expected to reduce wage inequality where coordination is inclusive, and should instead be expected to increase wage inequality where it is not inclusive. My findings confirm that the effect of coordination depends on the degree of inclusiveness: coordination reduces wage inequality only where union density (or bargaining coverage) is high, and where union density is low and there are no statutory minimum wage, coordination is positively associated with wage inequality.

Moreover, the presence of decommodifying welfare state policies matter. By increasing the reservation wages of low-income workers, high unemployment benefit replacement rates reduce wage inequality between median and bottom gross earnings deciles. By contrast, recommodifying policies such as employment incentives increase wage inequality between median and bottom gross earnings deciles. I also find that labour market dualization is associated with higher wage inequality in Western Europe: a growing unregulated temporary work sector also has adverse effects on wage inequality between permanent workers. Increased dualization between insiders and outsiders therefore also exacerbates wage inequality between insiders.

Recent research has shown that institutions have changed much more than initially assumed by the VoC literature (for example, Baccaro and Howell, 2011). Inclusiveness has been falling in many advanced economies over the past three decades, both in terms of union density and wage bargaining coverage. At the same time, the generosity of welfare state policies has decreased and this often understates the extent of recommodification. As a result, we can expect wage inequality to continue to rise, which may translate in higher overall inequality if the welfare state becomes increasingly constrained in its ability to correct market outcomes through direct redistribution. It does not follow that the State becomes irrelevant: even in a context of austerity, the State can intervene by introducing or increasing statutory minimum wages, extending wage bargaining agreements and reregulating the temporary work sector.

Overall my findings therefore contribute to the comparative political economy literature by specifying, and qualifying in important respects, the relationship

between the welfare state, inclusiveness, coordination and wage inequality between median and bottom gross earnings deciles. This article suggests that the link between coordination, welfare state policies and egalitarianism in this measure of inequality is more complex than often assumed. Further research should investigate this link for other types of inequality. Indeed, wage inequality by design only captures inequality among working people and the relationship between wage inequality and overall inequality is not straightforward: higher unemployment may for instance occur because low-skilled workers are 'priced out' of the labour market, thereby resulting in lower wage inequality but potentially higher overall inequality. Disentangling the effects of coordination on overall inequality from those of inclusiveness may shed new light on the relationship between efficiency and equality and would therefore constitute a worthwhile avenue for further research.

Acknowledgements

About the Author

Tim Vlandas is Lecturer in Politics in the University of Reading, where he teaches courses on political economy, welfare state policies, quantitative methods and European integration. He is interested in the relationship between the state and the market in industrialized democracies. His research has been published in *Politics & Society*, the *Journal of European Social Policy*, the *Journal of Common Market Studies*, the *European Journal of Industrial Relations, Political Quarterly* and *French Politics*. His PhD at the LSE was awarded the Doctoral Researcher Prize by the Network for European Social Policy Analysis.

Notes

1 This shift was the result of changes in the prevailing technology (Freeman and Katz, 1995; Goldin and Katz, 1996; Acemoglu, 2002), the structure of employment (Levy and Murnane, 1992), rising trade competition (Wood, 1994; Burtless, 1995; Freeman, 1995) and immigration (Borjas *et al*, 1997; Rueda and Pontusson, 2000, p. 357).

2 The figures for France are net (see Supplementary Appendix) so they are not directly comparable (many thanks to an anonymous reviewer for pointing this out to me). However note that France has one of the highest minimum wage legislation in Western Europe, and other studies have shown that the ratio of median to bottom income earnings is indeed very low. I have also recalculated my results without France and they are unchanged (results available from the author).

3 'A full-time employee is defined as a low-wage earner when his/her annual gross earnings are less than two thirds of the annual full-time median gross earnings' (Eurostat, 2010, p. 6).

4 These figures are taken from the Eurostat statistic in focus, see endnote 3.

5 See Visser's codebook, endnote 6.

6 One variable which is not captured here but that could affect wage inequality is trade union ideology – for which there is no reliable data for my whole sample over time. This is only a problem if there is a very strong correlation between union density and egalitarian ideology. For instance, an egalitarian ideology seems more prevalent in Sweden than in Germany (Dolvik and Stokke, 1998; Jacobi *et al*, 1998, p. 218) and union density is higher in Sweden than in Germany (I thank a reviewer for raising this point). However, it is not obvious that there is necessarily a statistical correlation between the two. Indeed, elsewhere I have created a variable capturing the working class ideology of unions (arguably not a perfect proxy) and union density for a sample of Western European countries after 2000 (Benassi and Vlandas, 2016) and the correlation between the two variables is <0.1, so an omitted variable bias is unlikely to be a problem.

7 This has the additional advantage of allowing us to be sure that inclusiveness is what matters for wage inequality. In the power resource approach, union density is often construed as an indicator of union strength rather than inclusiveness. It is therefore difficult to rule out that it is union strength rather than inclusiveness that explains the negative correlation between union density and wage inequality (I thank a reviewer for raising this point). However, there is no *a priori* reason that strength should mediate the effect of coordination on wage inequality.

8 While the replacement rate after the first year of unemployment could also matter, there are two problems with it. First, the replacement rate after the first year also captures the duration of benefits rather than their level. Second, most workers exit unemployment within 1 year. In any case, data availability for the replacement rate after the first year is very limited.

9 See Supplementary Appendix 3 for details on years available for each variable.

10 The results are reported in Supplementary Appendix 3.

11 My results do not change if the trend that I include in certain models is excluded, nor if GDP growth is excluded. I have further rerun my key regressions without France – which has a different measure of wage inequality that is net rather than gross – and my key results are unchanged. I am grateful to an anonymous reviewer for suggesting these robustness checks.

12 Note that data for these variables only starts in the mid-1980s so the number of observations drops slightly.

13 The original 14 Western European countries plus Australia, Canada, New Zealand, Switzerland, Japan and the United States.

14 See Supplementary Table A2.2 for details on the time period by country available for each independent variable.

15 I am grateful to an anonymous reviewer for suggesting this interpretation of this finding.

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