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The impact of trade unions and government party orientation on income inequality: Evidence from 17 OECD economies

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Abstract

Purpose: Despite the existing conceptual analysis on the impact of trade unions on employees' welfare and the wider economy, the mediating effect of political party orientation (i.e., right, centre and left) on income inequality remains under researched. In this paper we empirically explore the relationship between the nature of political party orientation, trade unions and income inequality.

Design/methodology/approach: We use three different measures of income inequality and dummy variables that capture government party orientation with respect to economic policy for a panel of 17 OECD economies over the period 2000-2016. We employ a panel fixed effects approach and the Driscoll and Kraay's (1998) nonparametric covariance matrix estimator.

Findings: The empirical evidence indicates that strong unions and, to some extent, left party governance, are fundamental institutional elements to combat rising levels of income inequality whilst countries dominated by right-wing political parties appear to exacerbate income inequality. The results pertaining to the impact of centrist parties on income inequality are ambiguous suggesting that a potential fragmentation may exist in their political approach.

Originality: The evidence generated can have significant policy ramifications in alleviating rising levels of income inequality as well in relation to the declining unionization rates observed across advanced economies.

Keywords: income inequality; unionization; political parties; panel data.

1. Introduction

A genuine interest in the effects of unions on workers goes at least as far back as the 18th century and can be traced in the writings of Adam Smith who noted the existing asymmetries between employers and workers. John Stuart Mill claimed that in the presence of imperfections "trade unions ... are the necessary instrumentality of [the] free market" (2008, p.319).

Traditionally, studies on income inequality have focused mainly on either the economic performance that shaped inequality or the demographic risks of inequality, whilst the impact of institutions and politics has been to a certain extent neglected. It was not until recently, that a growing number of empirical research papers has been devoted to the understanding of the distributional impact of party politics and institutions as well as the impact of electoral participation (Brady, 2009; Anderson and Beramendi, 2012). Within the realm of the power resources theory, collective actors bond together to raise awareness of their common interests to mobilize disadvantaged classes of citizens. By gaining electoral power through the formation of trade unions and left-wing parties, these groups aspire to expand the welfare state and reduce income inequality when elected (Brady *et al*., 2009; Huber and Stephens, 2001; Moller *et al*., 2003).

Motivated by the sparse and inconclusive evidence in the literature of power resource theory, this study offers insightful evidence on the empirical relationship between trade unions, the nature of political party orientation with respect to economic policy and income inequality, for a panel of 17 OECD economies over the period 2000-2016. To the best of our knowledge this is the first time that a research effort simultaneously explores the impact of unions and government party orientation on income inequality whilst at the same time controlling *inter alia* for the business cycle, economic stability and banking crises. In this direction, we utilize a comprehensive dataset where government party orientation variables are by construction directly related to the economic policies associated with the nature of the respective parties,

hence obviating the need to control for the nature of policies (e.g., expansionary or contractionary fiscal policy). For the empirical investigation we consider the most dominant orientations of political parties encountered in modern democracies, namely, right, centre and left, as well as three different measures of inequality (i.e., based on household disposable income, household market income, and manufacturing pay). The effects of political party orientation are gauged by means of a panel fixed effects methodology that utilizes the Driscoll and Kraay's (1998) nonparametric covariance matrix estimator which effectively deals with problems arising from cross-sectional dependence.

The rest of the paper is organized as follows: Section 2 reviews the literature surrounding the relationships between income inequality, unionization, and party orientation, whilst Section 3 presents the data and the framework adopted for the empirical investigation. Section 4 presents and discusses the evidence arisen from the empirical estimations and section 5 offers some concluding remarks.

2. Literature review

Income inequality began its steep rise in the 1980s and as a result a debate has been unfolding on the origins of this trend (Piketty, 2018). In the following sections, we provide a brief but comprehensive review of the theoretical and empirical literature on the relationships between income inequality, unions, and political parties.

2.1 Trade unions and income inequality

Growing income inequality across many OECD economies (OECD, 2018; UNDP, 2019) has rekindled the research interest about the impact of unions. The existing evidence on the relationship between labour unions and inequality (Di Nardo *et al*., 1996; Western and Rosenfeld, 2011) has been further supplemented by an array of potential drivers that explain

variations in income inequality and are closely associated with technological developments (Acemoglu *et al*., 2001).

The early empirical studies conducted in this area purported to provide evidence on the relationship between labour unions and inequality and focused mainly on the union premium, i.e. the wage differential between union and non-union members. In this context and in view of the lack of microdata, Lewis (1963), who was one of the first to advance the modern empirical neoclassical approach towards gauging the impact of labour unions, focused on sectoral differences. Almost 20 years later, Freeman and Medoff (1984) using microdata from the Current Population Survey found that the average union premium in the 1970s was approximately 16% which falls within the established in the relevant literature boundaries of 10% and 20%, respectively.

For classical economists, labour unions - being the sellers of labour to the competitive firm - possess monopoly power which reduces employment in exchange for higher wages (Rees, 1963). The resulting deadweight losses mean that measures to reduce union power should be associated with greater efficiency. Manning (2011) and Naidu *et al*. (2018) argue that in monopsonistic labour markets, increased bargaining power conferred to the unions raises workers' wages to their efficient level whilst for Keune (2021) collective bargaining coverage and union density are negatively related to inequality between capital and labour.

On a different note, in an era where globalization, technological change and deregulation might have to a certain extent squeezed rents, union power is also perceived to act as a catalyst in the constant struggle for redistribution of rents between firms and workers (see, Galbraith and Choi, 2020; Therborn, 2020). In this sense, unions can alleviate increased inequality induced by market forces but with ambiguous welfare implications (for more on the rent-sharing literature see Hirsch and Müller, 2018 and Song *et al*., 2019).

Checchi and Garcia-Penalosa (2008) provided a unifying framework of analysis to study the relationship between inequality and labour market institutions and found that different institutional measures are associated with inequality. The roles that these institutions play depend to a certain extent on whether they complement or substitute each other. Furthermore, they argue that labour market institutions and potentially political parties are likely to affect the unemployment rate, the functional distribution of income, and wage inequality. The prior net effect on income inequality however is thought to be undetermined. In the same spirit, Calderon and Chong (2008) established that both *de jure* and *de facto* labour regulations alleviate inequality, however the *de jure* approach might not adequately explain income inequality due to the endogenous nature of regulations.

Jaumotte and Buitron (2019) examined potential factors responsible for the increase in gross and net income inequality across advanced economies in the 1980s, and found that globalization, technological progress, financial deregulation and lower top marginal tax rates are significantly related to higher inequality. They also observed that the declining trend in union density along with the rise in top decile income shares are emerging features in advanced economies. In the same line of argument, Duenhaupt (2012) and Piketty *et al*. (2014) argue that the erosion of labour market institutions - in particular union density - adversely affects the bargaining power of average wage earners relative to capital owners and top earners. As a result, the anaemic influence of workers on redistributive policies contributes further to the rise of both gross and net income inequality. In this context, Freeman (1991) argued that in highly unionized countries during the 1980s, market pressures for rising inequality were subdued hence keeping earnings differentials by industry to their minimum.

In addition, Checchi and Garcia-Penalosa (2010) using a panel of OECD countries over the period 1970-1996 found that stronger unions and generous unemployment benefits alleviate income inequality. It should be stressed however, that the distribution of individual hours

worked, which to an extent depends on labour-market institutions, may contribute to the unequal distribution of hours over individual employees, therefore affecting household earnings (Salverda and Checchi, 2014).

Emerging evidence suggests that unionization causes earnings for the average worker to increase hence less earnings inequality (Western and Rosenfeld, 2011) whilst lowers compensation for elites (Volscho and Kelley, 2012). Card (1996) suggested that the union premium remains significant irrespective of the movement of labour between union and non-union sectors while Farber *et al*. (2021) argue that one of the challenging features in the current debate is the causal dimension between union membership and wages. Conversely, Pontusson (2013) argued that the declining relevance of unionization in most OECD countries caused the average union member to become relatively better off and, in all likelihood, less willing to support wage solidarity or redistributive government policies.

Scholars that explore poverty issues have demonstrated that increased union membership reduces the incident of low-paid jobs (Zuberi, 2006) whilst at the same time boosts the earnings of the less skilled, younger, contingent workers (Maxwell, 2007; Eren, 2009). In this sense, unions are instrumental in promoting a more egalitarian system by influencing policy as well as shaping the regulation and governance of labour markets (Western and Rosenfeld, 2011). In the same spirit, Brady *et al*. (2013) in a study on the US economy argued that state-level unionization potentially outweighs in importance, economic performance or social policies.

In so far as unions actively participate in shaping the nature of party politics, they should not be explored in a vacuum. Unions are an integral part of contemporary governance and their actions are instrumental in shaping electoral politics since they have the ability to motivate voters, align and form coalitions with political parties, and influence government

administrators. To this end, unions' relevance to electoral politics is thought to be complementary to the role of political parties.[1]

2.2. Political processes and income inequality

The political economy of inequality, or more specifically the political processes that shape the diversity in income distribution in advanced capitalist economic systems, is suggested to be revolving around three main pillars: "the median voter model of redistribution, the partisan motivations of incumbents and their impact on fiscal policy and distributive outcomes, and the role of institutions, particularly corporatism, as constraints on the set of policies available to policymakers" (Beramendi and Anderson, 2011, p.5). The median voter model of redistribution (Meltzer and Richard 1981) provides insights into the democratic politics of redistribution and inequality by considering the role of political competition. In this context, to predict voters' preferences for more or less redistributive policies we need to have knowledge of the voters' own relative income position as well as society's mean and median incomes.

When political parties contend to promulgate their ideological platform, they set objectives that are mainly centred around rent-seeking or truly ideological motives. The fact however that their desire to seek office, either alone or as part of a broader coalition, suggests that their political orientation might also depend on the nature of the electoral system and other political institutions involved in the process. As such, their decisions apart from reflecting the specific system of political representation, also indicate a pattern of relationships with both capital and labour and the economic interests that these serve.

[1] Regarding the relationship between unions and political parties, Hayward (1980) identified four distinct models: the 'Leninist model' in which the political party and unions are inextricably linked with one another with the former trying to control the policies and actions of the latter; the British model in which the unions gave birth to the political party (Labour Party); the social-democratic model involving 'interdependence and symbiosis'; and finally, a model in which unions, irrespective of their involvement in politics refuse any symbiosis with political parties.

Recently, it has been suggested that excessive inequalities might jeopardise the very foundations of democratic political regimes (see, Acemoglu and Robinson, 2006) as well as the ability of markets to distribute income equally. According to Beramendi and Anderson (2011), the impact of income inequality can sometimes be ambiguous whilst its causes are rather complex. As such, inequality might indeed be rising in different parts of the world, however, the pattern, the rate and the pace, vary.

The existing literature on the politics of economic growth (see, Lange and Garrett's 1985) delineates the channels through which party-politics and institutions together shape economic outcomes and provides insightful conceptual channels that enable us to better understand the political mechanisms associated with the future of advanced industrial societies. Research on the contributions of the partisan origins of macroeconomic outcomes has also unravelled new areas of interest that relate to institutional conditional effects (Alt, 2002; Franzese, 2002) such as the impact of different combinations of monetary and labour market institutions on inflation and unemployment rates (Iversen, 1999). A recent study by Gunderson (2021) used data from European national elections over the period 1996 to 2016 and found that income inequality is positively related to party polarization on economic issues when partisans are sorted with respect to income.

The role of trade unions in the social transformation of nations as well as their political involvement remains an area of considerable debate in academia. Political systems globally can be classed in groups ranging from the extreme right to the extreme left and political scientists have endeavoured to develop classification schemes of regime type (for a survey see Hsu, 2008). Given the large differences in ideology between right and left oriented parties on issues related to economic inequality, there are theoretical approaches that potentially discriminate between the effects of party-types on inequality. It is therefore not surprising that

a multitude of empirical studies generated results that are ambiguous and sometimes inconclusive (Galbraith, 2011).

At the early stages of the evolution of modern European politics, socialist parties and trade unions established alliances (Von Beyme, 1985) whereas conservative parties established strong connections with business associations and other organizations (Schmitter, 2001). These traditional strong links between particular parties and interest groups have somewhat weakened (Allern and Bale, 2012) and tend to be replaced by a more direct dependence on state resources (Katz and Mair, 1995).

2.3 *Political party orientation and expected outcomes*

"The variations in the difference between the two basic types of power resources – control over the means of production and the organization of wage-earners into unions and political parties – are assumed to be of major importance for the distributive processes in capitalist democracies and for their final result; the extent of inequality" (Korpi, 1983, p,187).

Parties serve as mediators in the implementation of policies (Huber and Stephens, 2001). Traditionally, Leftist parties are associated with a more egalitarian system of governance as they strive to reduce inequality and generally promote policies and pass laws that are congenial to the poor (Bradley *et al*., 2003; Kelly and Witko, 2012). The underlying relationship between left oriented parties and lower inequality might indeed be the case (Moller *et al*., 2003) but crucially it is the cumulative and long-term, rather than the current, power of Left parties that should be considered (Huber and Stephens, 2001; Jensen, 2010). Brady (2009) found that lower poverty in democratic regimes is significantly associated with the cumulative presence of left-wing parties than traditional democracies governed by Centrist and Right parties. Supporting evidence is also provided by Pribble *et al*. (2009) who demonstrated that

inequality tends to be lower in Latin American countries such as Uruguay and Costa Rica, with a traditional and cumulative history of Left parties in the legislature.

On a different note, power resources theory, by focusing on the collective agents that represent the downtrodden and the working class, portray the political advantages of business and elites as the norm hence the relatively scant research on the interaction of power and mobilization of elites and business vis-à-vis inequality and poverty (Brady *et al*., 2017). There is however literature that explores the impact of business and its mediating role in favour of egalitarian social policies by focusing mainly on the institutional differences between coordinated and liberal market economies. In this context, businesses appear to have a keen interest in welfare state expansion in coordinated market economies such as Germany, which is reflected by wage coordination, vocational and training schemes, and corporatism (Martin and Swank, 2012; Thelen, 2012). In contrast, another body of literature sustains that Right parties mostly counteract the policies implied by Left parties and unions (Brady and Leicht, 2008) as they tend to roll back the state by compromising the viability of the welfare state and alter the distributary nature of taxation to the detriment of equity (Alexiou 2003; Hacker and Pierson, 2010).

3. Model specification and data

We explore the determinants of the relationship between inequality, unionization and government party economic policy orientation by estimating unbalanced panels with annual data for the period 2000-2016.[2] We focus on advanced economies and our estimation sample consists of 17 OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, United Kingdom, USA). The general forms of the estimated models are expressed as follows:

[2] It should be noted that our effort to work with a longer data span was hindered by data availability.

$$inequality_{it} = \alpha_i + \beta_1 union_{it} + \delta_1 partyright_{it} + \xi \mathbf{X}_{it} + \varepsilon_{it} \quad (1)$$

$$inequality_{it} = \mu_i + \beta_2 union_{it} + \delta_2 partycentre_{it} + \rho \mathbf{X}_{it} + u_{it} \quad (2)$$

$$inequality_{it} = \gamma_i + \beta_3 union_{it} + \delta_3 partyleft_{it} + \theta \mathbf{X}_{it} + e_{it} \quad (3)$$

where α_i, μ_i and γ_i are the constant terms (fixed effects).

It is widely held that benefits assume a key redistributive role for any government in the battle against inequality. Bourquin and Waters (2019) argued that benefits (as a share of income) tend to be more concentrated at the bottom of the income distribution than direct taxes which might explain why benefits have a greater impact than direct taxes do. In view of this debate on the distributional impact of pre-tax/pre-transfer vis-a-vis post-tax/post transfer we opted to employ three different inequality measures (*inequality*) in order to explore their relationship with union density and party orientation. We use a Gini index of inequality in equivalized household disposable income (post-tax and post-transfer) and a Gini index of inequality in equivalized household market income (pre-tax and pre-transfer), both retrieved from the Standardized World Income Inequality Database (SWIID 8.0) which were developed by Solt (2019). In addition, we use a Gini index of inequality developed by Galbraith and Kum (2005) which is based on manufacturing pay data but does not include other income sources such as transfers.

For each of the three measures of income inequality, we estimate three models that include union density (see Alexiou *et al.* 2022 and Aghion 2019) and include dummy variables that capture government party orientation with respect to economic policy. More specifically, Models 1 to 3 include dummy variables constructed with data from the Database of Political Institutions 2017 (Cruz *et al*., 2018): *partyright* is a dummy variable that takes the value 1 if the government party is defined as right (conservative, Christian democratic, right-wing) and 0 otherwise; *partycentre* takes the value 1 if the government party position can best be described as Centrist and 0 otherwise; and *partyleft* takes the value 1 if the government party

is left (communist, socialist, social democratic, left-wing) and 0 otherwise. Furthermore, by interacting union density with the types of political party in power we explore the potential effect that may be manifested through the impact of the interacting terms on inequality (Models 4 to 6).

All estimated models include a vector **X** of independent variables the nature of which reflect *inter alia* the business cycle and economic stability. Potential determinants of inequality include amongst others, unemployment, productivity, trade, GDP per capita growth to capture the level of economic development, FDI net inflows, R&D expenditure, inflation as a measure of economic stability, education to capture the level of human capital, and a dummy variable (*bankingcrisis*) developed from Laeven and Valencia (2013) to account for banking crises. Table 1 presents detailed the descriptions of the variables[3] and their sources.

[Table 1 about here]

Spatial or spillover effects can lead to cross-sectional dependence which if ignored results in biased statistical inference. In order to check for the potential presence of cross-sectional dependence we implemented the Pesaran (2015) test of weak cross-sectional dependence where the rejection of the null hypothesis indicates the presence of strong dependency. In all cases, the results[4] suggested that innovations to the variables are strongly cross-sectional dependent. This finding, which is in line with our anticipation of a high degree of cross-sectional dependence across advanced OECD countries, reflects potential commonalities, such as exposure to common shocks. As such, to ensure the validity of our results, all models are estimated with a panel fixed effects approach using the Driscoll and Kraay's (1998) nonparametric covariance matrix estimator which produces heteroscedasticity-

[3] Descriptive statistics and the correlation matrix are not reported here to conserve space but are available upon request.

[4] The results are not reported here to conserve space but are available upon request.

and autocorrelation-consistent standard errors that are robust to general forms of cross-sectional (spatial) as well as temporal dependence.

Identifying trends and patterns in the different measures of inequality and union density can be useful in visualizing the existing relationships. Figures 1 to 3 present the scatterplots of the three measures of income inequality against average union density over the period 2000-2016. An inspection of these figures suggests that countries with higher unionization enjoy relatively lower levels of income inequality. However, the relationship appears to be weaker in the case of the Gini index of inequality based on household market income.

[Figures 1 to 3 about here]

4. Empirical results

Tables 2 to 4 present the results for the estimated models. In Table 2 where income inequality is proxied by the Gini index based on household disposable income, union density and the measures that capture political orientation are statistically significant and bear the expected signs. In particular, increasing unionization is found to be highly significant bearing a negative sign, i.e. reduces income inequality, which is in line with Gordon (2012). Trade unions reduce inequality both by raising wages at the low end and by constraining them at the high end. Supporting evidence is also provided by Western and Rosenfeld (2011) who estimate that the decline of labour unions as a force in the American economy is responsible for 20 to 33% of the overall rise in inequality.

[Table 2 about here]

The results for the government orientation dummy variables suggest that as governance transitions from right to left party dominance, inequality declines. More specifically, *partyright* and *partycentre* both bear a positive sign, confirming the existing perception that right and centre-oriented parties which normally favour free market ideology potentially lead to higher

income inequality (see for e.g. Brady and Leicht, 2008). A more left-wing agenda however promotes - through better regulation and welfare policies - an environment more equitable with less inequality, as this is reflected by the negative sign of *partyleft*. Finally, interaction effects between right or left (but not centre) political parties in power and union density are confirmed since the respective interaction terms are significant and bear the expected signs. In this context, Castater (2015) provided evidence according to which moderate levels of unionization vis-à-vis lower and higher levels, experience more of a partisan effect on income inequality.

Regarding the control variables, unemployment, GDP per capita growth, R&D, education, and banking crises, are found to be highly significant, whereas trade and inflation are significant at the 10% level only. The results indicate that R&D expenses signal technological improvements which could result in rising incomes, yet in an uneven manner, since R&D expenditure is significant and positively associated with rising inequality. The later could indicate a skill-biased technological change as rewards disproportionately flow to highly skilled workers. On this view, educational progress and better schooling should normally be the key solution to contain inequality yet education is found to be positive. This finding might appear rather surprising, but on second thought it is be in line with Hendel *et al*. (2005) who suggested that education affordability drives down the wage for unskilled workers and raises the skill premium. As for the growth of GDP per capita and its positive association with inequality this is far from puzzling if we consider the move of high-income post-industrial societies as they shift towards markets dominated by technological innovation and high finance. In these cases, inequality is likely to rise with income (Galbraith, 2011).

The statistically significant and positive effect of banking crises on inequality suggests that historically the financial burden in the aftermath of banking crises falls on tax payers, mainly affecting lower incomes, thus spurring income inequality, a finding in line with Li and Yu (2014) and De Haan and Sturm (2017). Further, the finding of weakly significant and

negative inflation is rather counterintuitive given that tighter monetary policies lead to lower income inequality (Bulir, 2001); however, the unexpected sign might be due to possible nonlinearities between income inequality and inflation (Kuznets, 1955).

Turning our attention to the Gini proxy based on market income (Table 3), the yielded evidence suggests that union density has a significant negative impact on income inequality, while the measures that capture political orientation are insignificant with the exception of *partycentre* but only at the 10% level bearing a negative sign. Furthermore, interaction effects between union density and the type of political party in power are not present in this case. On the other hand, unemployment, productivity, GDP per capita growth, R&D, education and banking crises have a statistically significant positive effect, while trade becomes more relevant with increasing levels ameliorating market income inequality.

[Table 3 about here]

The results using the Gini index of income inequality based on manufacturing pay (Table 4) are also interesting. More specifically, unemployment, productivity, and R&D appear to be adversely affecting inequality whilst at the same time, trade, GDP per capita growth, FDI, inflation, banking crises, and unionization are statistically insignificant. In contrast to the previous findings, education bears a negative sign thus appearing to be effective in reducing inequality. Regarding the political orientation variables, the results are in line with those in Table 2 with the variables being statistically significant and bearing the expected signs. The only exception appears to be *partycentre* which now becomes insignificant. Similarly to Table 3 interaction effects likely to impact the Gini index based on manufacturing pay are not observed.

[Table 4 about here]

In order to provide a more immediate and accurate visualization of the estimated relationships, Figure 4 presents *ropeladder* plots (Jann, 2014) which graphically illustrate the

regression coefficients and the 95% confidence intervals of our main variables of interest against the three proxies for income inequality. Overall, we can conclude that government party orientation does play a significant role in affecting income inequality. As Figure 4 summarizes, in two out of our three estimated models, the political orientation variables are found to be statistically significant bearing the expected signs. The signs of *partyright* and *partyleft* confirm the perception that right oriented parties lead to higher income inequality while the opposite is true with left oriented parties, a finding in line with Brady (2009) and Pribble *et al.* (2009). However, the effect of centre-oriented parties is ambiguous with both a positive and a negative effect found.

[Figure 4 about here]

Increasing unionization is found to significantly reduce income inequality, as suggested by other studies in the area (see for instance, Western and Rosenfeld, 2011). When however, the inequality measure related to manufacturing pay is used, no significant effect is detected, a result that could potentially be attributed to the fact that inequality in manufacturing earnings does not effectively capture movements of inequality in households outside the manufacturing sector. An alternative explanation could be that the intensity of economic globalization has adversely affected wage gains hence rendering unions ineffective in extracting higher wages in sectors where wage competition by cheap labour countries is raging (Golden and Wallerstein, 2011).

In passing, it is worth elaborating on a number of ambiguous results that have emerged from the estimations. The positive and significant impact of productivity on inequality (Tables 3 and 4) can be thought as counterintuitive. More specifically, the theoretical proposition that labour productivity and income inequality are closely and inversely associated is based on the assumption that productivity, inequality, economic growth and real wages are strongly related. As long as productivity growth boosts demand without putting pressure on inflation, income

inequality is expected to decline. However, the slowdown in productivity growth and the increase in income inequality that has plagued many advanced economies following the global financial crisis (Arestis, 2020) might explain why some of our findings suggest that the observed anaemic productivity growth has had a positive impact on inequality.

Trade is found to be negative and marginally significant in the first specification (Table 2), negative and significant in the second specification (Table 3), and insignificant in the third specification (Table 4), and it appears that the impact of trade on inequality can be ascribed to its inherent sensitivity to different measures of income inequality. Another possible explanation can be attributed to the polarization in the distribution of income in some countries which has increased within-country income inequality. According to UNCTAD (2019, p. 1) "to respond to inequality rather than focusing exclusively on productivity and economic growth, policymakers need to focus on encouraging trade and on ensuring that the benefits brought by international trade become more inclusive and responsive to the imperatives under the Sustainable Development Goals". Finally, FDI is found to be insignificant in all estimated specifications which to an extent resonates with the extant theoretical ambiguity surrounding the relationship between FDI and income inequality. In particular, empirical evidence suggests that this relationship might depend on various factors such as the level of economic development of a country or the motivation of FDI (Tomohara and Yokota, 2011).

In view of the mixed empirical evidence in the literature regarding the impact of left-wing governments on the share of national income across advanced economies (see, Scheve and Stasavage, 2009) this study provides support to the notion that left party orientation is closely bound up with lower levels of income inequality vis-à-vis centre or right parties. We further provide support to the power resource theory and the view that "leftist government very strongly drives the redistribution process directly by shaping the distributive contours of taxes and transfers and indirectly by increasing the proportion of GDP devoted to taxes and transfers"

(Bradley *et al*., 2003, p.225). After all, left-wing governments favour interventionist-type policies to ameliorate income inequality, whilst centre and right parties are associated with less interventionist policies or policies that perpetuate economic disparities (Huber and Inglehart 1995; Korpi 2002).

5. Concluding remarks

In this paper we empirically advance our understanding of the underlying relationships between unions, party orientation and income inequality using three different proxies for inequality. What our study has demonstrated is that strong unions and to a certain extent left party governance are instrumental in alleviating income inequality. Moreover, countries dominated by right-wing political parties might exacerbate inequality whereas the evidence for centrist parties is ambiguous, hence implying a potential political fragmentation that coalition parties may breed.

"Power resources theory claims that the mobilization of such groups of less advantaged citizens is pivotal because the default distribution of political power in a capitalist democracy favours elites and business" (Brady *et al*. 2016, p.3). In this context, the evidence generated in this study can have significant policy implications in so far as declining unionization rates are observed across advanced capitalist economies. The fact that around half of the increase in the Gini coefficient of net incomes in developed economies is associated with deunionization (Jaumotte and Buitron, 2015) suggests that reduced union power increases post-redistribution inequality hence weakening the bargaining power of organized workers. As a result, the influence of unions on policy makers to foster fairer redistributive policies is frittered away. More broadly, politicians' ability to strategically adjust their economic policies to whatever socio-economic environment they are facing, implies that the role of party politics, irrespective of the inherent orientation, is difficult to fathom with accuracy. In this sense, the behaviour of

political parties is a highly volatile factor that can potentially distort the real socio-economic outcomes of particular policies *per se*.

Finally, given that our study focuses on unionization and political orientation of governance by controlling for the general macroeconomic environment we feel that more research is needed to investigate other aspects of unionization such as collective bargaining, arbitration, etc. hence, emphasising the extent to which these can be disruptive to productivity, economic growth, equity, and social cohesion.

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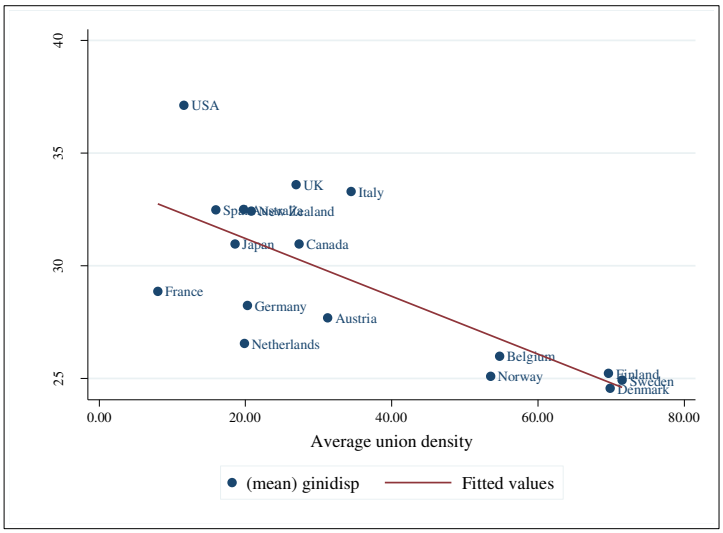

Figure. 1. The scatterplot of the average Gini index of inequality based on household disposable income (*ginidisp*) against the average union density (2000-2016).

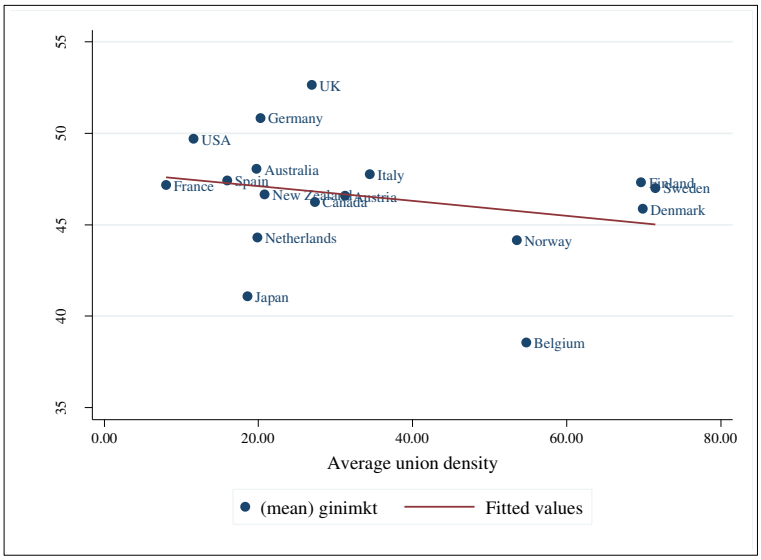

Figure. 2. The scatterplot of the average Gini index of inequality based on household market income (*ginimkt*) against the average union density (2000-2016).

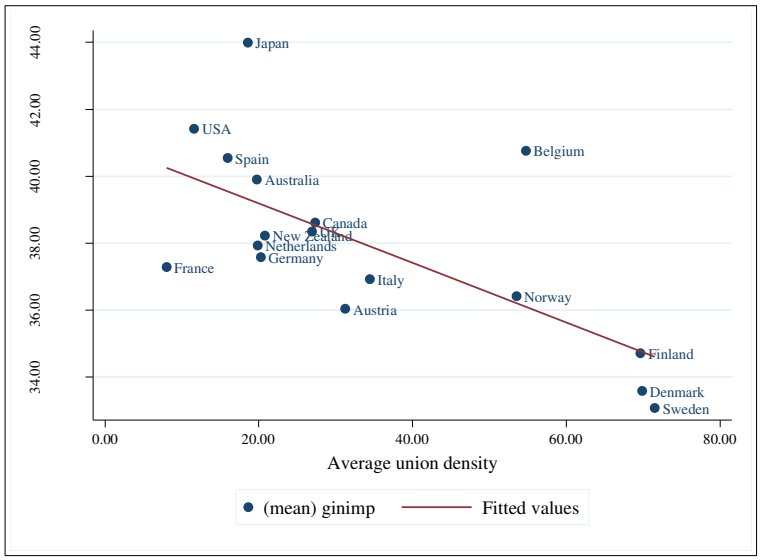

Figure. 3. The scatterplot of the average Gini index of inequality based on manufacturing pay (*ginimp*) against the average union density (2000-2016).

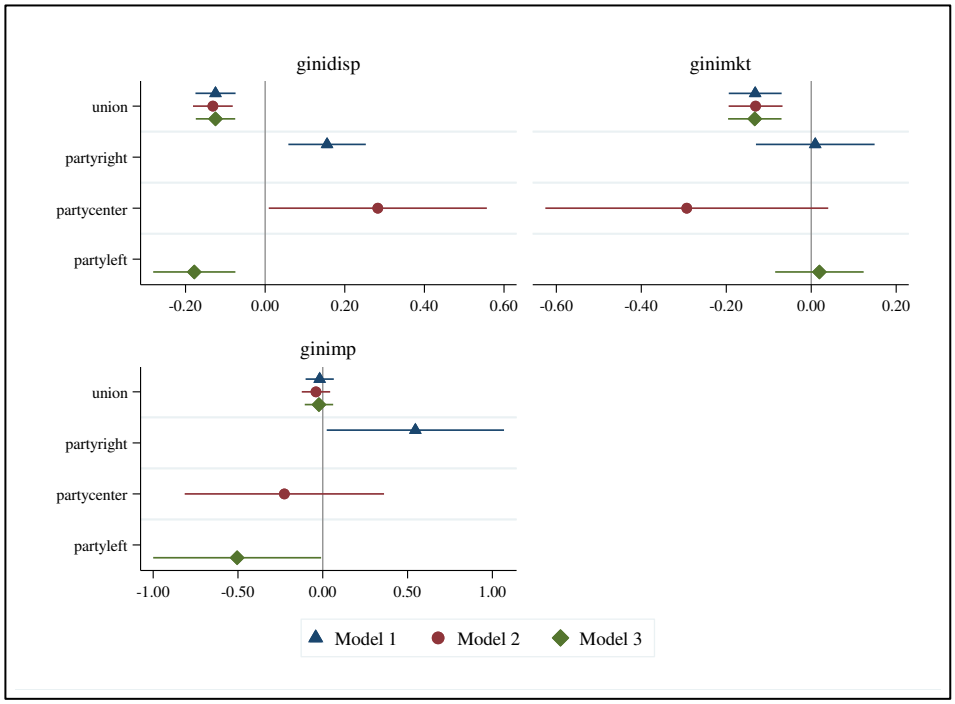

Figure. 4. Ropeladder plots showing the regression coefficients (markers) with 95% confidence intervals (horizontal spikes) for the different income inequality dependent variables (Models 1 to 3).

Table 1. Description of variables		
Variable	**Definition**	**Source**
ginidisp	Gini index of inequality based on household disposable (post-tax, post-transfer) income.	SWIID 8.0
ginimkt	Gini index of inequality based on household market (pre-tax, pre-transfer) income.	SWIID 8.0
ginimp	Gini index of inequality based on manufacturing pay data.	University of Texas Inequality Project
union	Union density defined as the ratio of wage and salary earners that are trade union members divided by the total number of wage and salary earners.	Employment and Labour Markets statistics, OECD
partyright	Government party economic policy orientation dummy variable that takes the value 1 if the government party is right (conservative, Christian democratic, right-wing) and 0 otherwise.	Constructed by the authors using data from the Database of Political Institutions (DPI) 2017
partycentre	Government party economic policy orientation dummy variable that takes the value 1 if the government party can be described as Centrist and 0 otherwise.	Constructed by the authors using data from DPI 2017
partyleft	Government party economic policy orientation dummy variable that takes the value 1 if the government party is left (communist, socialist, social democratic, left-wing) and 0 otherwise.	Constructed by the authors using data from DPI 2017
unemployment	Unemployment (% of total labor force).	World Development Indicators
productivity	Productivity (GDP per hour worked).	Compendium of Productivity Indicators, OECD
trade	Sum of exports and imports of goods and services (% of GDP).	World Development Indicators
GDPpc	Gross Domestic Product per capita (US dollars).	Economic Outlook, OECD
FDI	Foreign direct investment net inflows (% of GDP).	World Development Indicators
R&D	Research and development expenditure (% of GDP).	World Development Indicators
inflation	Inflation, consumer prices (annual %).	World Development Indicators
education	School enrollment, secondary (% gross).	World Development Indicators
bankingcrisis	Banking crisis dummy (1 = banking crisis, 0 = none) defined as systemic if two conditions are met (Laeven and Valencia, 2013, p. 228): a) significant signs of financial distress in the banking system (bank runs, losses in the banking system, and/or bank liquidations), and b) significant banking policy intervention measures in response to significant losses in the banking system.	Global Financial Development Database

Table 2. Dependent variable Gini index of inequality based on household disposable income (*ginidisp*)						
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
union	-0.125***	-0.131***	-0.125***	-0.112***	-0.132***	-0.108***
	(0.023)	(0.022)	(0.022)	(0.019)	(0.022)	(0.019)
partyright	0.156***					
	(0.044)					
partycentre		0.283**				
		(0.123)				
partyleft			-0.178***			
			(0.046)			
partyright×union				0.007***		
				(0.001)		
partycentre×union					0.004	
					(0.002)	
partyleft×union						-0.007***
						(0.001)
unemployment	0.137***	0.136***	0.138***	0.125***	0.137***	0.129***
	(0.030)	(0.026)	(0.031)	(0.030)	(0.026)	(0.030)
productivity	0.006	0.004	0.004	0.009	0.004	0.005
	(0.018)	(0.017)	(0.019)	(0.017)	(0.017)	(0.018)
trade	-0.012*	-0.010	-0.012*	-0.011	-0.010	-0.011
	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)
ΔlnGDPpc	4.910***	4.686***	4.971***	4.814***	4.681***	4.864***
	(1.106)	(1.041)	(1.141)	(1.112)	(1.046)	(1.135)
FDI	0.002	0.003	0.002	0.002	0.003	0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
R&D	0.907**	0.681*	0.900**	0.994**	0.684*	0.906**
	(0.387)	(0.335)	(0.373)	(0.346)	(0.339)	(0.299)
inflation	-0.085*	-0.087*	-0.085*	-0.087	-0.085*	-0.084*
	(0.046)	(0.047)	(0.045)	(0.049)	(0.047)	(0.046)
education	0.017***	0.018***	0.018***	0.019***	0.018***	0.022***
	(0.004)	(0.005)	(0.004)	(0.003)	(0.005)	(0.003)
bankingcrisis	0.447***	0.485***	0.458***	0.425***	0.481***	0.455***
	(0.069)	(0.076)	(0.074)	(0.072)	(0.074)	(0.083)
Constant	28.699***	29.383***	28.900***	27.475***	29.400***	27.808***
	(1.284)	(1.195)	(1.304)	(1.350)	(1.183)	(1.413)
Observations	162	162	162	162	162	162
within R^2	0.494	0.488	0.497	0.512	0.509	0.488
Notes: Driscoll and Kraay's (1998) robust standard errors are given in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.						

Table 3. Dependent variable Gini index of inequality based on household market income (*ginimkt*)						
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
union	-0.132***	-0.131***	-0.133***	-0.126***	-0.131***	-0.128***
	(0.028)	(0.028)	(0.028)	(0.029)	(0.028)	(0.031)
partyright	0.010					
	(0.063)					
partycentre		-0.293*				
		(0.149)				
partyleft			0.019			
			(0.047)			
partyright×union				0.002		
				(0.002)		
partycentre×union					-0.003	
					(0.003)	
partyleft×union						-0.001
						(0.002)
unemployment	0.307***	0.306***	0.307***	0.304***	0.305***	0.306***
	(0.049)	(0.048)	(0.048)	(0.051)	(0.048)	(0.050)
productivity	0.084***	0.087***	0.085***	0.085***	0.086***	0.084***
	(0.021)	(0.019)	(0.021)	(0.021)	(0.019)	(0.020)
trade	-0.038**	-0.038**	-0.038**	-0.038**	-0.038**	-0.038**
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
ΔlnGDPpc	6.342**	6.288**	6.291**	6.380**	6.301**	6.364**
	(2.315)	(2.246)	(2.270)	(2.302)	(2.239)	(2.268)
FDI	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
R&D	2.178***	2.220***	2.149***	2.253***	2.207***	2.198***
	(0.503)	(0.480)	(0.469)	(0.486)	(0.488)	(0.440)
inflation	-0.054	-0.055	-0.054	-0.054	-0.056	-0.054
	(0.100)	(0.101)	(0.100)	(0.100)	(0.103)	(0.100)
education	0.035***	0.033***	0.035***	0.036***	0.034***	0.036***
	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)	(0.007)
bankingcrisis	0.215***	0.194**	0.217***	0.204**	0.202**	0.215**
	(0.066)	(0.068)	(0.066)	(0.068)	(0.067)	(0.070)
Constant	34.761***	34.631***	34.829***	34.220***	34.654***	34.543***
	(2.175)	(2.159)	(2.222)	(2.367)	(2.149)	(2.483)
Observations	162	162	162	162	162	162
within R^2	0.609	0.610	0.609	0.609	0.610	0.609
Notes: Please see notes Table 2.						

Table 4. Dependent variable Gini index of inequality based on manufacturing pay (*ginimp*)						
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
union	-0.018	-0.040	-0.022	-0.020	-0.040	-0.023
	(0.037)	(0.037)	(0.038)	(0.041)	(0.038)	(0.041)
partyright	0.546**					
	(0.235)					
partycentre		-0.226				
		(0.264)				
partyleft			-0.505**			
			(0.222)			
partyright×union				0.007		
				(0.005)		
partycentre×union					-0.003	
					(0.005)	
partyleft×union						-0.005
						(0.004)
unemployment	0.147***	0.145**	0.150***	0.134**	0.143**	0.142***
	(0.031)	(0.047)	(0.032)	(0.045)	(0.047)	(0.044)
productivity	0.078***	0.082***	0.073***	0.082***	0.082***	0.078***
	(0.019)	(0.022)	(0.018)	(0.023)	(0.023)	(0.022)
trade	-0.011	-0.007	-0.010	-0.007	-0.007	-0.007
	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
ΔlnGDPpc	0.387	-0.514	0.369	-0.373	-0.510	-0.377
	(2.072)	(1.843)	(2.106)	(1.964)	(1.845)	(1.966)
FDI	0.012	0.015*	0.013	0.014*	0.015*	0.014*
	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)
R&D	2.082**	1.505*	1.934*	1.722*	1.502*	1.585
	(0.931)	(0.806)	(0.932)	(0.922)	(0.815)	(0.899)
inflation	-0.019	-0.019	-0.019	-0.022	-0.021	-0.018
	(0.068)	(0.081)	(0.071)	(0.078)	(0.081)	(0.080)
education	-0.032**	-0.034**	-0.029**	-0.031**	-0.034*	-0.029**
	(0.012)	(0.015)	(0.010)	(0.011)	(0.015)	(0.010)
bankingcrisis	0.021	0.062	0.062	0.041	0.065	0.071
	(0.118)	(0.159)	(0.139)	(0.135)	(0.159)	(0.153)
Constant	29.123***	31.064***	30.042***	29.344***	31.056***	30.027***
	(2.900)	(3.020)	(2.783)	(3.187)	(3.011)	(3.010)
Observations	153	153	153	153	153	153
within R^2	0.505	0.453	0.499	0.462	0.463	0.453
Notes: Please see notes Table 2.						