Union Rights and Inequalities

Stephen Bagwell[1] · Skip Mark[2] · Meridith LaVelle[3] · Asia Parker[3]

Abstract

Competing arguments surrounding the relationships between inequalities and labor rights have persisted over time. This paper explores whether labor rights increase or decrease two types of wage inequalities: vertical inequality and horizontal inequality. Vertical inequalities reflect inequalities in wealth or income between individuals, while horizontal inequalities reflect inequalities between social, ethnic, economic, and political groups which are usually culturally defined or socially constructed. By broadening the scope beyond traditional indicators of inequality (i.e., vertical inequality) to include horizontal inequality, we test whether government respect for labor rights can help reduce inequality. We find that as labor rights and practices improve, countries see a decrease in horizontal inequality. Furthermore, as stronger protections for labor rights improve within countries, this also serves to reduce individual levels of inequality (i.e., vertical inequality).

Keywords Collective labor rights · Redistribution · Vertical inequality · Horizontal inequality · Unions

"Inequality threatens long-term social and economic development, harms poverty reduction and destroys people's sense of fulfilment and self-worth. This, in turn, can breed crime, disease and environmental degradation." (United Nations Sustainable Development Goal 10)

✉ Stephen Bagwell
Stephen.m.bagwell@gmail.com

1 University of Missouri-St. Louis, St. Louis, USA

2 University of Rhode Island, Kingston, USA

3 University of Georgia, Athens, USA

Introduction

Wage inequality has been growing in nearly all advanced industrial democracies for decades (Solt 2019). The United Nations has identified inequality as a significant impediment to reducing poverty, improving health and education outcomes, and promoting development. As part of the United Nations' Sustainable Development Goals (SDGs), inequality reduction has been designated as its own goal, in which all countries around the world are tasked to reduce levels of inequality within their country by improving the conditions of the bottom 40% of the population. Contained within the language of SDG 10, the UN has argued that inequality undermines development, increases poverty, and harms people's sense of self-worth. Beyond these negative impacts, research has tied inequality to decreased political engagement, which threatens the ability of democracies to function (Solt 2008). Furthermore, inequality also has been attributed to increases in nationalism (Solt 2010), which is often tied to right-wing extremism and repression of "others" (Solt 2008). Conflict scholars have long argued that inequality creates grievances leading to civil conflict (Cederman et al. 2013; Deiwiks et al. 2012; Murshed and Gates 2005; Østby 2008). Global changes in political behavior such as the rise of populism, democratic backsliding, and an increasing number of civil conflicts are occurring as global inequality is on the rise.

As levels of inequality have changed, so too has respect for labor rights (Neumark and Wachter 1995; Western and Rosenfeld 2011). This holds true in both the developing and developed world. While it might be intuitive to connect the two, there are competing explanations about whether labor rights ameliorate or exacerbate societal inequalities. Collective labor rights allow workers to form unions more easily and to bargain collectively while in a union. Labor rights scholars and advocates argue that improved labor rights raise the floor for all workers (Farber 2005; Leicht 1989; Western and Rosenfeld 2011; Card et al. 2004), while critics contend that the added cost that labor rights impose increases inequality by passing added costs to consumers, only benefiting some workers, and creating inflexible labor markets which diminish growth and wages (Morley 1994). Other scholars find null or inconsistent results (Kogan 2017; Devinatz 2011; Eren and Ozbeklik 2016). These competing explanations provide an interesting puzzle to investigate, and the answers of such an investigation could provide one set of policies, improving respect for labor rights, to address the UN directive and advance existing scholarship of human rights, development, and political economy. Additionally, these competing explanations expose a secondary gap in studies of inequality: much of the scholarship's focus tends to be centered on explaining variation in vertical inequality (Solt 2008, 2010, 2019), or inequality between individuals, while ignoring horizontal inequality, or inequality between societal groups[1]. What implications might be borne from incorporating

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[1] Horizontal inequality can be broken down further into negative horizontal inequality (NHI) and positive horizontal inequality (PHI). NHI refers to the distance between the lowest earning group and the average, while PHI refers to the distance between the highest earning group and the average. Effectively, these are measures of the "floor" and "ceiling" effects of lower earning groups and higher earning groups, respectively. We discuss the conceptualization and operationalization of these terms later in the paper.

horizontal inequalities into the puzzle of competing outcomes between labor rights and inequality?

In this paper, we accomplish two primary goals: first, we develop a theoretical argument that integrates both vertical and horizontal inequalities to address competing arguments that exist in terms of how labor rights influence various forms of inequality. Upon testing our theoretical arguments, we determine that increased labor rights decrease two different types of income inequalities; second, we show that different types of inequality have different causal processes which are worth further investigation. Our empirical findings show that as labor rights and practices improve, countries see a decrease in horizontal inequality. We also find evidence that labor rights are associated with higher levels of redistribution, and when taken together, strong labor rights and redistribution work to reduce vertical inequality.

While existing research largely supports the hypothesis that unions ameliorate income inequality, the literature is primarily focused on single-nation case studies (Moore 1998; Farber 2005; Hanley 2010; Rosenfeld and Kelykamp 2012), developed countries (Iversen and Soskice 2006, 2015; Pontusson 2013; Alderson and Nielsen 2002; Brady et al. 2009; VanHeuvelen 2018), or only one type of inequality (Solt 2008, 2010, 2019; Iversen and Soskice 2006, 2015; Pontusson 2013; Rosenfeld and Kelykamp 2012). These studies provide important insights, but the lack of clearly generalizable inferences and the narrow operationalization of inequality provide an opportunity to advance the literature in a meaningful way while simultaneously improving policy recommendations for a global audience. We seek to take advantage of this opportunity by testing cross-nationally the effects of labor rights on vertical inequality, positive horizontal inequality, and negative horizontal inequality for a global sample of countries. We begin with a discussion of the concepts and measures of inequality; then, we place our theory in the literature. Next, we elaborate on our research design and test our hypothesis, finding support for our argument that labor rights reduce multiple types of inequality. We conclude by discussing some implications and future avenues for research on the relationships between various types of inequalities and labor rights.

Inequality and Its Various Forms

Inequality as a concept can be applied across several contexts: inequality of power, wealth, opportunity, social status, treatment by state agents, or access to public services. Data and measures that do exist and pertain to inequality are often solely found within the realm of wealth and income inequality. Traditionally, researchers have focused on Gini measures which compare two different income deciles to one another. The OECD measure, for example, compares earnings in the 90th percentile to those in the 10th percentile.

Gini measures capture vertical inequality, which we define as inequality levels between individuals. While Gini indicators are suitable measures for vertical inequality, they are narrow in their scope. In contrast with Gini measures, Cederman et al. (2013; 2014) discuss horizontal inequality, or inequality between groups. They define and measure two primary types of horizontal inequality: positive and

Table 1 Correlation between horizontal and vertical inequalities

Correlation	Vertical inequality	Negative horizontal inequality	Positive horizontal inequality
Vertical inequality	1		
Negative horizontal inequality	0.05	1	
Positive horizontal inequality	0.19	0.40	1

negative. Positive horizontal inequality measures the degree to which the top group in society has disproportionately gained income share relative to the median. Negative horizontal inequality measures the degree to which the poorest group in society has fallen behind the median group. Whereas vertical inequality would capture any individual-based income inequality regardless of race, ethnicity, or political groupings, meaning that wealthy individuals across any potential grouping would be at the top, horizontal inequality is instead focused on social groupings and the comparative wealth each grouping would possess. Table 1 shows that these two types of inequality are quite distinct from the vertical inequality measures that are traditionally used. As Table 1 demonstrates, these measures are not one-to-one predictors and capture different aspects of inequality within a country. Given the wide application of Gini measures (i.e., measure of vertical inequality), how do horizontal indicators factor into broader explanations and applications of labor rights and inequalities in political science?

Within the political science literature, cleavages within society provide explanatory power for many political outcomes of interest, and groups within society have long been shown to be unequal in all aspects of economic and political life. As such, it is a missed opportunity to consider only differences in income between individuals while ignoring group dynamics. This is especially true if we consider that political power is not always respected equally across different groups in society. Horizontal inequalities, which account for inequalities across groups in societies, also possess attributes of positive and negative inequalities.[2] The measurement of both positive and negative horizontal inequalities captures group dynamics that vertical inequality misses. Horizontal inequality thus can be used to identify determinants for varying levels of inequality that vertical inequalities cannot. For example, indigenous populations have historically been excluded from political participation in Latin America by party elites (Cott 2000). This has led indigenous groups to participate in collective labor struggles to improve their rights. Unions have often been on the side of indigenous rights in Latin America and elsewhere, but they have also sometimes participated in marginalizing these groups. Outside of the Latin American context, unions have historically excluded indigenous workers from employment in Canada, often protecting white workers while excluding Indian workers (Fernandez and

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[2] Positive horizontal inequality (PHI) is equivalent to the mean per capita income of the richest group in a society divided by country-level GDP. Negative horizontal inequality (NHI) is equal to country-level GDP per capita divided by the mean per capita income for the poorest group in the country.

Silver 2017). History gives us good reason to suspect that labor rights might reduce inequality for one ethnic group but increase inequality for another if labor rights are not equally available and enforced.

Literature Review and Theory

Explanations of Inequality

Wage inequality is often explained in political economy by the supply and demand of labor within a society. Technological improvements make educated and highly skilled workers more valuable, while increasing the number of low-skilled and less-educated workers. When there is greater demand for skilled workers, the wages these workers receive increase. High-skilled workers therefore are paid a higher income than low-skilled workers, and as technology continues to advance, the gap between these two groups grows. As the proportion of individuals with an education increase, those who have an education will see a rise in income if the supply of skilled workers is lower than the demand. However, as minority groups, women, and migrants have increasingly gained access to the workforce in the last century, there is a larger supply of unskilled jobs (which marginalized groups are over-represented in), which has resulted in a reduction of wages for unskilled workers as these groups are less likely to gain skilled employment relative to dominant groups (Rueda and Pontusson 2000).

Institutions provide another explanation for wage inequality. Democratic institutions provide opportunities for citizens to demand a more equitable distribution of income, and different electoral institutions can alter the extent to which the government redistributes income within society (Reuveny and Li 2003; Iversen and Soskice 2006). International human rights instruments may provide another explanation, as agreements like the International Covenant on Economic, Social and Cultural Rights as well as the Universal Declaration of Human Rights both guarantee the right to unionize and the right to a fair wage and a large number of rights which are meant to progressively improve economic conditions of all citizens over time. These protections provide incentives for leaders to improve the conditions of all citizens and *should* therefore reduce income inequality, though these agreements notably have very little to say about inequality itself. These combined with international organizations like the International Labour Organization (ILO), the United Nations, and non-governmental organizations can put pressure on governments to address and reduce inequality. In fact, the ILO specifically argues that enjoyment of collective labor rights is a key component to reducing inequality (Social Dialogue Report 2022).

While acknowledging the role these other factors play in determining levels of inequality, we turn our focus to the role of labor rights respect. Here, we focus on collective labor rights, or the right to form and join unions, as well as the right for unions to bargain collectively and strike. Where these rights are protected, the cost of organizing a union is lower and unions have a stronger bargaining position. This allows unions to bargain for better wages, benefits, and employment protections for their members (Brady et al. 2009). As an example, in the USA, so-called

right-to-work laws make it more difficult for unions to form and operate. Existing theoretical scholarship focused on the USA predicts that these laws induce inequality (Korpi 1983; Jacobs and Dirlam 2016) through systematically undercutting unions' abilities to recruit new members (Ellwood and Fine 1987) and retain existing members (Moore 1998). Empirical scholarship, however, has been largely unable to consistently identify the passage of such laws to increasing inequality (Devinatz 2011; Hanley 2010; Eren and Ozbeklik 2016; Kogan 2017). More recently, VanHeuvelen (2020) identifies the reduction of union rights in the USA to a decline in labor power and an overall increase in inequality. This vein of scholarship, however, is primarily focused on what we would consider vertical inequality and is limited only to the USA. We apply similar logics on a global sample.

Tying Labor Rights to Inequality Arguments

We begin with the premise that when labor rights are guaranteed in law and protected in practice, these factors produce stronger labor unions. Labor unions allow workers to bargain collectively with employers and provide a specialized organization which advocates for political and social goals. Iversen and Soskice (2015), for example, argue that unions provide a forum for discussing social and political issues, and disseminating information. By bargaining collectively, they increase labor's negotiating power relative to capital, increasing the probability that an individual member, on average, receives more compensation or benefits than they would without the existence of the union. These benefits are selective and private as unions negotiate for the benefit of their members.

To bargain effectively, unions must be able to credibly threaten employers through the use of (or threat of) collective bargaining tools such as slowdowns, work stoppages, and strikes. Those tools are more effective for bargaining when labor rights are guaranteed in law and the state and relevant bureaucracies enforce labor rights in practice. If management can fire or discriminate based on union activities, then the ability of unions to organize and bargain is much weaker (Voss and Sherman 2000). Thus, for unions to operate effectively, citizens should have the right to unionize without discrimination or coercion, to engage in strikes and other collective bargaining tactics, and have an effective remedy if employers violate these rights. While unions can form without these protections, labor rights increase the strength of unions and increase the bargaining power of union and non-union workers alike (Davis and Huston 1995).

The literature often treats unions as organizations that operate primarily through the provision of selective and private goods using a rational choice framework that focuses on the individual (Olson 1961). From this perspective, some scholars (Friedman 1956, 1962; Rees 1962; Lewis 1963; Card 2001; Johnson 1975) have argued that unions increase inequality. One argument posits that labor rights are a form of protectionism which increases production costs, resulting in rises in the price of goods that consumers must pay (Burtless 2001). According to proponents of this argument, when unions win benefits for their members such as higher wages or improved benefits, these production costs are passed on to the rest of society. While

union members are made better off, this creates inequality between union and non-union members. Non-union members pay these costs and receive lower real wages as a result (Christensen and Wibbels 2014; Fields 1990). However, this line of argument ignores the ways that unions and the threat of union organizing can improve conditions for non-union members (Bronfenbrenner 2007; Farber 2005; Leicht 1989). This logic falls apart upon examination of the role of unions as organizations who act to provide public goods to improve their reputation and recruit new members.

Unions often take action to improve labor conditions for all workers. They do this for several reasons. First, when unions are able to improve conditions for all workers, their reputation improves allowing them to recruit more members. They often use their political power to advocate for labor reforms which raise the "floor" for all workers (Brady et al. 2009; Tope and Jacobs 2009; Farber 2005; Leicht 1989). Second, many of the selective and private benefits that they provide their members depend in part on what the baseline is for all workers. It is easier to advocate for an improvement in wages and benefits if most workers already have livable wages and benefits. In the USA, for example, union contracts are often tied to some multiple of the minimum wage. If unions can raise the minimum wage, then they can improve the wages of their members without having to renegotiate a contract.

Unions have incentives to improve conditions for all workers because doing so improves their bargaining power during contract negotiations. It is for these two reasons that unions are often credited with winning the right to an eight-hour workday, safe working conditions, the creation of a minimum wage, job security, and many of the labor laws we see in some parts of the world today. Furthermore, by creating norms of equity (Western and Rosenfeld 2011), areas with strong unions are less likely to see increasing inequality, even among those not in the union (Card et al. 2004). Empirical studies largely identify that non-union wages are higher in industries, firms, and geographic localities which are also more highly unionized (Farber 2005; Leicht 1989; Neumark and Wachter 1995).

Labor rights are able to reduce inequality by reducing the cost of organizing unions and reducing the cost of collective bargaining for unions. Countries with strong labor rights also have stronger unions. Unions as an organization can use labor rights and the protections they convey to expand their size and influence. The ultimate aim of labor movements is to ensure every worker is protected in a union. Unions are more powerful if they speak for more workers, and greater membership conveys greater resources with which to promote the improvement of labor. Research points to unions as a tool for political mobilization, linking the existence of strong unions to an increase in turnout among low-income voters (Flavin 2016; Pontusson et al. 2002). Political parties are more likely to improve labor conditions where unions are strong. Furthermore, where labor rights are already strong, we are more likely to see these rights become societal norms that are hard to remove, even when states undertake labor rights insincerely (Risse et al 1999).

Second, where labor rights are strong, non-union workers can organize at a much lower cost. The decision to unionize is driven by the likelihood of employer retaliation or replacement on the one hand and the likelihood of success and improved working conditions on the other. If a worker is likely to get fired for unionizing,

then the probability of a successful union drive is low. However, if employers cannot penalize union drives, then the probability of a successful drive goes up. In anticipation of a successful union drive, employers should pre-emptively improve working conditions. The threat of forming a union creates incentives for employers to improve working conditions and forestall or end a union drive.

Labor rights can also shape the political landscape and agenda in countries. If labor rights are protected in law, this creates opportunities for political parties to garner votes by promoting pro-labor policies. It also increases the cost for anti-labor parties to undermine labor protections. Furthermore, because unions increase voter turnout and union members vote at higher rates, all parties have an incentive to produce policies or rhetoric that provides "good" jobs which in turn helps to reduce inequality. For these reasons, we expect that where unions are strong and collective labor protections are enforced, we are likely to see a more equal society. Thus, our first hypothesis is as follows:

H1. *As labor rights respect increases, vertical inequality decreases.*

However, the research cited above ties unions and union-related outcomes to individual well-being. Unions have the potential to help improve or hinder the well-being of minority groups in society, but understanding this requires us to think in terms of salient cleavage groups. Throughout the history of US labor movements, for example, widespread racism and racial discrimination within unions have long been a problem (Hill 1961; Kelly 2022; Rosenfeld and Kelykamp 2012). Within most countries, ethnic cleavages are synonymous with inequality. The conflict literature argues that these cleavages generate inequality within countries increasing the likelihood of civil conflict (Gleditsch et al. 2002; Buhaug et al. 2014). Unions may be as accepting of minority groups as any other member in society. Across the globe, outgroups are often denied access to the same rights as members of in-groups. When unions act to expand their membership within a country or across countries, they aim to unite all workers, often leading to more inclusive policies which benefit outgroups. On the other hand, where unions act to shut out certain groups from membership and benefits, they can reinforce horizontal inequalities.

The human rights regime has tied these rights to all people regardless of existing societal cleavages and discrimination.[3] Discriminated groups have the right to form their own unions and to be represented by existing unions. Furthermore, and as stated above, when unions increase their membership, they increase their power. As an organization, unions have an incentive to be less discriminatory than the broader public since this allows them to increase the number of potential members. Unions have increasingly become more egalitarian over time as they recognized that inclusivity and tolerance are successful organizing strategies. When collective labor rights are strong, it signals that all members of society have access to these protections.

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[3] There is debate about whether this applies to citizens or all persons a geographical territory.

Labor rights reduce horizontal inequalities by giving discriminated groups a platform to push for equality, creating incentives for parties to promote pro-labor policy, raising the relative earnings of labor as a class, and by providing an opportunity to create an organization that can speak for them if other unions are unwilling to. We argue that this should, in effect, reduce the distance from the bottom groups' earnings towards the average (negative horizontal inequality) and also restrain the most well-off groups' earnings from running too far away from the average (positive horizontal inequality), placing both a floor and a ceiling on inequality. Thus, this leads us to propose the following hypotheses:

H2. *As labor rights respect increases*, *negative horizontal inequality decreases.*
H3. *As labor rights respect increases, positive horizontal inequality decreases.*

Research Design

To test our hypotheses, we estimate three cross-sectional time series models with a country-year unit of analysis. For our vertical inequality model (model 1), the sample covers 155 countries during the period 1994–2016. The two horizontal inequality models (model 2 and model 3) cover the time period of 1994–2005 and contain data on 145 countries[4]. We include all countries for which we have data. While previous studies have tended to focus mainly on developed countries, this paper explores a global sample of countries allowing for better tests of how well these theories explain outcomes in the developing world.

We opt to use ordinary least squares regression with panel-corrected standard errors. This model is appropriate when the number of units, in our case countries, exceeds the number of time periods in the panel (Beck and Katz 1995, 2004). Our model assumes that the errors are distributed in a heteroskedastic pattern across panels and contemporaneously correlated. We use a first-order autoregressive process (AR1) to account for autocorrelation within panels given that the dependent variable is largely unchanging over time. Additionally, we decided against using fixed effects as fixed effects tend to perform poorly with time-invariant variables (Beck 2001), and we believe the assumptions of random effects, which unit-specific errors are uncorrelated with our independent variables, are too strong.[5]

Dependent Variables

To measure vertical inequality, we utilize the Standardized World Income Inequality Database (Solt 2008). The indicator is a Gini measure of vertical income inequality which represents the level of inequality in a country after taxes and

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[4] Unfortunately, the measures of horizontal inequality ceased being updated after 2005, limiting the temporal scope of our analysis.
[5] We opted to use the modeling strategy employed by Mosley and Uno (2007) who have similarly structured data.

transfers. We opt to use disposable income inequality as that is the actual level of inequality in resources available to citizens in a country. It ranges from 0 in the case of perfect equality to 1 which would represent perfect inequality.

We operationalize horizontal inequality based on measures taken from Buhaug et al., hereafter BCG (Buhaug et al. 2014). BCG creates two measures of horizontal inequality: positive and negative. Positive horizontal inequality (PHI) is equivalent to the mean per capita income of the richest group in a society divided by country-level GDP. Negative horizontal inequality (NHI) is equal to country-level GDP per capita divided by the mean per capita income for the poorest group in the country. Simply put, PHI measures how much better off a group is than the average, and NHI measures how much worse off a group is than the average. These data come from the G-Econ dataset and change very slowly over time. While time invariance represents a serious limitation for our study, patterns of growth and inequality are relatively stable over time within countries. BCG, for example, cites the cases of India and France, which both demonstrate a similar ordering of rich vs poor regions over time. Additionally, research exists showing social and economic inequalities tend to be persistent over time (Tilly 1999; Stewart et al. 2008). Despite these limitations, we believe additional measures of inequality allow us to explore a broader picture of the relationship between unions and inequality.

Independent Variables

Our primary independent variables of interest come from the CIRIGHTS dataset (Barry et al. 2022; Cingranelli et al. 2022) which updates and expands the CIRI human rights dataset. The expansion of the dataset includes a number of labor rights in law and in practice. Freedom of association codes whether employers interfere with union organizing and whether there is redress for anti-union discrimination. Collective bargaining examines the right of workers to strike and bargain collectively without discrimination or retaliation on the part of employers.

The Mokken scaling analysis suggests that freedom of association and collective bargaining (in both practice and law) can be combined into two scales: one for respect in practice and another for respect in law. *Labor practices* is an ordinal variable with ranges from 0 (no strength) to 4 (very strong) and is an additive scale of freedom of association in practice, and collective bargaining in practice. A Loevinger's *H* coefficient of 0.87 indicates this is a strong scale. *Labor laws* is also an additive ordinal scale ranging from 0 to 4 with a Loevinger's *H* coefficient of 0.73 which is also quite a strong scale. A global average of these two scales is plotted in Fig. 1. The average global value of both scales is much lower in 2019 than it was 25 years previously in 1994. This indicates that labor rights have declined globally in the last few decades around the world. We can also see that there is a sizable gap between respect for these rights in law and in practice. Laws are stronger than practices. This tells us that states promise greater labor rights than they deliver in practice.
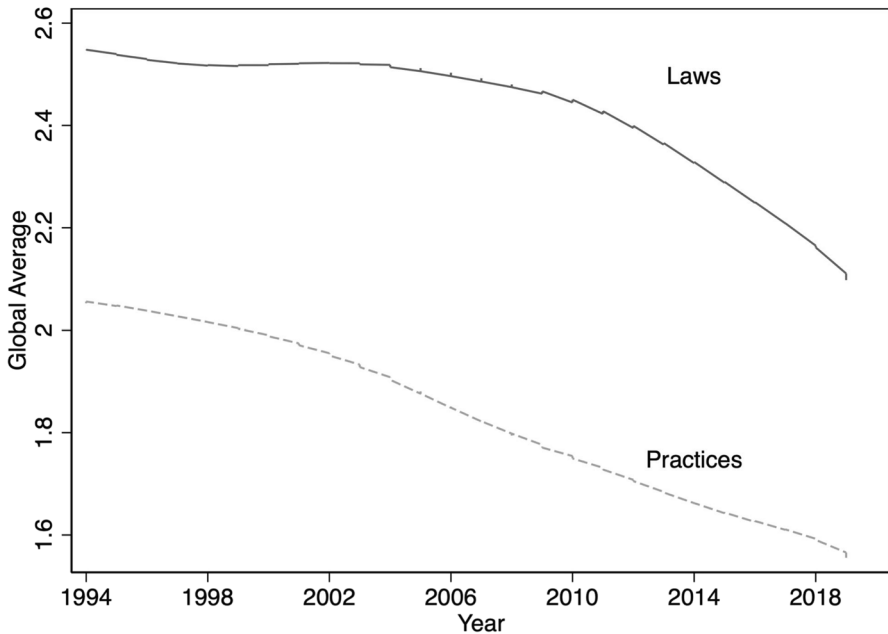
Fig. 1 Lowess global temporal trend in labor laws and labor practices

Control Variables

First, we include the *Physical Integrity Rights Index*, a measure of government repression also taken from the CIRIGHTS dataset. *Physical Integrity Rights* is an ordinal index ranging from 0 (no respect) to 8 (full respect), which captures government use of torture, disappearances, extrajudicial killings, and political imprisonment. We expect that government repression should be associated with higher levels of inequality as repression can be used to put down labor movements and to prevent changes to the distribution of resources in a country.

We include the polity IV measure of democracy (polity2) coded from −10 to 10 with higher values indicating a more democratic country (Marshall and Jaggers 2002). We expect that democracies will have lower levels of post-tax inequality (Timmons 2010) and stronger labor protections as laborers make up the majority of citizens in a country; therefore, accountable leaders should reduce inequality and improve labor rights. We also include a number of measures taken from the World Bank World Development Indicator dataset: GDP growth, GDP per capita, and population, and a measure for trade as a percentage of GDP (Rudra 2008). Countries with higher levels of trade and less-wealthy countries are likely to have higher levels of income inequality and may affect the ability of unions to organize and operate effectively. We anticipate higher population countries and those with growing economies will have higher levels of inequality and both factors will put downward pressure on labor rights.

Empirical Results and Discussion

Table 2 presents the results of our models. Positive coefficients indicate an increase in inequality, while negative coefficients indicate a decrease in inequality. When governments respect physical integrity rights, there is significantly less disposable income though there is no impact on the two horizontal inequality measures. On the other hand, wealthy and high-population countries have significantly more horizontal inequality but less disposable income inequality. This suggests that larger populations and wealthier countries are more likely to see gaps in wealth between groups rather than across the income spectrum. Countries experiencing economic growth see an increase in disposable income inequality, while those which engage in higher levels of trade have less disposable income inequality. An interesting first takeaway is the importance of examining different types of inequality. Our control variables show different effects depending on the type of inequality and sometimes affect one type of inequality but not another. This suggests that studies which rely solely on vertical income inequality, particularly those that primarily use a Gini measure, may warrant caution in how broadly their results travel to other types of inequality. We would also argue that this warrants a re-examination of the literature using alternative measures of inequality.

Turning to our independent variables of interest, we find no support for hypothesis 1. Neither labor practices nor labor laws significantly impact vertical inequality. However, we find support for both hypothesis 2 and hypothesis 3. Labor practices reduce both types of horizontal inequality, while labor laws reduce positive horizontal inequality. When workers have their labor rights respected in terms of both policy and practice, we see a decline in inequality between groups. This suggests that labor rights are an important factor for reducing income inequality and that they may be able to reduce intergroup inequalities along ethnic, racial, religious, or other societal cleavages.

While we did not find support for H1, it is also possible that labor rights may impact the redistribution of gross income by imposing taxes and redistributive spending that reduces inequality. Based on existing research, stronger labor rights are associated with increased social transfers, as strong unions increase the policy space leftist parties and leaders can effectively advocate for (Iversen and Soskice 2006; Pontusson 2013). These social transfers reduce horizontal inequality by increasing tax rates on the wealthiest groups in society, decreasing the distance between the incomes earned at the top and the average, and subsidizing low-wage work through transfers. This suggests that for vertical inequality, we must examine the way labor rights shape redistribution and disposal income.

To test this argument, we operationalize a conditional mixed process recursive estimator using maximum likelihood estimation. The first equation predicts the change in income inequality between market inequality and disposable inequality. In other words, we measure redistribution as [market inequality − disposable income]. The larger this value is, the more a country redistributes wealth through taxes and transfers. The second equation is disposable income inequality which is the same as the previous models. Taken together, this model explores the effect of

Table 2 Labor practices, laws, and inequality

OLS with PCSE	(1) (1) Negative horizontal inequality	(2) (2) Positive horizontal inequality	(3) (3) Disposable income inequality
Labor practices	−0.0163* (0.0083)	−0.0212*** (0.0064)	−0.0052 (0.0046)
Labor laws	0.0083 (0.0093)	−0.0725*** (0.0247)	−0.0073 (0.0068)
Repression	−0.0013 (0.0034)	−0.0021 (0.0029)	−0.0076*** (0.0025)
Democracy	0.0002 (0.0002)	−0.0007 (0.0005)	0.0001 (0.0003)
Population (log)	0.1459*** (0.0152)	0.0488*** (0.0115)	−0.0378*** (0.0125)
GDPPC (log)	0.0155** (0.0073)	0.0345** (0.0168)	−0.2795*** (0.0100)
Trade (log)	0.0091 (0.0079)	0.0051 (0.0098)	−0.0335* (0.0199)
GDP growth	−0.0004 (0.0004)	0.0000 (0.0005)	0.0015*** (0.0005)
Constant	−1.2584*** (0.2780)	0.3634 (0.2241)	3.2294*** (0.2451)
Country-years	1380	1380	2638
R-squared	0.7088	0.5012	0.2211
Countries	145	145	155

Standard errors in parentheses

***$p<0.01$, **$p<0.05$, *$p<0.1$

Table 3 Labor laws, practices, and redistribution

CMP recursive regression	Equation 1	Equation 2
	Redistribution	Disposable income inequality
Redistribution		0.8780*** (0.1801)
Labor practices	0.0541*** (0.0135)	−0.0621*** (0.0210)
Labor laws	0.1899*** (0.0176)	−0.1019** (0.0407)
Redistribution × practices		−0.0957*** (0.0222)
Redistribution × laws		−0.1651*** (0.0293)
Repression	0.0797*** (0.0078)	−0.0948*** (0.0171)
Democracy	0.0015 (0.0009)	0.0040*** (0.0013)
Population (log)	0.0148 (0.0105)	−0.1063*** (0.0149)
GDPPC (log)	0.2774*** (0.0097)	−0.2366*** (0.0488)
Trade (log)	−0.0872*** (0.0262)	−0.1782*** (0.0388)
Constant	−3.1336*** (0.2418)	5.5343*** (0.6473)
Country-years	2704	2704

Standard errors in parentheses

***$p<0.01$, **$p<0.05$, *$p<0.1$

union protections on redistribution and then the joint effect of redistribution and union protections on vertical inequality.

Table 3 shows the results of these models. Importantly, we find that in Eq. 1, respect for labor rights in law and practice leads to higher levels of redistribution in a country. In Eq. 2, we must interpret the coefficients conditionally given that this is an interaction model. When labor laws or labor practices are widely violated (a score of 0), then redistribution is associated with higher levels of disposable income inequality. Or put differently, in countries without labor protections, higher redistribution occurs with a great deal of vertical inequality.

Where redistribution is non-existent (a score of 0), then both labor practices and labor laws significantly reduce disposable income inequality. When there are both high levels of redistribution and strong labor laws or practices, we see a decline in disposable income inequality. This suggests that labor rights work both to redistribute pre-tax income in a more equitable way and to reduce disposable income inequality after the fact.

Figure 2 shows the effect size of the variables in the CMP recursive model with 95% confidence intervals. In the first equation, labor practices and labor laws are both significantly significant and increase the amount of redistribution. Similarly, countries with better physical integrity rights and those with higher GDP per capita also redistribute more. In the second equation, income redistribution is associated with significantly higher levels of disposable income inequality. However, stronger labor practices and labor laws both reduce income inequality. Interpreting these coefficients conditionally with their interaction term also suggests that improving labor rights and laws leads to less income inequality with high and low levels of redistribution. High-population countries, countries with greater GDP per capita, and countries with a lot of trade all have lower levels
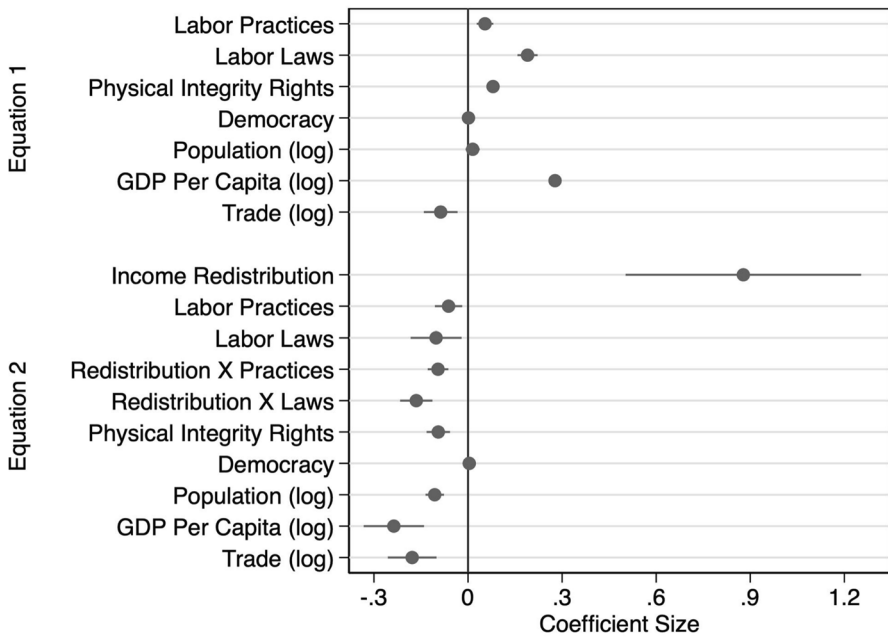
Fig. 2 Coefficient plot for the CMP recursive model with 95% confidence intervals

of disposable income inequality, while democratic countries have higher levels though the effect size is quite small.

Using this model, we can explore the substantive effects of a one-unit improvement in labor laws and labor practices on disposable income inequality. In the first equation, a one-unit improvement in labor laws leads to a 0.05 increase in redistribution, while an increase of one unit in labor laws leads to an increase of 0.19 in redistribution. Together, this increases redistribution by 0.24. In Eq. 2, if we set redistribution to 0.24 and labor laws and practices to 1, we can predict the level of disposable income inequality a country would see.

1. Disposable income inequality = (redistribution coef × 0.24) − (labor practices coef × 1) − (labor laws coef × 1) − (redistribution coef × labor practices × 1) − (redistribution coef × labor laws × 1)
2. −0.014 = (0.24×0.88) − (0.06×1) −(0.1×1) − (0.1×1×.24) − 0.17×1×0.24

The average change in disposable income inequality in our sample for a year is 0.0015. A change of −0.014 is in the 25th percentile suggesting a pretty large change in disposable income. On average, disposable income changes very little as we mention above. The effect size of this one-unit shift in labor laws and labor practices is large or about ten times the size of the average change in disposable income inequality.

Conclusion

In conclusion, this article demonstrates three things: first, our findings suggest that labor laws and labor practices are associated with lower levels of both vertical and horizontal income inequality. While many policymakers argue that respecting labor rights represents an unnecessary intrusion into the marketplace, we find that states which seriously intend to pursue policies that reduce various types of inequality would be well served to take the path of improving respect for the rights of association and collective bargaining in both law and practice. This suggests an important tool that states can use to meet the United Nations Sustainable Development Goal 10.

Given the links between inequality and populism, nationalism, and xenophobia, this also suggests one set of policies that states can use to address multiple issues while conforming to international human rights law, meeting the United Nations Sustainable Development Goal 10, and improving the working conditions of their citizens. Taken together, an improvement in labor rights has the potential to address the growing levels of radicalism around the world. By decreasing horizontal inequalities, labor rights may indirectly lessen the probability of a state experiencing a civil conflict. By decreasing vertical inequalities, labor rights can help serve as a cornerstone of a functioning democracy.

Second, we demonstrate that different types of inequality respond differently to macro indicators. The scholarly literature would be better served by accounting for horizontal and vertical inequalities as two separate and distinct outcomes. Our findings suggest that it is possible to mitigate vertical inequality while simultaneously increasing horizontal inequality. Likewise, reducing horizontal inequality (i.e., inequalities experienced across groups) does not always reduce vertical inequality (i.e., inequalities experienced across individuals). We take an important first step towards unifying the literatures on each and pushing scholars to consider these in tandem. Future research is needed to examine the relationship between different types of inequality.

Finally, many states already have strong legal protection for collective labor rights, though globally these protections have also trended downwards over the preceding 20 years. Our results indicate that increasing protections in practice would further ameliorate inequalities. Many states aiming to improve existing inequalities need to only enforce current laws. Our findings also suggest that states which also lack legal protections could begin to lessen inequalities by adopting collective labor rights law, even if practice lags behind. Passing labor rights legislation is an important first step in tackling growing inequalities.

This article represents only a first step in unifying the literatures on inequalities and labor rights in a global context. Much work remains. Future scholarship should look to examine other indicators of union strength, such as union membership, strikes, and slowdowns. We also call on scholars to develop better measures of horizontal inequality as existing measures are extremely limited. Anecdotal evidence suggests horizontal inequalities change slowly over time, and existing data supports that claim. Scholars should also examine whether labor rights are

able to reduce societal conflicts. Additionally, it would be prudent to explore cases in which unions may have incentives to maintain or increase horizontal inequalities, especially if unions are dominated by one group in society to the exclusion of another. Labor rights serve as a powerful tool for political mobilization and can reduce conflict both reducing grievances and increasing the chance that accommodation is less costly than repression for states engaged in labor conflicts.

Data Availability Data and programming necessary for replication are available by request and on the corresponding author's website, smbagwell.com.

Declarations

Conflict of Interest The authors declare no competing interests.

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