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Has Global Trade Competition Really Led to a Race to the Bottom in Labor Standards?

RESEARCH NOTE

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The possibility that economic competition puts working and employment conditions under pressure is a frequently voiced concern in debates on international trade. We provide an empirical assessment of the argument that competition for world markets has generated a race to the bottom in labor standards. Spatial econometrics is used to identify interdependence in labor practices among trade competitors. We present a strategy for measuring export competition between countries that fulfills several criteria: It reflects actual competition between firms offering similar products, rather than export similarity in relation to a few very broad product categories; it captures not only what competitor countries export but also how much; it takes into account that states are exposed to export competition to different degrees; and it focuses on the downward pressure stemming from a deterioration of labor rights protections among close competitors. To address endogeneity, we implement a two-stage least-squares (2SLS) instrumental variable approach and a difference two-stage generalized method of moments (GMM) approach. We find no evidence that export competition has triggered a race to the bottom in two samples covering most states in the world over nearly three decades. The finding is robust to a variety of alternative specifications.

La posibilidad de que la competencia económica ejerza presión sobre las condiciones laborales y de empleo es una inquietud que se expresa con frecuencia en los debates sobre el comercio internacional. En esta nota de investigación se proporciona una evaluación empírica del argumento de que la competencia por los mercados mundiales ha generado una carrera a la baja en las normas laborales. Utiliza la econometría espacial para identificar la interdependencia en los estándares laborales entre los competidores comerciales. Presentamos una estrategia para medir la competencia de las exportaciones entre países que cumple varios criterios: refleja la competencia real entre empresas que ofrecen productos similares, más que la similitud de las exportaciones en relación con unas pocas categorías de productos muy amplias; captura no solo de lo que exportan los países competidores, sino también la cantidad; tiene en cuenta que los estados están expuestos a la competencia de las exportaciones en diferentes grados; y se centra en la presión a la baja derivada del deterioro de las protecciones de los derechos laborales entre competidores cercanos. Para abordar la endogeneidad, implementamos un enfoque de variables instrumentales de mínimos cuadrados de dos etapas (two-stage least square, 2SLS) y un enfoque de diferencia mediante el método generalizado de momentos (generalized method of moments, GMM) de dos etapas. No encontramos pruebas de que la competencia de las exportaciones haya desencadenado una carrera a la baja en dos muestras que cubren la mayoría de los estados del mundo durante casi tres décadas. La conclusión tiene solidez debido a una variedad de especificaciones alternativas.

La possibilité que la concurrence économique mette sous pression les conditions de travail et d'emploi est une préoccupation fréquemment exprimée dans les débats sur le commerce international. Cet exposé de recherche offre une évaluation empirique de l'argument selon lequel la concurrence pour les marchés mondiaux aurait généré un nivellement par le bas des normes du travail. Il s'appuie sur l'économétrie spatiale pour identifier l'interdépendance des normes du travail entre les concurrents commerciaux. Nous présentons une stratégie répondant à plusieurs crit è res qui permet de mesurer la concurrence à l'exportation entre les pays : elle reflète la concurrence réelle entre des entreprises proposant des produits similaires plutôt que la similarité d'exportation en lien avec quelques très vastes catégories de produits, elle capture non seulement ce que les pays concurrents exportent, mais aussi la quantité qu'ils exportent, elle prend en compte le fait que les États sont exposés à la concurrence à l'exportation à différents degrés, et elle se concentre sur la pression à la baisse des normes découlant d'une détérioration des protections des droits du travail chez les concurrents proches. Pour traiter l'endogénéité, nous avons mis en œuvre une approche par variables instrumentales des moindres carrés en deux étapes ainsi qu'une approche par une méthode des moments généralisée en deux étapes en différence. Nous ne décelons aucune preuve indiquant que la concurrence à l'exportation aurait déclenché un nivellement vers le bas dans nos deux échantillons couvrant la plupart des états du monde entier sur près de trois décennies. Cette conclusion est robuste face à diverses caractéristiques alternatives.

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Introduction

The possibility that international economic competition puts working and employment conditions under pressure has worried policy reformers and labor-friendly scholars for nearly two centuries. Governments concerned about the competitive position of their industries in world markets are widely expected to be reluctant to help workers obtain better conditions and even to actively thwart their efforts. If certain governments start promoting or tolerating a deterioration of labor protections in their jurisdictions, the argument goes, their closest competitors will be under pressure to do the same, and the result will be a "race to the bottom" (RTB) in labor standards (Chan 2003). This concern has contributed to a range of policy initiatives, such as the adoption of international labor conventions, the hitherto unsuccessful attempts to incorporate a "social clause" into multilateral trade agreements, the inclusion of labor provisions in numerous preferential trade agreements, and the development of a range of "multistakeholder" initiatives (Esbenshade 2004; Hassel 2008; Mosley 2011b; Berliner et al. 2015b; Lechner 2016; Hafner-Burton, Mosley, and Galantucci 2019). Proponents of a linkage between the right to participate in international trade and the promotion of basic labor standards frequently evoke the possibility of a RTB as an argument in its favor, but at least some of them, such as Barry and Reddy (2006, 574), acknowledge that its existence is ultimately an empirical question.

Despite the long history of the RTB hypothesis, it is only in the past decade and a half that it has been subjected to rigorous empirical assessment. This breakthrough was supported by major data collection efforts as well as methodological advances in the analysis of policy interdependence. Using the data collected by Mosley (2011a) and Barry, Cingranelli, and Clay (2015), Figure 1 shows that working conditions deteriorated in a large number of countries over the past decades. The fact that the same period displayed increased economic globalization renders the RTB hypothesis particularly plausible. In attempts to explore the potential causation behind this broad correlation, scholars used analytical tools designed to capture how units influence each other and indeed found evidence of policy interdependence regarding labor rights practices. These scholars then interpreted this evidence as supporting the RTB hypothesis. In this article, we argue that this interpretation was premature. Searching for RTBs requires scholars to make a series of important research design decisions, which are likely to influence the outcome of the study. Here, we focus on five types of design decisions in the study of RTBs, relating to what we label *directionality*, *specificity*, *proportionality*, *exposure heterogeneity*, and *endogeneity*, and find no evidence of an RTB. To keep the analysis manageable, we examine these issues in relation to one source of competitive pressures, export competition, but our arguments can in principle be extended to other sources, notably competition for inward foreign direct investment (FDI) and for domestic market shares. Furthermore, the RTB hypothesis is not limited to labor standards but has been studied also in relation to environmental standards (Cao and Prakash 2010, 2012), and the methodological choices we discuss are also relevant to scholars working on those areas.

In this study, we explain specific choices regarding these research design decisions and report the findings of a quantitative analysis that implements them. The first four problems concern the measurement of the competitive pressure on states. The *directionality* problem arises because, as in any race, the direction of movement matters. The RTB logic posits that a movement in the direction of worse labor conditions will be followed by movements in the same downward direction, while it is agnostic about the impact of improvements. However, existing studies do not isolate the effects of deterioration of labor rights protections among competitors from the effects of their improvement. In our analysis, we apply an approach designed to do that. The *specificity* problem arises because accurate measures of competition should reflect actual competition between firms offering similar products, rather than export similarity in relation to a few very broad product categories. However, product-level data are missing for many countries in a way that is unlikely to be random. In our analysis, we choose a level of aggregation that ensures a good balance between specificity and data quality. The *proportionality* problem arises because it matters not only *what* competitor countries export but also how *much* of it they export, since larger volumes give countries more weight in the determination of world market prices for specific products. However, existing studies do not take the volume of exports into account when identifying key competitors. By contrast, our analysis combines information on the similarity of exports with information on their volume. The *exposure heterogeneity* problem arises because states may be exposed to export competition to different degrees. We address this issue by comparing the results of two ways of constructing a connectivity matrix between competing countries. Finally, the *endogeneity* problem stems from the fact that the working conditions in a country may not only be influenced by the conditions in its competitors but also affect them in turn.

In contrast to the existing literature, we do not find evidence for an RTB triggered by export competition. This finding does not necessarily extend to other types of international economic competition, which would require separate analyses. However, it provides a reason to be sceptical about claims that the deterioration of working and employment conditions in recent decades was caused by global trade competition.

The RTB in Empirical Research

As a theory, the RTB argument is over 200 years old, with French statesman and financier Jacques Necker outlining the basic logic already in 1788. Social reformers, labor activists, and government officials debated the issue extensively since the 19th century, and it contributed to the creation of the International Labor Organization (Follows 1951). Since then, concerns about an RTB have been often voiced by organized labor and prompted numerous attempts to include "social clauses" in multilateral and bilateral trade agreements, as well as unilateral trade measures (Charnovitz 1987; Roozendaal 2002; Silver 2003; Levi and Murphy 2006; Ahlquist, Clayton, and Levi 2014; Owen 2017).

Notwithstanding all the attention it received, empirical knowledge regarding the RTB hypothesis was very rudimentary until the mid-2000s. A decisive breakthrough was the systematic collection of data on levels of actual respect for workers' rights in many countries over time, especially in relation to freedom of association and collective bargaining rights (Kucera 2002; Mosley and Uno 2007; Barry, Cingranelli, and Clay 2015). These data enabled researchers to assess systematically the effect of economic globalization and specifically the observable implications of the

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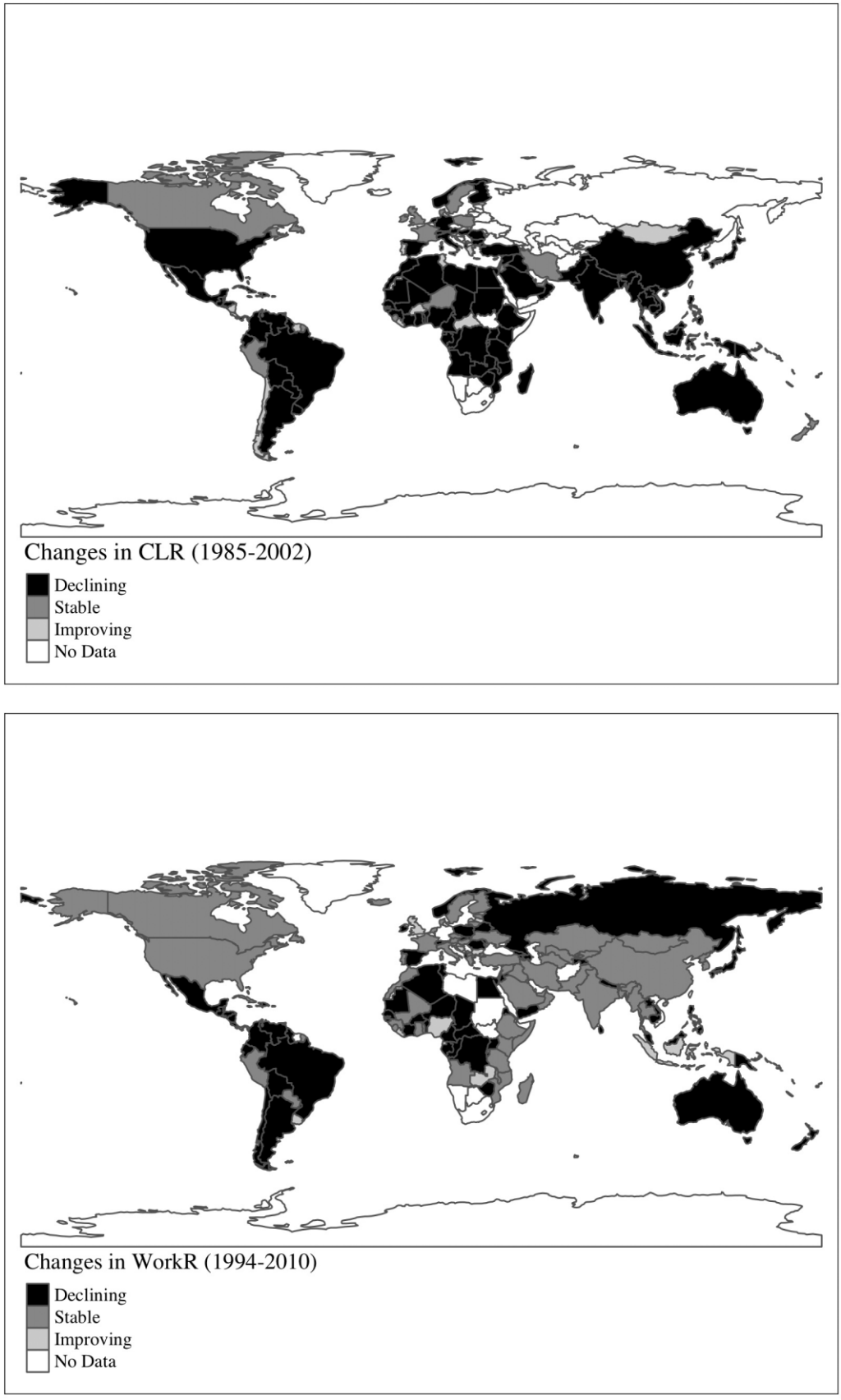

Figure 1 Continuity and change in labor practices according to two datasets.

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RTB argument (Neumayer and De Soysa 2006; Mosley and Uno 2007; Mosley 2011b; Blanton and Blanton 2012, 2016; Davies and Vadlamannati 2013; Olney 2013; Payton and Woo 2014; Berliner et al. 2015b; Berliner et al. 2015c; Wang 2017, 2018). At the same time, these data enabled researchers to assess a different implication of economic globalization, i.e., the possibility of a "California effect" whereby superior labor standards are transmitted from importing to exporting countries (Greenhill, Mosley, and Prakash 2009).

Initially, studies used the ratio of trade on GDP or similar openness indicators to gauge the pressure that competition in world markets exerts on labor rights. As noted by Cao and Prakash, the trade/GDP ratio has limited usefulness as an indicator of competitive pressure because, "[w]hile it gives us a sense of the dependence of a country on trade, it does not necessarily tell us about competitive threats from specific countries....To uncover the mechanisms of regulatory races, we need to identify the competitor countries and their regulatory policies" (2010, 482). Accordingly, some studies complemented or replaced the trade/GDP ratio with variables that reflect the average level of labor rights protection among competitor countries. Competitor countries were sometimes operationalized as those in the same per capita income decile (Mosley and Uno 2007; Mosley 2011b; Blanton and Blanton 2012). A more fine-grained approach considered all states as potential competitors but treated their contribution to generating competitive pressure as a matter of degree. Using the toolbox of spatial econometrics, these studies created connectivity matrices that used different weights to reflect the importance of each state as a source of competitive pressure. Davies and Vadlamannati (2013) used GDP, population, GDP per capita, trade to GDP, proximity to large markets, and closer distance to the focal country as weights in the spatial matrix (their focus was attractiveness to FDI rather than relevance to exports). In his analysis of export competition, Wang (2018) assigned greater weight to states that export products in similar categories as the focal state. These published studies found evidence of an RTB. However, studying policy interdependence using connectivity matrices involves a series of research design decisions that are not straightforward. We identify five critical decisions that require thorough consideration and theoretical justification. These can be summarized as choices about directionality, specificity, proportionality, exposure heterogeneity, and endogeneity. We discuss them in turn.

Directionality. In spatial econometrics, the spatial stimulus that emanates from relevant senders can be in different directions, and it is crucial to examine the spatial effects in a way that reflects theoretical expectations (Neumayer and Plümper 2016). The RTB logic assumes that states react to lower labor standards among their main competitors by reducing their own labor standards. Yet, existing studies on the RTB in labor standards use variables that capture international influences without distinguishing between downward pressure and potential uplifting influence. By contrast, in the empirical analysis presented in the following sections, we adopt an approach similar to Greenhill (2015) and examine specifically whether states change their labor rights practices when the practices of their main competitors have *deteriorated* from one year to the next, in line with the core logic of the RTB argument.

In an additional analysis, we assess the related but separate argument about a "regulatory chill," which posits that competitive pressures cause a *lack of improvement* (rather than a deterioration) of standards (Esty and Geradin 1998). Esty and Geradin (1998, 19) argue that, contrary to the RTB hypothesis, the regulatory chill hypothesis "cannot be proven empirically, because it requires hearing (and measuring) the bell that does not ring—standards that were not raised, enforcement actions that were not brought, and so on." However, spatial analysis can provide *indirect* evidence for the existence of regulatory chill. If we were to find that states improve their labor practices when the practices of their main competitors have improved, then we can infer that those instances where practices do not improve can at least partly be explained by the absence of improvement among the country's main competitors. This counterfactual argument assumes that pro-worker organizations exert pressure to raise standards, but this pressure is counterbalanced by competitiveness concerns; if and when improvements among the main competitors lessen such concerns, then policymakers and firms are more willing to make concessions to pro-worker interests and allow standards to rise.

Specificity. While the direction of the effect determines whether specific senders of a spatial stimulus are relevant or irrelevant to assess a hypothesis, another crucial specification of the connectivity variable—the weight assigned to each relevant sending unit for each receiving unit—determines the relative relevance of each sender for each receiver (Neumayer and Plümper 2016). Measuring competition is a complex task that involves important theoretical assumptions that may affect empirical findings. We start from the argument that a measure of trade competition between two countries should reflect the fact that they are more relevant to each other when their exports are more similar. This is because firms are in competition when they offer products that are sufficiently similar to each other (Guler et al. 2002; Baccini and Koenig-Archibugi 2014; Chatagnier and Kavakli 2017). Wang (2017, 2018) improves upon previous labor RTB studies by constructing a competition matrix that attributes greater weight to countries that export in similar sectors. However, his measure captures product similarity at a high level of aggregation, i.e., the ten categories that form the highest (first) level in the Standard International Trade Classification (SITC) of the COMTRADE data developed by the United Nations. It is doubtful that actual competitive dynamics can be captured at such a high level of aggregation. For instance, a country with large exports of products made of cork and wood (SITC division 63) is not necessarily a close competitor of a major exporter of products made of iron and steel (SITC division 67), but both product categories are included in the same first level category (SITC section 6). On the other hand, disaggregated trade data suffer from well-known problems (Feenstra et al. 2005). In particular, there are inconsistencies between reported exports and imports, and there are a large number of missing and incomplete values, especially in developing countries (Cao and Prakash 2010).[1] In the analysis that follows, we strike a balance between specificity and data quality by using the second level of the SITC, in line with other studies that measured degrees of trade competition (Baccini and Koenig-Archibugi 2014).

Proportionality. The RTB hypothesis expects each government to be concerned about the effect of other countries' levels of labor protection on the international competitiveness of its firms. When assessing the threat posed by other countries, governments can be expected to care not only about *what* the competitors export but also how *much* they export, since larger volumes give their firms more weight

[1] To mitigate this problem, we follow much of the literature and use COMTRADE import data, which is widely considered more reliable than export data (cfr. Feenstra et al. 2005).

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in the determination of world market prices for specific products. However, no existing labor RTB study considers the volume of exports when it comes to identifying key competitors. Davies and Vadlamannati (2013) used GDP as weight in their connectivity matrix with no connection to export similarity, while Wang (2017, 2018) used export similarity with no connection to export volume. Both approaches can yield implausible estimates of the contribution of individual states to competitive pressure, as the following examples show. Country A may pay much more attention to country B than to country C if B has a GDP of similar size to C but a much higher degree of export similarity with A. Conversely, countries D and E may both be very similar to A in terms of export profile, but A is likely to pay more attention to D if the volume of D's exports of the relevant products is much larger than E's. In the analysis reported in the following section, we combine information on product similarity with information on export volumes to generate a more realistic estimate of how much one country matters to another. In our approach, the intensity of competitive pressure is no longer assumed to be symmetric within each dyad, which reflects the realistic presumption that, for any pair of competing states, firms, and policymakers in the smaller exporter of a particular good (e.g., Cambodia) are more sensitive to changes in labor practices occurring in the larger exporter (e.g., China) than vice versa.

Exposure heterogeneity. Neumayer and Plümper (2016) criticize the common practice in spatial econometrics to "row-standardize" the weighting matrix, i.e., to divide the observed connection between the unit i and other units by the sum of connections that each i has. Row standardization involves two assumptions that are unlikely to be justified in the context of export competition. First, it imposes the assumption that total exposure to the spatial stimulus is equal for all units. According to Neumayer and Plümper (2016, 182), this assumption is unwarranted in the case of regulatory competition, given that "a globally integrated country like South Korea is much more exposed to the imperatives of regulatory competition than an economically closed one such as North Korea." The second assumption implied by row-standardization is that the number of competitors determines the level of competition between i and each one of these competitors. A country with fewer competitors increases the relevance that each one of them has, irrespective of their export product similarity. Consider the extreme case where a country i has export similarity equal to 0 with every other country except one, j. With row-standardization, this single competitor j will send the maximum possible value of the spatial stimulus to i regardless of the level of export similarity between i and j; an export correlation of 0.1 would generate the same competitive pressure as an export correlation of 0.9, which is implausible. In our analysis, we follow the advice of Neumayer and Plümper (2016) and replace row-standardization with min–max normalization, which does not impose the assumption of homogenous total exposure and does not change the relative relevance of competitors, while ensuring that the matrix is non-singular (Neumayer and Plümper 2016, 182). We also check the robustness of our findings to the more conventional choice to row-standardization, since we can mitigate the first of the two problems by controlling for export/GDP, which proxies for the level of exposure of countries to what happens in world markets.

Endogeneity. While endogeneity concerns are a key challenge for all empirical research, they are particularly important in models involving spatial interdependence. Indeed, as Franzese and Hays (2007, 143) note, "even if the spatial and nonspatial components are modeled perfectly, the spatial lags in this empirical model will be endogenous (i.e., covary with residuals)" as the estimates would suffer from a simultaneity bias. Thus, causal claims about the RTB must be based on a rigorous identification strategy. We exploit the spatial structure of the data to implement a two-stage least-squares (2SLS) instrumental variable approach that—if correctly specified—is able to address both the omitted variable and the simultaneity bias (Franzese and Hays 2007; Kelejian and Prucha 2010; Betz, Cook, and Hollenbach 2020).

In the remainder of this article, we empirically assess the RTB hypothesis by first presenting the results based on our preferred approach to the directionality, specificity, proportionality, exposure heterogeneity, and endogeneity problems, and then showing whether and how the findings change if we use alternative specifications.

Model Specification

The baseline model we use to examine the existence of the RTB is the following:

$$LC_{i,t} = \beta \sum_{j \neq i} W_{i,j,t-1} LC_{j,t-1} + \eta X_{i,t-1} + \phi Lc_{i,t-1} + \lambda_i + \tau_t + \varepsilon_{i,t}. \quad (1)$$

$LC_{i,t}$ is the main dependent variable of interest; it is a measure of the protection of union rights of country i at time t. We use two separate datasets for our dependent variable. Both provide information on whether union rights are protected *in practice*, which is preferable to using data on protection *in law* because competitiveness concerns ultimately focus on practices. The Collective Labor Rights (CLR) dataset created by Mosley (2011a) provides a continuous measure of the protection of freedom of association and bargaining rights in most sovereign states. While it has a high degree of precision, CLR is available only for the 1985–2002 period. The second source is the Worker Rights in Law & Practice (WorkR) dataset created by Barry, Cingranelli, and Clay (2015), which also captures patterns of freedom of association and collective-bargaining rights in practice (Barry, Cingranelli, and Clay 2022). The indicator provided by this dataset has broad spatial coverage and includes more recent years. However, it is less fine-grained than CLR. It only has five levels, ranging from 0 (no protection) to 4 (full protection). Considering their relative advantages, we will estimate our models using both CLR and WorkR. For each dependent variable, we include all countries for which the data are available for all the periods in order to create two balanced panels. The panel using CLR data consists of 137 countries from 1985 to 2002, while the panel using WorkR data consists of 144 countries from 1994 to 2010. The countries included in each sample are reported in the Online Appendix (Appendix A).

$W_{i,j,t-1} LC_{j,t-1}$ is the spatial lag that captures the effects of competitors' labor practices on a country's union rights, where labor conditions of competitors ($LC_{j,t-1}$) are weighted ($W_{i,j,t-1}$) by the level of trade competition between i and j. The RTB argument expects β to be positive and significant, meaning that the more a country has close export competitors with declining labor standards, the more it will reduce its own labor standards. As elaborated in the previous section, building the competition connectivity matrix W entails important choices. For the reasons presented there, our preferred specification has the following features. First, to capture the extent to which any two countries export

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similar products, we follow Guler et al. (2002) in computing the Pearson's r correlation between the product vectors of every pair of states ($TS_{i,j,t}$).[2] We strike a balance between different requirements by examining product similarity at the second SICT level (*specificity*). Second, we employ a min–max normalization of the connectivity matrix W rather than row-standardizing (*exposure heterogeneity*) (Kelejian and Prucha 2010; Neumayer and Plümper 2016).[3] Third, to account for volumes, we weight our min–max normalized measure of export similarity ($mm\_TS_{i,j,t}$) by the *average share* of exports of the competitor j out of the total global exports.[4] In creating this weight, we only include in the *average share* of exports the products p exported by both j and i. This avoids over- or underestimating the importance of a competitor j based on volumes of exports for which countries i and j are not in competition. Further details on our weighting approach are in the Online Appendix (Appendix B). In sum, $\Sigma_{j \neq i} W_{i,j,t-1} LC_{j,t-1}$ is a weighted sum of the working conditions in competitors' countries, j, where competition is measured, taking into consideration *specificity*,*exposure heterogeneity*, and *proportionality*. Moreover, to account for the *directionality* of the RTB, we estimate our model only on the subset of countries whose spatial lag is declining ($\Delta \Sigma_{j \neq i} W_{i,j,t-1} LC_{j,t-1} < 0$). This means that we only select countries whose competitors' labor practices have, on aggregate, deteriorated from one year to the next, removing the potentially uplifting effect that competitors' labor practices could have when they are improving.

$X_{i,\,t-1}$ is a vector of control variables for country i that previous literature has considered in relation to labor rights (Neumayer and De Soysa 2006; Mosley and Uno 2007; Mosley 2008, 2011b; Blanton and Blanton 2012, 2016; Davies and Vadlamannati 2013; Olney 2013; Payton and Woo 2014; Berliner et al. 2015a; Berliner et al. 2015c; Blanton, Blanton, and Peksen 2015; Peksen and Blanton 2017; Wang 2017, 2018; Owen and Sung 2020; Lee and Woo 2021). These include the level of economic development (GDP per capita); GDP growth; population size; inflow of FDI as a share of GDP; the level of democracy as measured by the Polity5 Project; the ideology of the governing party; the number of international pro-labor NGOs present in the country; country ratification of ILO Convention 87 on Freedom of Association and ILO Convention 98 on Collective Bargaining; membership in the GATT/WTO; and participation in an IMF agreement in a given year.[5]

In line with most previous research, we include the lagged dependent variable (LDV) ($LC_{i,\,t-1}$) to account for dynamic changes in labor standards and for the autocorrelation of the residuals (Davies and Vadlamannati 2013; Olney 2013). There are strong reasons to believe that labor standards are persistent over time and that last year's practices influence current practices. Indeed, managerial approaches, attitudes toward unions, and bureaucratic practices are not likely to change suddenly. If this is correct, and the LDV is part of the data generating process, excluding it from the model would lead to an omitted variable bias that makes coefficients of the other regressors too large. An additional advantage of the inclusion of the LDV is that it allows accounting for autocorrelation in the residuals (Wilkins 2018). On the other hand, researchers have noted two main limitations in LDV models. First, as discussed by Achen (2000), even if the LDV is part of the data generating process, its inclusion risks suppressing the explanatory power of other independent variables while artificially inflating the coefficient of the LDV. Moreover, when the LDV is used jointly with fixed effects, it introduces the Nickell bias (Nickell 1981). The bias is of order T^{-1}, and it is particularly severe when T is small.[6] If the coefficient of the LDV is positive, then the Nickell bias will be negative, hence suppressing the coefficient of the LDV. The biases noted by Achen and Nickell are likely to affect our estimates in opposite directions, possibly reducing the size of the overall bias. To further mitigate these concerns, we will show that our findings are robust to the exclusion of the LDV from Equation (1).

λ_i are country fixed effects. Fixed effects are important for model identification because they control for the time-invariant or slow-changing country-level heterogeneity that could affect labor standards. A Hausman test indicates (p <0.01) that a fixed-effects model rather than a random-effects model is appropriate. Given that maximum likelihood estimators are inconsistent with fixed effects, we do not use an ordered probit model for WorkR even if it is an ordinal variable (Greene 2004; Distelhorst, Hainmueller, and Locke 2017). Instead, we use ordinary least-squares (OLS), which provide the best linear approximation of the conditional expectation function (Angrist and Pischke 2009, 34; Distelhorst, Hainmueller, and Locke 2017, 715). We estimate an ordered probit model as a robustness check. Previous research has argued that the use of year fixed effects with a spatial lag can artificially generate negative findings. Hence, to model time effects, we include 5-year fixed effects (τ_t) and, as a robustness check, we include a time trend (cfr. Davies and Vadlamannati 2013; Olney 2013). Finally, all of our tables report Newey and West (1994) standard errors that are robust to arbitrary heteroskedasticity and autocorrelation.

As noted earlier, a key challenge with spatial models is that they are intrinsically endogenous. If a country's labor conditions are a function of those of its competitors, then reverse causality should be assumed. As a first step to deal with endogeneity concerns we lag all regressors in Equation (1) by 1 year. Changes in the working conditions of country i at time t should not affect the conditions in its competitors at time $t-1$. Lagging covariates, however, may not be sufficient to identify the effects of competitors' labor standards. On the one hand, competition may trigger anticipatory behaviors, whereby countries strategically change their labor conditions because of *expected* changes abroad, as opposed to *actual* changes. On the other hand, despite the use of fixed effects and a wide range of controls, there may be lingering unobserved time-varying heterogeneity affecting our estimates. To overcome these identification issues, we follow the standard approach in spatial econometrics and exploit the spatial structure of the data to implement a 2SLS

[2] We follow Cao and Prakash (2010) and assign a value of 0 to dyads with negative correlations. This is equivalent to assuming that countries are not in competition if they trade dissimilar products (cor <0). Results are similar if we rescale our competition measure between 0 and 1.

[3] Min–max normalization is achieved by dividing each cell of the connectivity matrix by $m = min\{max(r_i),\ max(c_i)\}$, where $max(r_i)$ is the maximum row sum of the matrix and $max(c_i)$ is the maximum column sum of the matrix (Neumayer and Plümper 2016, 182).

[4] Note that mm_TS_{ijt} is the cell in our connectivity matrix W.

[5] The sources of the data are as follows: economic growth and GDP per capita; World Development Indicators (https://data.worldbank.org/indicator); FDI: OECD databases (http://www.oecd.org/corporate/mne/statistics); democracy: the Polity5 Project (Marshall 2018); labor INGOs and government ideology: Peksen and Blanton (2017); ratification of ILO Conventions: ILO NORMLEX database (https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:1:0); and GATT/WTO membership: Pevehouse et al. (2020): IMF agreements: Bauer, Cruz, and Graham (2012).

[6] In our case, where T is greater than 15 the bias should not be greater than 6.8 percent .

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Table 1. The effects of deteriorating union rights practices among trade competitors: 2SLS IV models

	Union rights (CLR)		*Union rights (WorkR)*	
	(1)	*(2)*	*(3)*	*(4)*
Competitors' practices (CLR)	0.004	0.001		
	(0.025)	(0.026)		
Competitors' practices (WorkR)			−0.025	−0.049
			(0.060)	(0.094)
Labor practices (CLR)$_{t-1}$	0.150*			
	(0.078)			
Labor practices (WorkR)$_{t-1}$			0.727***	
			(0.048)	
Export % of GDP	0.001	0.001	−0.001	0.001
	(0.001)	(0.001)	(0.003)	(0.005)
FDI inflows % GDP	0.000	0.000	0.001	0.002
	(0.001)	(0.002)	(0.003)	(0.004)
GDP per capita (log)	0.022	0.033	−0.019	0.146
	(0.032)	(0.033)	(0.090)	(0.116)
GDP growth	−0.003*	−0.003*	−0.000	−0.006
	(0.001)	(0.002)	(0.005)	(0.008)
Population (log)	−0.198	−0.247*	−0.342	−0.917
	(0.128)	(0.136)	(0.323)	(0.648)
Democracy	0.003	0.004	−0.014	0.007
	(0.003)	(0.004)	(0.010)	(0.014)
Government ideology	0.007	0.011	0.071	−0.045
	(0.013)	(0.013)	(0.045)	(0.081)
Number of labor INGOs	0.001	0.002	−0.001	0.019
	(0.003)	(0.003)	(0.012)	(0.021)
ILO Convention 87	−0.057	−0.054	−0.252**	−0.343*
	(0.041)	(0.045)	(0.112)	(0.186)
ILO Convention 98	0.022	0.018	−0.063	−0.197
	(0.052)	(0.058)	(0.132)	(0.188)
WTO membership	−0.009	−0.008	−0.015	0.026
	(0.022)	(0.024)	(0.063)	(0.109)
IMF Agreement dummy	0.060**	0.070***	0.064	0.131
	(0.026)	(0.024)	(0.064)	(0.096)
N	884	884	765	765
Five-years FE	yes	yes	yes	yes
Country FE	yes	yes	yes	yes
Kleibergen–Paap LM underid test	0.000	0.000	0.000	0.000
Kleibergen–Paap *rk* Wald *F*	197.625	197.174	43.774	43.841
Hansen *J*	0.327	0.438	0.828	0.529

Notes: Competition measured at the second level of the SITC classification. *W* is min–max normalized and volume weighted. Spatially weighted exogenous instruments: government ideology and level of democracy. Newey–West robust standard errors in parentheses—bandwidth = 4. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All regressors are lagged by 1 year.

instrumental variable approach (Franzese and Hays 2007; Kelejian and Prucha 2010; Betz, Cook, and Hollenbach 2020). We build the instruments for $W_{i,j,t-1}LC_{j,t-1}$ by creating a spatial lag of the exogenous regressors $W_{i,j,t-1}X_{j,t-1}$. This approach has been proven to produce consistent and asymptotically efficient estimates, provided that the instruments are valid (Franzese and Hays 2007). To avoid some of the challenges involved in spatial instrumentation (Betz, Cook, and Hollenbach 2018), including problems of overidentification, we restrict the set of exogenous variables instruments to the spatial lag of government ideology and the level of democracy.[7] Finally, to further mitigate endogeneity concerns, we follow the recommendation by Franzese and Hays (2007) and combine the spatial instrument with an alternative identification strategy. Our results are robust to the use of a difference two-stage GMM approach that uses the lagged level of the endogenous regressors ($WLC_{i,t-2}$) as instruments for the difference equation $\Delta WLC_{i,t-1}$ (Arellano and Bond 1991). A more detailed discussion of identification issues and endogeneity is in the Online Appendix (Appendix C).

[7] To address weak instrument concerns, we use a maximum likelihood estimation that has been shown to be more robust (Angrist and Pischke 2009). We use the `xtivreg2` command to produce our estimates (Schaffer 2010).

Findings

Table 1 presents the results of our preferred specification: an estimation of Equation (1) on the sub-sample of countries whose competitors' labor standards have been declining, using a min–max normalized weighting matrix that accounts for differences in export volumes and a 2SLS maximum likelihood estimation strategy with spatial instruments. Columns 1 and 2 show the results using CLR data, respectively, with and without the LDV. *Competitors' practices (CLR)* are positively associated with countries' labor practices, in line with the RTB predictions, but the effect size is small, and the effect is not significant at conventional levels.

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Omitting the LDV does not affect the coefficient for *Competitors' practices (CLR)*, which remains roughly of the same magnitude and with similar standard errors. The Hansen J and the Wald F statistics indicate that our instrumental models are correctly specified.[8] The Online Appendix (Appendix D) reports the first-stage results for the instruments, which are of the expected sign and highly significant, suggesting that our instruments are correctly specified. Columns 3 and 4 show estimates based on WorkR data. *Competitors' practices (WorkR)* are negative, contrary to the expectations of the RTB argument. This finding is consistent with the view that countries can engage in divergent patterns of strategic competition (Malesky and Mosley 2021), such as attempting to implement upgrading strategies when competitors risk increasing market shares by downgrading. However, this effect is not significant at any conventional level. Once again, all tests for instrument validity as well as the first-stage results suggest the models are correctly specified (cf. Online Appendix D).

Robustness Checks

We performed a series of robustness checks to ensure that our finding is consistent also using alternative model specifications, and an additional analysis aimed at capturing regulatory chill rather than the RTB. This section summarizes these checks: Full details and results are in the Online Appendix (Appendix D).

No directionality and regulatory chill. We estimated a nondirectional model, which includes also observations where competitors' labor practices have been improving. The coefficient of competitors' labor practices remains statistically insignificant. We also looked for possible evidence for a regulatory chill, which—as noted earlier—could be revealed by a finding that states improve their labor practices in response to recent improvements among their main competitors. We found no evidence suggesting a regulatory chill.

No proportionality. Re-estimating Equation (1) while using a measure of competition that does not account for differences in volumes yields coefficients of competitors' labor practices that are positive but not significant at conventional levels.

Exposure homogeneity. We also estimated models based on a row-standardized as opposed to a min–max normalized W matrix. The spatial lag in the models using WorkR data is never significant. The models on the CLR data find a negative and significant effect (i.e., against the RTB logic), but these results should be treated with caution, given that row standardization imposes assumptions that are unlikely to hold in the context of trade competition. What matters for our purposes is that, in line with our other findings, there is still no evidence of a RTB. We also run our models without any form of standardization: results coincide with our main specification. Finally, we formally tested whether heterogeneity exists, finding that exposure heterogeneity has a significant impact on the results estimated using CLR data (1985–2002), while it does not have a significant impact on the results estimated using WorkR data (1994–2010). This suggests that in more recent years, as more countries participated intensely in global trade, the effects of exposure heterogeneity declined.

Alternative levels of specificity. We found no evidence of a RTB using the third instead of the second digit SITC level. The same mostly applies to the findings using the first digit level competition. The exception is a model based on WorkR data, which shows a positive and weakly significant (p <0.10) association between a country's labor standards and that of its competitors. This result should be treated with caution because using a low-specificity W matrix that considers product similarity at the first digit is likely to misidentify as competitors some states that mostly export different products, and because it stems from a model without the LDV and does not control for autocorrelation of the errors.

Endogeneity. To show that our results are consistent with alternative model specifications and do not depend on the 2SLS identification strategy, we estimated models that do not account for endogeneity problems, namely a simple OLS with fixed effects and Driscoll–Kraay standard errors that are robust to spatial and cross-sectional dependence and (for WorkR) ordered probit models and found no evidence of an RTB. We also employed a two-stage dynamic GMM approach as an alternative identification strategy. Again, we found positive but insignificant effects of competitors' practices.

Time, additional controls, and subsamples. Our main finding is confirmed if we account for time using a time trend rather than fixed effects, test different lag lengths of the spatial lag, and control for additional variables, namely the labor practices of export destinations (Greenhill, Mosley, and Prakash 2009) and the level of state capacity (Berliner et al. 2015c). Moreover, the effect of competitors' labor practices remains statistically insignificant in a subsample, including only low- and middle-income countries and in a subsample that excludes democratic countries.

Significance of controls and model selection. In the analysis presented in Table 1, most control variables are not statistically significant at conventional levels. In the Online Appendix (Appendix E), we examine if the finding regarding competitors' practices could be the result of our specific model selection. To do so, we estimate models of increasing identification rigor (OLS, country fixed effects, two-way fixed effects, and IV models) and find that, while most controls are statistically significant and of the expected sign in the less rigorous models, the variable that could reveal an RTB remains statistically insignificant across the range of models. This finding boosts our confidence that our conclusions are not dependent on model selection.

Conclusions

Freedom to form labor unions and collective bargaining are no panacea. For instance, they can deepen income inequality in labor-abundant countries by increasing the number of unemployed and informally employed while increasing the incomes of those who are employed (Christensen and Wibbels 2014). However, there is widespread agreement that the ability of workers to improve their working and employment conditions through collective action is an important element of a fair economy. The possibility that trade may undermine this ability is therefore troubling. Given the methodological pitfalls that can affect the analysis of the links between trade competition and labor standards, this article laid out the key research design decisions required in such an analysis and presented arguments in favor of specific options. We found no evidence of an RTB triggered by export competition, either using our preferred specification or a wide range of alternative specifications.

We note some limitations of our study. Our analysis focused on the effects of competition for export markets. But

[8] The Hansen J p-value suggest that we cannot reject the null that our model is not over-identified, and the Wald F is very large, suggesting that we are unlikely to suffer from a weak instrument problem.

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international economic competition can take other forms. It is possible that governments are concerned mostly about foreign firms that compete with domestic firms for shares in their own domestic market, thus future research could examine whether import competition has the effect that export competition does not seem to have (López-Cariboni and Cao 2015). Similarly, we have considered FDI inflows as a control variable without consideration of the directionality, specificity, proportionality, exposure heterogeneity, and endogeneity issues that we applied to export competition. Future research could examine FDI from the perspective of those issues. Our analysis has also focused on countries, under the assumption that governments have some control over labor rights in practice in their jurisdictions. But decisions about labor practices are taken also at the level of firms embedded in global value chains, and future research could examine whether RTBs can be detected at that level. Moreover, data quality considerations led us to focus on trade union rights, but future research could examine other outcomes affecting workers, such as wage levels, working hours, and occupational health and safety. Finally, we have shown that export competition is unlikely to have triggered an RTB, but we have not examined why. The search for explanations could follow at least two paths. The first is that responses to competitive pressures may depend on highly contingent domestic political processes that are not adequately captured by general measures of political regime and left-right ideological orientation. The second is that downward pressures may trigger a more complex pattern of divergent reactions, including some "upgrading" strategies that may involve improving rather than worsening labor practices. We highlight this as an important question for further investigation.

Supplementary Information

An Online Appendix is available on the *ISQ* website, at https://academic.oup.com/isq.

Funder Information

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