Trade and Labor Standards in the Golden Age of Globalization

Michael Huberman
Université de Montréal

Christopher M. Meissner
University of California, Davis,
and NBER

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If there is a relation between trade and labor standards, it ought to turn up during the first wave of globalization. Between 1870 and 1914, the world moved from unregulated to regulated labor markets and levels of trade openness rose. In this paper, bringing together new international data sets on labor regulations and social entitlements, and trade and exchange rate data, we ask whether labor standards affected exports adversely. We find no particularly strong evidence that labor standards had long term and enduring effects on trade, although in the short run regulation lowered exports. In response to regulation, firms adjusted the capital-labor mix. There were regional differences, however. The Old World had more labor legislation than the New and it adapted more rapidly to regulations. We attribute the divergence to improving terms of trade in the Old World.

Contrary to all evidence, globalization in the twenty-first century is widely perceived to threaten national social and economic policies like labor market regulations and, more generally, the welfare state. The view is sustained by the belief, popularized by Karl Polanyi, that the welfare state was created in the backlash to pressures of international economic integration in the late nineteenth century.[1] But the historical record, despite a comparable discourse on the dangers of globalization, actually points to an alternative interpretation. When and where welfare states expanded, so did international exposure.[2] This was particularly the case in Europe's small countries, like Belgium and Sweden, whose labor market regulations improved as trade increased, although it remains a puzzle how this was actually realized.

The objective of this paper is to reconcile how Old and New World countries designed, developed, and adapted to labor standards in the context of global economic integration before 1914.[3] Inter- and intraindustry trade expanded in the period. By labor standards, we refer to the social entitlements that workers had access to if they were unemployed, sick, injured, or retired, and the labor market regulations that fixed conditions inside the factory. All types of labor standards sought to correct for social costs that arose as factories began to replace farms as the dominant place of employment. In theory, regulations like those constraining worktimes of women and children reduced labor supply, thus raising the earnings of unskilled workers at the low end of the wage distribution.

The literature on the effects of labor standards on trade is vast.[4] To fix ideas, we consider two opposing views. The first, which is associated with the new institutional economic history, posits that labor regulations did not have large effects because improvements in working conditions were the outcome of changes in income, technology, or preferences. Labor standards in this view

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[1] On the second wave of globalization and the welfare state, see Lindert, "What is Happening," p. 234; Osterhammel and Petersson, *Globalization*, p. 148. On Polanyi and the welfare state, see Berman, *Primacy of Politics*, p. 5.

[2] On the historical relation between globalization and the welfare state, see Huberman and Lewchuk, "European Integration"; Rodrik, "Open Economies," for the post 1945 period.

[3] Charnowitz, "International Labor Standards," and Engerman, "History and Political Economy," previously studied labor standards in the first period of globalization.

[4] For the race to the bottom view of trade and labor standards, see Mazur, "Labor"; Bhagwati, "Demands" and Srinivasan, "International Trade," maintain that trade and labor standards are independent; Elliot and Freeman, *Can Labor Standards Improve*, and Kreuger, "International Labor Standards." claim the relation is complementary. Empirical findings are mixed. While some find negative effects (Rodrik, "Labor Standards"; Van Beers, "Labour Standards and Trade Flows"), most research points to a weak effect, at best, of standards on trade (Dehjia and Samy, "Trade and Labor"; Flanagan, "International Labor Standards"; Samy and Dehjia, "Trade and Labor Standards"; Samy and Rodriguez, "Analyzing the Effects").

were not detrimental to trade, and vice versa, because new legislation only codified existing practices. As countries went through this process, standards improved even as trade volumes increased. The second view derives from a political economy model of industrial relations in which labor standards arose because states acquiesced to pressures for social reform or because of global forces of emulation. Labor regulation generated a type of 'wage push', leaving real effects on output, employment, and trade as prices increased.

Our results give comfort to both views. We find evidence of some short-term effects on trade but that these effects dissipated rapidly. The industrial relations' model signals how firms and workers may have adapted to the new regulations and protected market share in the face of stiff intraindustry competition as in cotton textiles. After the initial wage push, firms and investors seeking to earn rates of return they could realize elsewhere responded by substituting capital for labor and by adjusting production ranges to more highly valued and specialized goods. Contrary to the claims of Polanyi and other globalization pessimists, regulation may have in fact promoted the exploitation of new export markets. Globalization and the welfare state were complementary.

The relation between labor standards and trade varied across regions. In 1914, the Old World had stricter labor regulations than the New. The received explanation is that in Europe the drive for social reform was tied to the extension of democracy. In the New World, the story is more complicated because of greater variation in suffrage rates and levels of industrialization across countries. In land-abundant Latin America, elites desiring to preserve high degrees of inequality suppressed political voice. In the fast industrializing regions of Australia, Canada, and the United States, male workers, who had full voting rights, claimed the same protection as Europeans. Still they were less successful in their demands because of immigration and a footloose labor supply, and because it was more difficult on the frontier to arrive at collective decisions on public goods like hours of work.[5]

We suggest a complementary explanation that integrates the franchise and factor endowments, but invokes differences in comparative advantage and interindustry trade patterns in Old and New Worlds. The incidence of regulation was greater on labor-intensive manufacture, the type of production in which many countries in the Old World specialized. If all countries acted in concert, or if products were differentiated, output would have fallen and prices have risen as labor

[5] For a recent study of American exceptionalism, see Alesina and Glaeser, *Fighting Poverty*. Goldin ("Labor Markets," pp. 613-14), concluded that "[immigration] quotas, by restricting the flow of less-skilled immigrant labor, were the single most important piece of [labor] legislation in the twentieth century" in the United States.

was withdrawn from production. The terms of trade on the range of specialized goods European countries actually produced may have improved. Under these circumstances, the substitution of capital for labor may have been easier and further differentiation into specialized and new products more readily possible. In the New World, production was oriented toward primary products that were sold on relatively more competitive world markets. Improved labor standards would have had the impact of raising already high prices of local manufactures and cut returns to land-based production that could not offset the costs of the new legislation.

There was a political dimension to the terms-of-trade effects. In the Old World, workers could find common ground with employers and the State to improve labor legislation, while in the New World workers had no major coalition partners in the battle for regulation. European workers and firms adjusted rapidly to the new labor standards because they in fact participated in their design, finding ways to economically adapt to changes in the parameters of production and passing on the increased costs of legislation to consumers in the New World. The bottom line is summarized by Torben Iversen in his study of globalization and the social safety net in the late twentieth century: "The welfare state is simultaneously an arena for distributive struggles and a source of comparative advantage."[6]

Our approach and findings make several contributions. The study of labor regulation is most often set in a closed economy and its evaluation restricted to the direct effects of a single piece of legislation on a narrow group of workers, say minimum age legislation on the employment of children. We study regulation through the prism of trade data. Exports are simply output sent abroad and its effects ought to be seen – if there are any – on trade as well, perhaps in a more indirect fashion. This approach allows us to examine the effects of a wide range of regulations on labor costs in a comparative framework that seems relevant to the experiences of developed and developing countries today. Following up on Richard Freeman, the intuition is that in periods of globalization like the late nineteenth century the demand for labor becomes more elastic and any change in labor costs would show up in trade flows.[7]

Our findings cast light on recent debates on the relation between labor standards and trade. For the late twentieth century, the evidence is ambiguous on the effects of labor standards on

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[6] Iversen, *Capitalism*, p. 13. Political scientists have addressed how at its origins the welfare state met the needs of employers and workers. See Baldwin, *Politics of Solidarity*, and Mares, *Politics of Risk*. For the late twentieth century, Kreuger, "Bismarck to Masstricht."

[7] Freeman, "Are Your Wages."

exports. But the late nineteenth century had a different set of institutions. Governments today have more latitude in raising taxes and adjusting exchange rates or monetary policy to neutralize the effects of higher costs caused by tighter labor codes. Market structures may have been different as well between the two periods. In the common perception, the late nineteenth century global system was fiercely competitive, characterized by un-differentiated goods, standardized technology, and small wage differences, certainly across the Old World; this would imply that for world industries like cotton textiles small increases in labor costs would have had detrimental effects on profit margins. Assuming that the competitive model is a reasonable approximation, if labor standards were ever to have an effect on trade the relation ought to turn up one hundred year ago. But another possibility is that there may have been more product differentiation in manufactured goods than often supposed, and labor standards even in the heyday of globalization could have had quite different effects than those predicted based on a perfectly competitive, small open economy perspective.

The rest of the paper proceeds as follows. First, we provide historical background on the rise of labor standards. We identify two views on the effects of labor standards on trade: exports were unaffected because the new labor standards codified existing practices; or exports were harmed because firms and workers adapted to the new standards only after they became law. In section two, we bring globalization into the foreground and examine the evolution of welfare states in two small open economies, Belgium and Switzerland. In section three, we evaluate the effects of standards on exports. We find only modest negative effects on trade and no long-term effects. In section four, we report comparable results at the country level. Across our sample, different (and significant) patterns emerge. In section five, we argue that the Old World provided greater protection than the New because it was able to pass higher prices onto consumers.

Do labor standards matter? Two views

Following the OECD, we define labor standards as the norms, rules, and conventions that govern employment.[8] In Tables 1 and 2, we give dates of introduction of 11 major pieces of

[8] OECD, *Trade, Employment*. A distinction is frequently made between core labor standards and standards that govern outcomes. Core standards are defined as basic rights of workers and obligations of employers, such as the right to organize, and the elimination of slave contracts and the exploitation of children. These types of rules concern the organization of the labor market; other standards, like the restriction of the length of the workday, specify particular

legislation that dealt with the conditions workers faced inside the factory (labor regulations) and the benefits they received if they were ill, unemployed, retired, or injured (social insurance). By no means exhaustive, these entitlements constituted the forms of non-wage compensation that contemporaries believed to have affected, or been affected by, competitive advantage. The potential harm to firms of regulation was not negligible. In Mexico, clearly not a leader in social reform, an employer estimated that unit costs rose by 15 percent in the aftermath of new labor legislation.[9] As today, standards were relatively labor using in that they removed a portion of a country's labor force, mainly women and children, from production.[10] Such standards made labor scarcer, thereby raising wages of male and unskilled workers. Labor regulations were more common than social entitlements and all countries except for Argentina had some form of factory inspection. We make no assumption about compliance and whether legislation was enforced with the same vigilance everywhere, but we note that in many countries inspection was initiated after other regulations were already in place, signaling perhaps the juncture when national authorities took their obligations toward labor seriously.[11]

With few exceptions, labor regulations increased as world trade expanded. But the difference between Old and New Worlds is stark. Europe offered superior protection and social entitlements than Australia, which had a larger 'safety-net' than North America, while labor protection was practically non-existent in Latin America. It may be the case that we have underestimated regulation in the New World where states and provinces had jurisdiction over labor conditions. But the procedure we have followed – for the U.S. we have recorded the date when ten states adopted

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market outcomes. This distinction was unknown in the nineteenth century, although there was a consensus on the abolition of slavery in the early part the century and child labor in the later half.

[9] Cited in Gómez-Galvarriato, "Measuring the Impact", p. 314. Clark, ("Why"), provides another yardstick. Assuming that hours of work in the textile industries of France and Germany were identical, the profit differential in favor of the former was only 1.6 percent. But using actual hours, which were about one hour longer per day in France, the profit gap jumps to 50 percent in its favor. This was the cost of a shorter legislated workweek in Germany.

[10] Occupational safety and health regulation is an example of a standard that is not purely labor using. These regulations often require investments in safer machines. On the distinction between labor and capital using, see Brown, Deardorff, and Stern, "International Labor Standards," p. 54.

[11] Even for Russia, a new study by Andrei Volodine, ("Russian Factory Legislation"), found that inspectors were fair, diligent, and surprisingly numerous, thus confirming the earlier finding of Von Laue, "Factory Inspection." There were good reasons for employers to comply if they initiated the reforms in the first place as suggested by Fishback, "Progressive Era." In Sweden, employers monitored labor standards to minimize worker mobility (Swenson, *Capitalists Against Markets*, p. 103). For a comparative study of enforcement in France and the U.K., see Fuchs, *Institutions, Values*.

legislation – actually biases our results against finding a large difference between Old and New Worlds.[12] Appendix 1 gives sources and describes in detail the methodology underlying Tables 1 and 2.

How effective were these laws? Changes in hours of work in many countries did coincide with the passage of legislation, but it would be rash to conclude that the new laws caused these changes.[13] The literature on the regulation is vast and we have selected two approaches, albeit stylized, to study the determinants and effects of labor law. In the spirit of the new institutional economic history, Engerman wrote that changes in working conditions

> "were not due primarily to legislation but were the consequences of higher national income, with accompanying changing preferences regarding work time and work arrangements as income rose …[L]egislation imposed only such standards as those that had already been achieved, or that the actual standards meant only a very small change from what was already occurring…" [14]

In the U.S. during the Progressive Era, Price Fishback found a large and heterogeneous movement of workers, employers, social reformers, religious groups, and elected officials – "a big tent" – in support of labor reform.[15] Because the coalition was built on diverse claims, actual legislation was often diluted and the effects on actual work practices modest. Many studies have tended to focus on single pieces of legislation in a closed economy setting.[16] But the argument can be extended. If trading partners were undergoing similar structural changes, inducing the sort of outcomes described by Engerman, labor standards would have improved elsewhere and in a fairly parallel fashion, leaving relative prices and trade flows unaltered.[17] A rising tide would have lifted all boats. When and for whatever reason a country was slow to improve its labor protection, its major trading partners would consider this datum before altering their own

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[12] For the U.S. and Canada, states and provinces in the industrial heartland were often the first to pass legislation. The effects of labor standards on trade ought to have shown up in these regions. Higher domestic labor standards would have led to either cheaper imports or decreased profitability in competitive sectors and loss of market share; higher foreign standards would result in relatively cheaper exports or gains in global market share.

[13] On legislation and hours of work, see Huberman, "Working Hours"; Whaples, "Winning."

[14] Engerman, "History and Political Economy," p. 60.

[15] Fishback, "Progressive Era," p. 300. For an earlier review on labor regulation in the U.S., see Fishback, "Unfettered Markets."

[16] Moehling, "State Child Labor", is a well-cited example. Goldin, (*Understanding*, pp. 194-99), studied the (indirect) effects of legislated changes in women's hours on the worktimes of men. This approach is closer in spirit to that taken in this paper with our attention on the effects of legislation on total labor costs.

[17] Casella, "Free Trade," presented a formal model along these lines. Srinivasan, "Trade and Human Rights," made a related argument to explain the dispersion of labor standards across North and South.

standards. They would proceed with new legislation when firms and workers had made the necessary adjustments to meet the new regulation. Labor standards in this view would have had no effect on trade because the new legislation codified best practices.

The alternative view claims that legislation leaves real effects. Ricardo Caballero and Mohamad Hammour designed a dynamic model of industrial relations with monopolistic competition to explain fluctuations of wage and capital shares in France in the wake of changes in labor legislation since the 1970s.[18] Faced by growing social pressures, the government legislates a shorter work week without a proportional change in weekly wages. This is a form of 'wage push'. In the very short-run, the supply of capital is inelastic and militant labor is able to appropriate a larger share of the quasi-rents. There is a fall in output. But this induces the substitution of capital for labor in the long run.[19] The pressure to substitute away from labor would be most keenly felt in open economies.[20] As prices rise in the short-run and firms lose market share at home and abroad, investors will develop or seek out new technologies (and products) to guarantee returns that they could earn elsewhere in the world. The end result is that capital's share increases along with output. The response in France was as expected. Workers' compensation per hour rose, but labor's share of output returned to its initial level because of an increase in unemployment.

Globalization and labor standards in Belgium and Switzerland

Regardless of the model invoked, the dominant narrative on the rise of the welfare state has been almost exclusively written as a chapter in national history. But globalization mattered too. In the New World, movements in factor prices unfavorable to labor unleashed a backlash manifested in demands for tariff and immigration quotas.[21] Labor regulation, especially in regions where the number of voters was restricted, often took a back seat to these demands.[22] And while workers in certain industrialized regions, from Ontario and Pennsylvania to New South Wales, had voting

[18] Cabellero and Hammour, "Jobless Growth." See also, Acemoglu, "Directed Technical Change"; Alesina and Zeira, "Technlogy and Labor;" Blanchard, "Medium Run."
[19] The assumption here is that the elasticity of substitution between *new* capital and labor is greater than one. In their model of the French economy, Caballero and Hammour assumed an elasticity of six.
[20] Comin and Hobjin, "Cross-Country Technology."
[21] For comparison of immigration policy in Brazil and Australia, see Sánchez-Alonso, "Labor and Immigration," pp. 395-406. On the asymmetry of Old and New Worlds with regard to free trade, see O'Rourke and Taylor, "Democracy."
[22] We give evidence below.

rights and fought hard for better conditions, they came up against their countries' dominant export sectors producing in highly competitive world markets in agriculture and resources that opposed labor regulation – at home and abroad – because it meant higher input prices.[23]

Europe saw tensions between domestic and external forces as well. The fear of social unrest may have driven elites to introduce labor legislation even in the advance of democratic reforms, thus unleashing a wage push.[24] But it remains a puzzle why unskilled laborers in the Old World would support labor standards so strongly thereby penalizing themselves in competitive markets.[25] It is quite possible that many markets for industrialized output were less than fully competitive. If so, then in regions where the elasticity of substitution between foreign and domestic goods was low, or the prospects of adjustment to the legislation were at hand, the loss of markets would be smaller, and the probability of enacting reform might be greater. But if these conditions were not met, European states would be hard pressed to proceed with new labor legislation.

Globalization was multi-faceted and while foreign competition was often perceived to be a threat to national labor codes other transnational forces operated in countervailing fashion. The drive to emulate political and economic rivals was great. Russia under Sergei Witte improved its factory inspection as a signal to foreign investors about the quality of its labor force and to demonstrate its commitment to further democratic and social reforms,[26] Proposals and blueprints for reform moved freely across the Atlantic – and in both directions.[27] Even Germany, which in many accounts had the model welfare state of the period, bent to pressures and emulated their rivals' more favorable regulation of women's work.[28] There were pressures emerging from newly formed international organizations as well. By the turn of the century, an epistemic group of reformers, comprising well-regarded authorities like Lujo Brentano (Germany), Ernest Mahaim (Belgium), Alexandre Millerand (France), and Carroll D. Wright (U.S.), assembled and diffused

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[23] Newly regulated local industry may have called for higher tariffs to protect itself against cheaper foreign imports, but even in the New World the reception to these proposals was divided. Owing to higher input prices, tariffs would have incited only further antagonisms between manufacturing, on the one hand, and the service sector and export interests, dominated by agricultural and natural resources, on the other.

[24] For models of this type, see Acemoglu and Robinson, *Economic Origins*. In these models, elites acquiesce when the losses from redistribution under democracy are less than the losses from a potential revolution from below.

[25] One possibility is that labor markets were composed of insiders, who supported legislation, and outsiders. Goldin, (*Understanding*, pp. 189-95), gives the example of male workers who demanded legislation of women's worktimes in order to raise their own wages and reduce hours.

[26] Von Laue, ("Factory Inspection," p. 348), wrote that under Bunge, a predecessor of Witte, "Russia had a set of laws "more enlightened than those of France or the United States." In 2001, Cambodia improved its labor standards to attract foreign investment. Elliot and Freeman, *Can Labor Standards Improve*, p. 111.

[27] The standard text is Rodgers, *Atlantic Crossings*. An earlier statement is Higgs, *Crisis*, pp. 114-16.

[28] Hennock, *Origin of Welfare States*, p. 140.

studies on the state of labor markets around the world. Reformers did not shy from stigmatizing their own country's inferior labor laws and they campaigned for a guiding set of international labor standards.[29] The organization they founded in 1900, the International Association of Labour Legislation (IALL), a precursor to the ILO, became an important forum where countries evaluated their standards relative to their major trading partners. Certain national authorities may have resorted to recommended levels of protection to staunch social unrest at home, while others, where labor's voice was weak relative to capital's, may have exploited guidelines for international standards to get around internal opposition to new regulations.

The experiences of two small countries, Switzerland and Belgium, illustrate the interplay of domestic and external factors in the evolution of labor standards. From Table 1, Switzerland was among the early leaders in labor legislation, but by mid-century there were clear signs that manufacturers and workers hesitated to make further reductions to the length of workday. The Factory Act Commission of Geneva in 1855 concluded that "[t]o regulate satisfactorily the conditions of competition among spinners, it would assuredly be necessary to generalize the legislation by international stipulations between Europe's industrial states."[30] Into the 1870s, each canton was responsible for its own labor legislation, and when the Swiss National Council deliberated on its first set of federal labor laws, it demurred because "the greatest drawback to factory legislation is the fact that if a state acts alone to improve working conditions, its industry may be endangered if its ability to struggle against foreign competition is impaired." Similar concerns affected the timing of the introduction of Swiss federal legislation in the later part of the century. The employment of female workers was not negligible and was concentrated in export industries like textiles.[31] Figure 1 gives the dates of introduction of laws to prohibit night work of women in Switzerland and its major competitors. The Figure reports the share of Swiss exports to these countries in 1890. Swiss labor was reluctant to press their demands. Only after the French and Germans, its major trading partners, prohibited night work did Switzerland follow suit.[32] Trade with

[29] For histories of the movement for international labor standards, see DeLevigne, "Pre-War History"; Francke, "International Labour Treaties"; Follows *Antecedents*; Potter, "Movement"; Shotwell, *Origins*.
[30] This paragraph is based on Follows, *Antecedents*. Citations from pp. 98-99.
[31] In 1890 women comprised 39 percent of the labor force in Swiss manufacturing. For the same year, the figure for Germany was 18 percent. Source: Mitchell, *Historical Statistics*.
[32] Similarly, Hatton and Williamson, (*Global Migration*, p. 177), found that immigration policy in South American countries was dependent on policy decisions in the U.S.

Italy was less important and the Swiss passed legislation before its southern neighbor. Nonetheless, in the wake of legislation, the share of Swiss exports to Italy contracted by a half.[33]

If Swiss workers and their employers exhibited foresight, Belgians revealed a type of bounded rationality. An early industrializer, the country's record of labor legislation was dismal. By the early 1880s, labor, inspired by developments elsewhere in Europe, was eager to press its case for better working conditions and higher wages, even on the absence of the right to vote.[34] Employers warned that labor regulation would harm the country's comparative advantage that was based on abundant labor. 1886 saw a prolonged period of 'social upheaval.' To prevent further social unrest, and minimize future losses, elites passed the first laws to restrict child and young adult labor in 1889 before extending the franchise in 1893. The measure provided for some redistribution, thereby signaling the state's commitment to workers. Figure 2 shows the impact of the new legislation on cotton textiles, among the largest employer of women and children in the country.[35] Wage growth in textiles was modest until the late 1880s. F-X.Van Houtte, the historian of the industry, reported wage growth of less than 0.8 percent per annum from 1880 to 1890 (panel a). However, legislation had the effect of raising unskilled wages of adults. Growth was rapid until 1905, with a large jump in compensation in the first five-year period, about 2.5 percent per annum. Labor appropriated an increasing share of the surplus into the later 1890s (panel b), even as its productivity performance stabilized by the end of the decade (panel c).[36] The spike in wages was limited to textiles; elsewhere in Belgium wage growth was flat. As employers warned, regulation harmed exports that showed a sharp short-run decline in 1889 and 1890 (panel e). We return to a discussion of panels c-e below, but we do observe that all

[33] Trade figures from Mitchell, *Historical Statistics*. As total exports declined, this was not a matter of trade diversion only. The Swiss pattern was repeated elsewhere. Canada moved very late in restricting the working day of women to 11 hours. It hesitated until the leading industrial states south of the border had done likewise. Australia's isolation may explain why it moved ahead much earlier than other new settler economies.

[34] For the economic history of Belgium and globalization before 1914 and sources, see Huberman, "Ticket."

[35] In 1880, women and children (under 18 years of age) comprised 48 percent of the labor force in textiles. All figures in this paragraph are from Van Houtte, *L'évolution*. See page 273 for wages. For other histories of Belgian textiles, see Scholliers, *Wages*, *Manufacturers*, and "Mots et pratiques."

[36] Based on these shares, and assuming a Cobb-Douglas production function, we can trace the relation between wages and the marginal productivity of labor. Until 1890 or so, labor was exploited (wages were far below productivity), the gap narrows into the late 1890s and then widens again. Labor productivity is measured as yarn (corrected by count spun) and textile output divided by the size of the workforce in spinning and weaving.

parties seemed to have drawn lessons from this episode because it was twenty years later before the next major piece of labor regulation was passed.[37]

Labor standards and trade balances: Baseline results

The argument so far is that while labor standards rose alongside world trade volumes, globalization was more than a mere midwife to the birth of the welfare state, mediating its timing and expansion. It would be hazardous, however, to judge whether or not labor standards harmed exports on the basis of the Swiss or Belgian examples alone. The relative shares of women and children employed in the industries we studied may have been unrepresentative of country-wide patterns, and idiosyncratic market structures and other unobservables may have distorted the effects of labor regulations. More generally, it is difficult to disentangle using the case-study approach the effects of standards on labor market outcomes from wider movements in wages and productivity that were independent of legal changes.

In this section we present a trade-based approach to the study the effects of labor regulations. We use trade and exchange rate data in order to go beyond individual cases and to get a general idea of the possible effects of broad range of labor standards across time and space. When a country implements a labor standard that is enforced, short-run marginal costs should rise. In a situation of less than perfect competition, the price of goods would also rise, thereby limiting demand for exports, as well as internal demand for these goods, and raising demand for relatively cheaper imports and goods unaffected by the labor standards. In a situation of perfect competition, the result may be higher wages and possibly lower employment. Firms that cannot adjust at world prices would leave the industry. Industry output and exports would contract.

We follow the empirical growth literature and use a panel error correction model to study the short and long run impacts of labor standards on trade. Our specification is comparable to that of Luis Catão and Solomos Solomou who looked at the relation between the trade balance and

[37] In line with the wag push model, in 1890-1891 the log of the overall trade ratio (total exports divided by imports) fell by 6-8 percent, while the real exchange rate appreciated by 2 percent in 1889 and another 3 percent in 1890.

the real effective exchange rate.[38] We augment a version of their trade balance model with controls for labor standards.

Our baseline specification consists of a dynamic fixed effects model and a mean group estimator. A dynamic fixed effects approach may produce biased coefficients because of a short time dimension time or because of the imposition of slope homogeneity. With over thirty years of data, the former is expected to be small; the latter heterogeneity bias is more worrisome since the impact and adjustment to labor standards are likely to be different across countries. The mean group estimator allows for separate slopes for each country and avoids these problems.[39] Using the simple average of the slopes from country by country regressions yields an unbiased estimate of the parameters of the model. The other advantage to our auto-regressive distributed lag specification is that stationarity testing is not necessary and consistent estimates are provided whether or not the variables included are stationary (i.e., I(1)) only after first-differencing.[40] We estimate for the dynamic fixed effects model:

$$\Delta \ln\left(\frac{EX_{it}}{IM_{it}}\right) = +\beta_1'\left[STNDS_{it-1}\right] + \left[\sum_{k=0}^{1}\beta_{2k}'\Delta STNDS_{it-k}\right] + \beta_3 \ln\left(\frac{EX_{it-1}}{IM_{it-1}}\right) + \beta_4 \Delta \ln\left(\frac{EX_{it-1}}{IM_{it-1}}\right) +$$
$$\beta_5 \ln(RER_{it-1}) + \beta_6 \Delta \ln(RER_{it}) + \beta_7 \ln(GDPCAP_{it-1}) + \beta_8 \Delta \ln(GDPCAP_{it}) + \mu_i + \varepsilon_{it}$$

where *i* subscripts countries, *t* subscripts years and Δ is the first difference operator. Our dependent variable is the first difference of the logarithm of the ratio of exports to imports

[38] Catão and Solomou, "Effective Exchange Rates." We study country differences below. We also have experimented with introducing labor standards in a gravity model of trade. Such a model is suitable when relative price effects are important as in the case when competitors' standards matter for domestic policy and when standards might affect international but not internal trade. Nevertheless, gravity model results are similar to those reported here; available upon request.

[39] Pesaran and Smith, "Estimating Long Run Relationships."

[40] If there is a unique vector defining the long-run relationship between the variables and the lag orders are appropriately chosen, then the auto-regressive distributed lag model provides consistent estimates of the parameters, regardless if the variables are stationary only after first differencing. As for trade data, we use national accounts and Mitchell, *Historical Statistics*; exchange rates from Obstfeld and Taylor, *Global, Capital.* Data available upon request. Countries are listed in Table 4. While some measurement error exists, these sources have been widely used in many comparative econometric studies and give results consistent with various theoretical models and histories of international trade in the period. One problem with the specification is the inclusion of fixed effects and the lagged dependent variable. The 'Nickell bias' arises when the lagged dependent variable and the error term are correlated. The problem disappears as the length of the panel increases. In our case, since we have thirty years of observations, the bias is minimized.

(*EX/IM*).[41] *STNDS* is a vector of indicator variables equal to one when a country has implemented one of four labor standards. Here we have limited our analysis to accident compensation, factory inspections, maximum work hours for women, and minimum age for child labor.[42] The first lag of the change in these indicators is also included, and so are the lagged level of the dependent variable, the lagged first difference of the dependent variable, the lagged level and first difference of the real exchange rate (*RER*), the lagged level and first difference of the change in the logarithm of GDP per capita (*GDPCAP*), a country fixed effect, (μ_i), and an idiosyncratic error term, (ε_{it}). This model captures the long and short run associations between labor standards and the trade balance. We divided the coefficients of the variables in lagged levels by the coefficient on the lagged level of the dependent variable and multiplying by negative one to calculate long term effects. The coefficients collected in the vector β_{2k} capture short run impacts of changes in standards. Lags were chosen to keep the model parsimonious. Typically information criteria likelihood tests are undertaken to determine the optimal lag length; to conserve on degrees of freedom we use a maximum of one lag of first differenced variables. Our results are robust however to inclusion of a further lag term for all first differenced variables.

Our results for the mean group estimator are based on a regression similar to equation (1) in which coefficients vary by country. We report averages of these coefficients. (We present results from separate country-level versions of these regressions in the next section.) Our specification allows us to dispense with checks on the order of integration of the separate series.

We also use the real exchange rate (*RER*) as a dependent variable in an alternative specification. If labor standards raise labor costs, they might raise the price of locally produced goods. This would occur either in a situation of monopolistic competition with differentiated goods and where prices are marked up over wage costs, or in a situation when a country is large enough to have an impact on world prices. At the other end of the spectrum, if nations compete in perfectly competitive markets then any rise in labor costs would simply translate in the short run into lower profits, higher wages or lower employment, or both; in the long run, into lower wages and lower employment as firms substitute away from labor.[43] Thus the real exchange rate may reveal information about the impact of labor standards. This alternative specification begs the

[41] We use this ratio as opposed to the level of the trade balance or the ratio of the trade balance to GDP, following Shirvani and Wilbratte, "Relationship." This allows for a linear in logarithms specification.
[42] Results for other regulations and social entitlements are available on request.
[43] The RER would first appreciate and then depreciate, moving back to an equilibrium level and having no impact on the trade balance in the long run.

question why we do not use real wages directly as opposed to some indicator of labor standards. International comparative wage data, where available, cover sectors (like day laborers) not affected by legislation. Our approach is much richer because it provides coverage of a broad range of occupations for a broad range of regulations.

Table 3 shows only modest evidence of a short run impact of labor regulations, whether the dependent variable is the trade ratio or the real exchange rate. Nearly all of our point estimates are negative in the first or second year of introduction – labor regulations are indeed associated with short run declines in exports and/or rises in imports and an appreciation of the real exchange rate. That said, only the coefficient on minimum age legislation is statistically significant in the trade balance equation, while column 3 of the table shows that the first year of implementation of the minimum age requirements is associated with almost a two percent appreciation of the real exchange rate. The contrast between our results for minimum age legislation and the null effect found by Carolyn Moehling is a reflection of our different research strategies. We study a panel of countries using export data, while Moehling studies labor market outcomes for the U.S only. In Table 3 none of the other coefficients on the controls for labor standards are statistically significant at standard levels of confidence. The estimates have large standard errors potentially because our sample has only about six to eight countries that changed their labor regulations for each type of legislation considered. The other nine countries in the sample had no changes during the period and yield no information on the short-run impact of changes in regulations.

We also examine the long-run relation between labor standards and the trade balance or the real exchange rate. If countries adjusted or made substitutions successfully – and we give some examples of this later in this paper – we would not expect a long-run relationship. We calculate the long-run impact as -1 multiplied by the ratio of the coefficient on the lagged level of the labor regulation and the coefficient on the lagged level of the dependent variable. Although the point estimates suggest that labor regulations like minimum age requirements, accident compensation, and factory inspection were in fact associated with slightly larger trade surpluses or smaller trade deficits in the long run, none of these impacts are statistically significant at conventional levels. There also appears to very little impact on the real exchange rate in the long run. These figures are neither economically nor statistically significant.

The results give comfort to both views of labor regulations, depending on whether a short or long-term perspective is taken – and the mixed findings sit well with attempts to measure the effects of labor regulations in the wave of globalization since 1970.[44] Figure 3 which tracks the cumulative number of countries that adopted factory inspection and minimum age legislation makes this point differently. If the Swiss case was representative, then countries legislated restrictions on child labor and enforced them only when their major competitors had done so. But the ratchet-like effect is only partially evident. From 1890 till the end of the period, five countries legislated minimum age rules that could hardly be considered rivals for competing markets: U.K. (1899), Denmark (1901), Bulgaria (1905), Italy (1907), and Russia (1907). International political pressure was perhaps a more immediate factor. The British wanted to have legislation in place, moving against the interests of workers and firms in the textile industry, before the inaugural meetings of the IALL in 1900; while in Russia, to show their commitment to social reform and, as previously noted, with the aim of attracting foreign investment, the state "stood ahead of public opinion of employers and workers."[45] Nevertheless, legislation had only a short run impact, its effects dissipating over the long run because other countries eventually caught up with the early reformers and because of on going adjustment.

The fact that signs of the some regulation coefficients are positive in the short run, like accident compensation in column 3, and in the long run, minimum age law in column 2, merits comment, if only to foreshadow discussion in subsequent sections. After implementing a standard in competitive markets with undifferentiated goods, firms' profitability would have suffered, generating a negative impact on exports in the short run. In countries producing more differentiated goods, prices increased and market shares contracted. In either case, over the long term structural change toward more differentiated products or new production techniques might have recuperated lost competitiveness. Accident compensation may have had a more immediate impact on performance because, as Fishback and Shawn Kantor found for the U.S., it met the needs of workers and firms.[46] Social reformers and certain employers before 1914 made the general point in their

[44] For summaries, see Dehjia and Samy, "Trade and Labor"; and Dehjia and Samy, "Trade and Labor Standards"; Rodriguez, "Analyzing."
[45] The restriction of child labor was a core demand for the IALL. Follows, *Antecedents*, pp. 120-43; citation from Von Laue, "Factory Inspection," p. 348.
[46] Fishback and Kantor, "Did Workers Pay."

defense of improved working conditions.[47] Contrary to fears of a race to the bottom that were evoked by labor and capital, improved labor standards would raise labor efficiency. Firms would be rewarded by greater productivity and a more skilled labor force. The claim that national labor standards and openness were incompatible was ill founded. To the contrary, social reformers concluded that improved labor standards went hand in hand with globalization.

Labor standards and trade: Divergent experiences

The estimates reported so far may mask some heterogeneity at the country level. In Tables 4a and 4b we explore whether this was the case. The results are far from systematic and uniform, confirming the heterogeneous impact of regulations. That said, more than half of the countries in the sample and all the New World countries exhibit large and significant short run declines in trade balances (panel a) in the years after adoption of labor standards. Belgium, France, Germany, Netherlands, Sweden, and the U.K., comprised the minority (panel b).

These results sit well with case histories of labor regulations. Certain, but by no means all small, northern European and Scandinavian countries, with large international exposures, designed labor standards so as not to harm their market share. Even Belgium, despite wage push pressures to improve working conditions, adapted rapidly to legislation.[48] The Caballero and Hammour model introduced earlier gives an explanation of the process. In the wake of the early factory legislation, capital was hostage to labor and its share of output was squeezed. Into the mid 1890s the industry could not pass on increased costs in higher (real) prices that in fact remained stable, owing perhaps to the lowering of tariffs (1895) and intense international competition in the period. Returning to Figure 2, in panel d we track the ratio of spinning machines to yarn output (after corrections for yarn spun and type of machinery). In this sector, the capital-output ratio was flat in the immediate period after 1889. Seeking to realize a rate of return that it could earn elsewhere, capital turned toward new investments in machinery that allowed for more spindles per frame and faster turning speeds. Older technologies, mainly spinning mules, were scrapped and replaced by ring spinning machines that demanded less skilled workers (panel e).

[47] Doepke and Zilibotti, ("Macroeconmics of Child Labor"), present a model in which employers have an incentive to restrict child labor because of its positive effect on human capital accumulation.
[48] Razo and Haber, ("Rate of Growth," p. 501), found a similar pattern for Mexico in the wake of the Revolution's labor legislation.

Gary Saxonhouse and Gavin Wright found that orders for rings surpassed those for mules by the end of the century and the industry began specializing in the production of low to medium counts of yarn.[49] New firms constructed were large and integrated spinning and weaving processes. Productivity did not increase as expected because there remained a substantial and specialized weaving side of the industry where technological innovation and rationalization were slower, but Van Houtte saw the expansion in the number of small weaving sheds outside the major textile centers as a response to the new supply of yarn on the market. An alternative explanation is that increased monitoring and compliance in the cities led to the establishment of a rogue industry or underground economy in the countryside, composed of sheds using older technology and not in compliance with the new laws.[50] With the substitution of capital for labor, unemployment rose, putting downward pressure on wages – nominal values actually fell by 5 percent from 1900 to 1910 – exactly as Caballero and Hammour would have predicted (panel a).[51] Belgian industry had carved out a market niche. The bottom line is clear in the last panel (f). From 1900, Belgian textiles exports grew rapidly, outperforming all rivals in intraindustry competition and taking market share in Europe at the expense of the British.

Other countries did not fare as well. In Austria-Hungary the implementation of two of its four regulations we studied appears to have affected trade negatively in the short run in Table 4.[52] The politics of the sprawling Dual Monarchy help to explain this finding. Labor regulation in Austria and Hungary was often exploited as a means to moderate demands for national autonomy and industry footed the bill. By 1900, manufacturing goods comprised nearly 40 percent of the Empire's exports, but Hungarian authorities, despite their renown for policies to support industry, offered meager subsidies to exporters and import competing firms to defray the costs of improved working conditions.[53]

The French state was more accommodating than others and offered some compensation both to exporters and import competing firms.[54] A complementary strategy pursued by the French government, and others, was to negotiate bi-lateral labor agreements with major competitors to

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[49] Saxonhouse and Wright, "Technological Evolution."
[50] Harrison and Scorse, ("Impact of Globalization"), reported a similar outcome in Indonesia after the imposition of child labor legislation in the 1990s.
[51] Unemployment was minimized because women and adolescents withdrew from the labor market.
[52] We took half-way points for Austria and Hungary to study the effects of labor regulation in the Dual Monarchy on trade.
[53] Eddie, "Economic Policy," pp. 874-78.
[54] Smith, *Tariff Reform*, p. 222.

assure a level playing field.[55] The Franco-Italian accord was a prototype of twentieth century social clauses. Signed in 1904, the treaty was part of series of agreements that put an end to a decade long trade war between the two countries. France, fearing that the waves of Italian immigrants would undermine the effective level of social protection it provided to its own nationals, initiated negotiations. Italy's history of labor legislation was recent and, because the percentage of eligible voters was low, the liberal government exploited the French initiative to go around the vested interests of the Italian business elite who opposed labor reform.[56] The agreement gave Italian workers in the Hexagon the same level of benefits that French workers received, and in exchange the Italian government introduced in the peninsula some measures of the more advanced French labor legislation. Labor costs increased relatively more in Italy as a result. Figure 4 traces bi-lateral exchanges between the two. Exports from France to Italy rose more than flows in the opposite direction. Because the Italian state was 'ahead' of industrialists, the latter were unprepared to meet the new labor regime and trade suffered relatively as the estimated coefficients in Table 4 indicate.

In Germany, Bismarck had been hesitant to improve factory regulations, fearing its impact on trade. He observed bluntly: "A normal workday could be established for Germany alone, if Germany were surrounded by a Chinese wall and were economically self-sufficient."[57] The social entitlements he introduced in the 1880s had little effect on trade because a non-negligible portion of their cost was downloaded onto workers who paid direct contributions in exchange for these benefits. Bismarck feared that employers could offset the costs of factory regulations, and Germany postponed adoption of legislation to limit women's work until 1892 when firms could meet the new legislation. Owing to their lateness, the new measures had no effect on Germany's trade balance.

Finally, in the U.K., as befitting a highly productive economy, legislation did not harm trade. Still, minimum age legislation came late to the U.K. It was a persistent source of concern for employers and workers in the textile trade, because these groups perceived that the industry's

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[55] For brief histories of the Franco-Italian labor accord, see Fontaine, "Review"; Lowe, *International Protection;* Follows, *Antecedents*, p. 170.

[56] Earlier in the decade, the Italian (liberal) Prime Minister Giovanni Giolitti had invited socialists into his cabinet. In the years before the accord, the minimum working age was raised to 12 years, and the employment of women on night shifts was controlled (as opposed to banned) with the introduction the maximum working day of 12 hours for women, but Giolitti guarded against making further improvements because workers were underrepresented in Parliament, universal suffrage being granted only in 1911. Zamagni, *Economic History*, p. 117.

[57] Cited in Fallows, *Antecedent*s, p. 91

competitiveness was built on the supply of low wage labor in the preparatory stages of cotton spinning and in weaving. The industry was ever reluctant to make the shift to ring spinning as in Belgium, and male workers, who had actually campaigned against the new age laws, sought an alternative strategy to level the playing field with their continental rivals, while maintaining their positions as labor aristocrats. In 1900, the year after the age limits were imposed, the cotton spinners' union invited representatives of Belgian, French, and German unions to tour Lancashire. At this point, British hours of work were twenty percent below continental levels. The objective was to demonstrate to Europeans the superior organization of Lancashire's factories and its social and moral benefits. If all went according to plan, European workers would put pressure on their bosses to reduce working hours, encourage a race to the top in standards and maintain British competitiveness.[58] While this type of pressure did not translate into immediate results, worktime legislation on the continent did approach British standards by 1914 and the trade balance was unharmed as a result.

Old World vs New World

Whereas Tables 1 and 2 reported that the Old World was more regulated than the New before 1914, Table 4 found that, in general, regulations were less detrimental to trade balances in the Old. How did the Old World escape the pressures on trade? Why did regulations affect trade more in the New World? We have suggested that the substitution of capital for labor in Belgian textiles revived the country's performance in intraindustry competition. But all countries in Old and New Worlds could avail themselves of different choices in technologies, as between ring and mule spinning. Moreover, Old World states were not more likely to subsidize exporters and firms did not have more leeway in shifting the burden onto workers, although labor did pay some contributions for certain social entitlements. In fact, firms in U.S., Canada, and Australia had more latitude because of their higher wages.[59] To be sure, there is a vast literature on the comparative histories of the welfare state that has sought to attribute New World exceptionalism to its federal structures, weaker labor power, and flows of immigrant labor, and while these arguments may explain why

[58] This episode is recounted in the *Cotton Factory Times*, 5 May 1900.
[59] On accident insurance and wage offsetting, see Fishback and Kantor, "Did Workers Pay." They observed that as unions became more established firms had increasing difficulty in shifting the burden onto workers.

Europe adopted more labor laws the puzzle remains why the Old World adapted more easily to these laws without harming trade.[60]

In this section, we speculate that the complementary relation between labor standards and international comparative advantage reconciles why the New World had weaker standards, even as regulations harmed trade more than in the Old.[61] Recall that labor regulations in the period were relatively labor using. If all countries implemented these restrictions, world output in labor-intensive industries would have fallen, driving up prices. Working conditions would have improved with firms earning higher rates of return on their capital. The burden would have fallen on consumers – and in this sense world welfare fell. Since the comparative advantage of the Old World was in labor-intensive exports, the terms of trade would have moved in its favor and deteriorated in the New which was a major importer of cheap labor goods. Where countries were large enough to set prices, or where they had differentiated goods, labor regulations reduced output and improved terms of trade as well. The upshot is that low-wage countries had arguably an interest to over protect labor.

In the land abundant, labor scarce New World, even for the U.S., export performance was tied to natural resource endowments. Export markets were more competitive and cost changes brought on by new regulation, insofar as they affected primary sector costs, could not be passed on through higher prices. Profitability and the land rental rate would fall. To the extent that political power was concentrated in the hands of a landed elite or the relevant majority gained its livelihood from primary production, labor standards were off the agenda. Workers in industrialized regions of the New World would have found little cross class support for their demand for better working conditions. Even if workers in the New World succeeded in improving labor regulations, terms of trade could have turned against them. Gains from the new labor standard that was labor intensive went to the country or region that exported the affected good, in this case the Old World, not the country that imposed the standard.

Where the terms of trade did improve, we would expect that capital and labor would have found common ground since tougher labor regulations had benefits for both parties. Governments

[60] The literature on the 'varieties' of welfare states is vast. See the exchange between Hacker and Pierson, "Business Power," and Swenson, "Varieties."
[61] For models of this type, see Brown, Labor Standards: Where Do They Belong"; Brown, Deardorff, and Stern, "International Labor Standards"; Dehjia and Samy, "Trade and Labor."

would have moved quickly to adopt reform, signaling a move away from a wage push model of industrial relations. There are indicators of a climate change in Belgium. Figure 5 traces the terms of trade for Belgium, measured as the ratio of prices of cotton textiles to prices of grain imports. From 1880 until 1900, there was a long period of decline in export and import prices. In this period, capital fought against labor reform and its sole recourse was to substitute away from labor. Around 1900, the terms of trade moved in Belgium's favor and in the subsequent decade new and improved labor reforms multiplied. Recognizing that there are may factors that can alter terms of trade, at the very least, price movements provided shelter to workers and firms, even if they were not the direct result of the change in standards.

It is difficult to identify any specific episode that precipitated the change in labor market regimes. Both internal and external factors contributed to the new environment. By 1900, there was universal male suffrage and it was foolhardy for elites to persist in antagonizing labor. Elites may have acquiesced because they expected that labor would mollify its demands for more redistribution because tariff reductions in 1894 and increased exports of labor intensive goods would, in theory, lead to rising unskilled wages. But there were also external forces emanating from the IALL in the years after it began meeting in 1900. The Belgians along with the Swiss were key players in the movement for international labor standards and, although no major agreements were realized, the pressures for adoption of minimum standards were real. Most governments in our sample sent delegates to these meetings and, although they were not completely persuaded by the reformers, they returned less certain about the harmful effects on trade of labor regulation and more inclined to follow the guidelines for international labor standards proposed by the IALL. In the decade after the inception of the IALL, Italy, Portugal, Spain, and Sweden, all latecomers to the reform movement, prohibited night work of women (Table 1). Although the restriction was not universal, the convergence in standards operated to raise the price of labor-intensive goods everywhere. Indeed the movement in terms of trade in Belgium seems to have been replicated elsewhere in the Old World, with the exception of the poor European periphery, rising sometime after 1900.[62]

[62] For Austria-Hungary, see Eddie, "Terms and Patterns," p. 340. For the U.K., Imlah, *Economic Elements*, pp. 94-98. The classic comparative study is Kindleberger, *Terms of Trade*, pp. 29-66. The poor European periphery is: Italy, Portugal, Russia, and Spain. Williamson, "Globalization and the Great Divergence."

The dynamic was different in the New World. In Canada, unlike Belgium, labor did not have an obvious coalition partner to support its demand for improved factory regulation.[63] Canada had no influence on its terms of trade that began to move downward in 1895.[64] Any increase in labor regulation, at home or abroad, would have led to higher prices of consumer and intermediate goods and have had a negative effect on the trade balance, exactly as we found in Table 4. Labor did seek a coalition with capital but the relation was turbulent. Beginning in the 1870s labor supported capital's demand for tariff protection with the aim of gaining its backing for stiffer immigration rules.[65] But capital reneged and by the late 1890s organized labor threatened to challenge tariff policy. Agrarian interests may have welcomed this change in direction, but they opposed labor regulation because it meant higher prices for inputs. Labor was isolated and regulation's passage in Parliament, which would have been facilitated with even modest cross-class support, was not assured. As a result, regulation did not become the salient issue it was in Europe. Inevitably Canadian labor's interests located elsewhere and they depended almost exclusively on industrial action to improve their welfare.[66]

The political economy of labor-capital coalitions in Old and New Worlds is evaluated further in Table 5. It is widely held that workers' voice, manifested in voter turnout, was a key determinant in the rise of the welfare state.[67] But if the Belgian experience was representative, then Old World workers and employers had a joint interest in improving labor standards, and they would have done so regardless of the extent of democracy. In the New World, workers were isolated and they needed a strong political voice to improve working conditions, although they did so primarily through the demand for tighter immigration policies.

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[63] From Viner, (*Canada's Balance*, pp. 232-36), the ratio of export (weighted in importance to 1913) to import prices declined by 5 percent between 1900 and 1914. Taylor's agricultural export price index divided by textile import price index fell by 20 percent from 1895 until 1913 (Urquhart and Buckley, *Historical Statistics*, pp. 299-300). Elsewhere in the New World, Williamson, (*Globalization and the Poor*, p. 85), found that the terms of trade for Latin America began to decline at the turn of the century. In Australia, the decline began in 1903 (Gillitzer and Kearns, "Long-Term Patterns," p. 2). For the U.S., the picture is less clear, perhaps because it was a larger exporter of manufactured goods. Exports prices increased by 20.6 percent, and import prices by 8 percent from 1900 to 1914 (U.S. Department of Commerce, *Historical Statistics*, series 226 and 238, pp. 892-93).

[64] For the U.S., Irwin, ("Tariff Incidence", p. 601), wrote: "…there is little evidence available on the ability of the United States to influence its terms of trade through policy measures."

[65] On Canadian trade unions, tariffs, immigration policy, and labor regulation, see Craven and Traves, "Class Politics." Immigration restrictions were introduced only in the late 1920s, and after the U.S. had done so.

[66] At the establishment level, strikes in the Canada before 1914 were most often about wages and not working conditions.

[67] Alesina and Glaeser, *Fighting Poverty*; Lindert, *Growing Public*.

Table 5 confirms the different approaches in the two regions.[68] We run a probit where the dependent variable is the adoption of one of three different labor standards. The regressors are voter turnout, levels of incomes, the share of exports in GDP, the trade-weighted average of other countries' labor standards, and the trade weighted average tariff level of the trading partners of each country. Tariffs are given by the value of tariff revenues divided by total imports and weights are derived from a bilateral trade database.[69] We have also included an indicator variable for whether a country was in the "New World" and the interaction between this variable and voter turnout. We use the interaction term to inform the hypothesis that political voice (as expressed in turnout) mattered only in the New World.

As expected, in all specifications the coefficient on GDP per capita is positive and highly statistically significant, giving credence to the rising tide phenomenon previously mentioned. A doubling of GDP per capita would raise the likelihood of implementing one of these standards by between 50 and 100 percent. Voter turnout by itself is never statistically significant, but when turnout is interacted with New World we find a statistically significant and positive coefficient. The implication is that when labor had voice in the New World it pushed for labor standards. In the Old World, however, democracy did not galvanize demand for labor standards as it is often held to be. Because labor could rely on capital's support, workers in Europe had other options. The New World coefficient indicates that countries in the region had lower standards than elsewhere after controlling for other observable characteristics. Finally, for these regulations, spillover or ratchet effects had only a slight to negligible impact on countries' policies, a result that is consistent with our earlier discussion of Figure 3 that national authorities introduced regulation because of a combination of domestic considerations and external political pressures emanating from the IALL.

Labor standards in historical perspective

In this paper, we use a novel source, trade data, to examine an old chestnut in business and economic history: did labor regulations matter? For a sample of Old and New World countries, we can track for fifty years before 1914 the evolution of labor standards from an

[68] The sample for the probits in Table 5 includes 15 countries: Argentina, Australia, Austria-Hungary, Belgium, Canada, Denmark, France, Italy, Netherlands, Norway, Portugal, Spain, Sweden, U.K., and the U.S.
[69] Bilateral trade data from Barbieri, *Economic Interdependence*, and López-Córdova, and Meissner, "Exchange Rate Regimes."

unregulated to a regulated world. It was during this conjuncture that inter- and intraindustry trade rose markedly. Labor standards and trade before 1914 exhibit more variation than can be found in the late twentieth century. If there is a relation between labor standards and trade, it ought to show up during the first wave of globalization.

Contrary to some claims made by critics of globalization today, we find that economic integration before 1914 did not inhibit the expansion of the welfare state. In Europe, elites were hard pressed to reject outright demands for labor reform, even before substantial increases in the number of voters, because this would have incited more labor protest, raising the probability of even greater demands for redistribution. Workers relieved the pressure somewhat because they had no reason to raise standards excessively and punish employers – and themselves. The end result, along the lines of the new institutional economic history, was that the observed effect of labor standards on trade was neutralized. In other regions, like Latin America, elites had the upper hand and the welfare state was held in check. In North America, the story was different. Labor's major concern was to limit immigration and protect wages.

It would be rash to conclude, however, that labor regulations did not exhibit real effects as in the wage push model. At least in Europe the expansion of labor standards and rise of trade were self-reinforcing. We have identified two mechanisms that sustained this relationship. The new labor market regime forced firms to adjust the capital-labor mix, raising productivity, and shifting production to more specialized and sometimes higher value goods. Alternatively, firms passed on labor costs in higher prices, leading to improved terms of trade for labor abundant countries.[70] The net outcome was that labor regulation *and* globalization had much wider cross-class support than in the New World.

The unevenness of labor regulations across OECD countries is a prominent and well debated feature of the second wave globalization. Europe today is both more open and more regulated than the New World. And while the divergence is believed to be a recent phenomenon, perhaps an outcome of different degrees of labor power or different preferences toward standardized working hours and vacation times, our findings suggest that history matters too.

[70] There are parallels between the implementation of labor standards in the first and second waves of globalization. Elliot and Freeman, (*Can Labor Standards Improve*), argued that consumers today would be willing to pay higher prices to ensure better labor standards in exporting countries. Before 1914 consumers paid for the new regulations – but did so involuntarily.

Globalization one hundred years ago was a prime mover in the divergence between "social Europe" and "liberal America."[71]

[71] The terms "social" and liberal" are from Pontusson, *Inequality and Prosperity*.

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APPENDIX 1

In Table 1, wherever possible, we selected dates of introduction of legislation that came close to meeting standards of the Final Protocol of the International Conference on Labour in Factories and Mines held in Berlin in 1890. The Berlin meeting outlined a model labor code that was intended to be the basis of a late nineteenth century European social charter. The final Protocol recommended that children under 12 years of age be prohibited from factory work; the elimination of night work for women; and a working day for children under 14 years of 10 hours, and for women, 11 hours. In selecting dates of introduction for Tables 1 and 2, we gave priority to information found in official publications; when official reports gave conflicting years, we assumed that change occurred mid-way between the last two dates identified. For the Old World, we assume that legislation was standardized within national borders, although after the Franco-Prussian War, German manufacturers maintained that Alsatian firms had a competitive advantage because they were exempted from the stricter German labor code.[72] For Switzerland, we take federal legislation. For Australia, we use the date the first state passed legislation that met the Berlin standard; for Canada, when Quebec and Ontario achieved this level; for the U.S., when ten states passed comparable legislation.

The choice of dates for the U.S. merits discussion because of different histories of regulation at the state level. Despite its federal structure, Fishback claimed that the "geography of adoption showed that neighboring states were likely to adopt legislation with similar features within the same time frame."[73] Twenty-two states adopted accident compensation between 1911 and 1914 alone.[74] For other regulations, legislation was most common in industrial northern states with the largest share of workers in manufacturing and import competing activities – the key sector for our analysis. As for dates of introduction, years recorded in Tables 1 and 2 approximate those reported by Commons and Andrews. To illustrate, they gave 1903 as the date that the movement to restrict the working day of children "began in earnest"; our date for the restriction of night work is 1909. As for women's hours, Common and Andrews gave 1908, the year when the Oregon ten-hour law for women was upheld, to mark the beginning of "enforceable hour limitation laws for women." [75] Based on our procedure, we estimated that night work of women was introduced in 1913.

In selecting dates we gave special attention to the level of enforcement. We recorded dates of introduction of legislation where to the best of our knowledge regulation was effective. To illustrate, for Spain we recorded dates of passage for child labor because, as the U.S. trade representative wrote unambiguously, "[t]he law provides that children under 10 can not be employed, and those from 10 to 14 years old may work only 6 hours per day…The condition of the working class in Spain has greatly improved over the years."[76] For Mexico, we did not record early legislation as effective. A trade representative reported in 1909 "that there is a federal law which says mills shall not work over 12 hours a day…but there is no attempt to enforce this law."[77] In the wake of the Revolution, new labor law was passed beginning in 1911; historians of legislation concluded that it was enforced and we have recorded this legislation as effective in 1913.[78] In Brazil. legislation was ineffective throughout the period.

With regard to social entitlements, dates do not presume universal standards for social expenditure because of the variability in these measures and in program funding. For Europe, dates refer to national

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[72] Hagemann, "Verien," p. 159.
[73] Fishback, "Progressive Era," p. 302.
[74] Fishback and Kantor, *Prelude*, p 58.
[75] Commons and Andrews, *Principles*, pp. 97-102. The citations are from pages 100, 102.
[76] Odell, *Cotton Goods*, p. 25
[77] Clark, W.A., *Cotton Goods*, p. 24.
[78] Bortz, "Revolution," pp. 674-83.

standards. We have not included the Poor Law in our tabulation. In Western Europe, Poor Law expenditures as a share of national product were declining from 1850 on – by 1880 they represented as little as 0.5 to 1.0 percent of GNP.[79]

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[79] Lindert, *Growing Public*, pp. 39-66.

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TABLE 1 Labor Market Regulation Before 1914

	Minimum age 12	Ten hour working day youths	Night work children prohibited	Night work women prohibited	Eleven hour working day women	Introduction of factory inspection	Introduction of first factory acts
Austria	1885	1843	1842	1895	1895	1883	1787
Belgium	1889	*	1889	1909e	*	1889	1889
Bulgaria	1905	*	-	1909e	1913	1905	-
Denmark	1901	1901	1891	*	*	1873	1873
Finland	1889	*	-	*	*	1889	-
France	1871	1892	1892	1892	1892	1874	1841
Germany	1853	1839	1839	1891	1891	1853	1839
Hungary	1840	1893	1884	1909e	*	1893	1840
Italy	1907	*	1902	1907	*	1906	1886
Netherlands	1889	1913	1889	1889	1889	1895	1874
Norway	1892	1892	1892	1909e	*	1892	1892
Portugal	*	1891	*	1909e	*	1893	1891
Russia	1907	*	*	1905	*	1882	1882
Spain	*	*	1900	1909e	*	1907	1873
Sweden	1881	1890	1892	1909e	*	1889	1881
Switzerland	1833	*	1837	1894	1894	1877	1877
United Kingdom	1899	*	1833	1844	1850	1833	1833
Argentina	*	*	*	*	*	*	1905
Australia	1885	1885	1896	1896	1873	1885	1854
Canada	1885	1885	1910	1910	1910	1888	1888
Mexico	*	*	*	*	*	1913	1913
United States	1889	1879	1909	1913	1890	1887	1879

Notes and sources: *Indicates did not enact such a regulation. - Indicates information not available. e Indicates mid-point estimate. For sources, see Appendix 1.

TABLE 2 Social Insurance Before 1914

	Accident compensation	Unemployment insurance	Sickness insurance	Old age insurance
Austria	1887	*	1888	*
Belgium	1903	1907/1920 (V)	1894 (V)	1900 (V)
Bulgaria	1908	*	*	*
Denmark	1898	1907 (V)	1892 (V)	1891
Finland	1893	*	*	*
France	1898	1905 (V)	1898 (V)	1900 (V)
Germany	1884	*	1883	1889
Hungary	1907	*	1891	*
Italy	1898	*	1886 (V)	1898 (V)
Netherlands	1901	*	1913	1913
Norway	1894	1906 (V)	1909	*
Portugal	1913	*	*	*
Russia	-	*	-	*
Spain	1900	*	*	*
Sweden	1901	*	1891 (V)	1913
Switzerland	1911	*	1911 (V)	*
United Kingdom	1897	1911	1911	1908
Argentina	(1915)	*	*	*
Australia	1914	*	1907	1901
Canada	*	*	*	*
Mexico	*	*	*	*
Canada	*	*	*	*
United States	1911	*	*	*

Notes and sources: *Indicates did not enact such a regulation. - Indicates information not available. V stands for a voluntary scheme. For sources, see Appendix 1.

TABLE 3 Trade Balances, Exchange Rates and Labor Standards, 1880-1913

Regressors	(1) Dep. Variable Change in Trade Balance Dynamic Fixed Effects	(2) Dep. Variable Change in Trade Balance Mean Group Estimator	(3) Dep. Variable Change in Real Exchange Rate Dynamic Fixed Effects
Short run coefficients			
First year of accident compensation	-0.023	-0.023	0.017
	[0.030]	[0.015]	[0.008]**
Second year of accident compensation	-0.008	0.009	0.015
	[0.031]	[0.030]	[0.013]
First year of limits on women's hours	-0.013	-0.012	-0.006
	[0.047]	[0.013]	[0.010]
Second year of limits on women's hours	-0.013	-0.02	-0.001
	[0.044]	[0.013]	[0.008]
First year of minimum age law	0.046	0.022	-0.018
	[0.040]	[0.024]	[0.010]*
Second year of minimum age law	-0.042	-0.054	-0.014
	[0.047]	[0.028]*	[0.009]
First year of factory inspection	-0.044	-0.015	-0.001
	[0.041]	[0.025]	[0.010]
Second year of factory inspection	-0.033	0.004	-0.016
	[0.049]	[0.021]	[0.013]
Long run coefficients in levels			
Accident compensation	0.013	[0.021]	-0.002
	[0.020]	-0.045	[0.008]
Limits on women's hours	0.005	[0.032]	0
	[0.027]	0.006	[0.008]
Minimum age law	0.023	[0.020]	0.007
	[0.029]	0.099	[0.009]
Factory inspection	0.021	[0.055]*	0
	[0.023]	-0.027	[0.006]
Other variables			
Lagged level of EX/IM	-0.264	-0.657	---
	[0.037]***	[0.126]***	
Lagged first difference of *EX/IM*	-0.173	0.246	---
	[0.043]***	[0.196]	
Lagged level of *RER*	0.131	0.473	-0.296
	[0.124]	[0.273]*	[0.049]***
First difference of *RER*	0.006	0.246	---
	[0.191]	[0.196]	
Lagged first difference of *RER*	---	---	0.017
			[0.029]
Lagged ln (real GDP per capita)	-0.032	0.117	-0.03
	[0.026]	[0.142]	[0.009]***
First difference ln (real GDP per capita)	-0.486	-0.106	-0.129
	[0.107]***	[0.191]	[0.073]*
Observations	541	541	545
Number of countries	18	18	18
R-squared	0.22		0.20

Notes and sources: Robust standard errors clustered at the country level in brackets. Method of estimation in columns 1 and 3 is an OLS dynamic fixed effects model in error correction representation. The model in column 2 is the mean group estimator (see text). * significant at 10%; ** significant at 5%; *** significant at 1%. Trade balance: Various national accounts, and Mitchell, *Historical Statistics*; exchange rates: Obstfeld and Taylor, *Global, Capital.* GDP: Maddison, *World Economy*.

TABLE 4a Trade Balances and Labor Standards: Country Results

Regressors	Australia	A-H	Canada	Denmark	Italy	Norway	Portugal	Spain	Switz.	US
First year of accident compensation	---	-0.122	---	-0.058	-0.042	-0.074	-0.114	0.062	0.036	-0.084
		[0.029]***		[0.088]	[0.072]	[0.029]**	[0.048]**	[0.216]	[0.017]**	[0.124]
Second year of accident compensation	---	0.044	---	0.355	0.118	-0.008	---	-0.28	-0.105	-0.021
		[0.058]		[0.059]***	[0.066]*	[0.044]		[0.098]**	[0.017]***	[0.037]
First year of limits on women's hours	---	-0.156	-0.091	---	---	---	---	---	---	---
		[0.056]**	[0.102]							
Second year of limits on women's hours	---	-0.071	-0.126	---	---	---	---	---	---	-0.23
		[0.082]	[0.151]							[0.098]**
First year of minimum age requirements	-0.064	0.026	-0.041	0.399	---	0.003	---	---	---	---
	[0.111]	[0.045]	[0.127]	[0.091]***	[0.073]	[0.055]				
Second year of minimum age requirements	-0.264	---	-0.169	-0.156	-0.199	---	---	---	---	---
	[0.097]**		[0.095]*	[0.067]**	[0.057]***					
First year of factory inspection	---	-0.013	-0.105	-0.185	-0.126	---	-0.306	0.23	---	0.058
		[0.022]	[0.069]	[0.045]***	[0.035]***		[0.120]**	[0.116]*		[0.179]
Second year of factory inspection	---	---	-0.044	0.051	---	---	0.359	-0.207	---	-0.046
			[0.093]	[0.065]			[0.112]***	[0.053]***		[0.021]**
Accident compensation lagged level	---	-0.016	---	-0.334	-0.083	-0.057	---	-0.039	0.099	0.121
		[0.061]		[0.101]***	[0.084]	[0.043]		[0.179]	[0.024]**	[0.102]
Limits on women's hours lagged level	---	0.017	0.102	---	---	---	---	---	---	0.171
		[0.045]	[0.166]							[0.115]
Minimum age requirments lagged level	0.25	0.152	0.144	0.352	---	---	---	---	---	0.11
	[0.149]	[0.022]***	[0.080]*	[0.073]***						[0.027]***
Factory inspection lagged level	---	-0.114	0.069	-0.129	-0.198	-0.012	-0.007	0.275	---	0.051
		[0.039]**	[0.080]	[0.063]*	[0.098]*	[0.068]	[0.177]	[0.136]*		[0.204]
Lagged level of *EX/IM*	-0.353	-0.557	-0.609	-1.09	-0.29	-0.401	-0.766	-1.077	-0.739	-1.089
	[0.224]	[0.360]	[0.282]**	[0.300]***	[0.225]	[0.325]	[0.231]***	[0.286]***	[0.211]***	[0.409]**
Lagged first difference of *EX/IM*	-0.209	-0.275	0.237	0.329	-0.401	0.565	0.184	0.486	0.487	-0.055
	[0.227]	[0.195]	[0.343]	[0.182]*	[0.180]**	[0.274]*	[0.149]	[0.223]**	[0.226]**	[0.298]
Lagged level of *RER*	0.456	0.648	1.294	-1.265	-0.15	0.038	0.623	-0.599	0.393	2.76
	[0.863]	[0.770]	[1.277]	[0.904]	[0.595]	[1.176]	[0.436]	[0.439]	[0.250]	[2.441]
First difference of *RER*	0.16	-0.529	-0.465	0.146	0.507	-0.721	0.072	0.04	-0.227	-1.404
	[0.864]	[0.572]	[1.295]	[0.704]	[0.749]	[0.845]	[0.367]	[0.518]	[0.263]	[2.013]

Lagged ln (real GDP per capita)	0.004	-0.195	-0.157	0.271	0.469	0.107	-0.391	-0.158	-0.082	-0.181
	[0.126]	[0.248]	[0.095]	[0.199]	[0.275]	[0.185]	[0.509]	[0.546]	[0.047]	[0.135]
First difference ln (real GDP per	-0.725	-0.862	-0.763	0.507	-0.577	-0.318	0.194	-0.173	-0.223	2.945
capita)	[0.492]	[0.538]	[0.482]	[0.882]	[0.446]	[0.349]	[1.125]	[0.604]	[0.224]	[1.931]
Constant	-0.411	4.181	0.125	1.319	-3.236	-0.961	1.519	4.494	-0.22	0.362
	[1.089]	[2.728]	[0.895]	[3.548]	[6.157]	[4.534]	[2.466]	[6.261]	[0.600]	[1.551]
Observations	32	32	32	32	32	32	32	32	27	32
R-squared	0.42	0.66	0.61	0.73	0.66	0.41	0.68	0.59	0.55	0.56

TABLE 4b Trade Balances and Labor Standards: Country Results

Regressors	Belgium	France	Germany	Neth.	Sweden	UK
First year of accident compensation	-0.061	-0.046	-0.024	0.141	-0.126	-0.026
	[0.036]	[0.049]	[0.041]	[0.112]	[0.173]	[0.086]
Second year of accident compensation	0.091	-0.06	0.045	-0.042	-0.058	-0.122
	[0.093]	[0.048]	[0.059]	[0.108]	[0.076]	[0.099]
First year of limits on women's hours	---	0.045	-0.128	0.018	---	---
		[0.036]	[0.099]	[0.041]		
Second year of limits on women's hours	---	0.005	-0.02	0.101	---	---
		[0.049]	[0.054]	[0.037]**		
First year of minimum age requirements	0.025	---	---	---	---	0.149
	[0.073]					[0.084]*
Second year of minimum age requirements	0.07	---	---	---	0.136	---
	[0.049]				[0.064]**	
First year of factory inspections	0.028	---	---	0.007	0.035	---
	[0.054]			[0.051]	[0.109]	
Second year of factory inspection	0.048	---	---	0.067	-0.009	---
	[0.065]			[0.079]	[0.056]	
Accident compensation lagged level	-0.112	0.152	-0.063	0.052	-0.062	0.015
	[0.086]	[0.046]***	[0.080]	[0.142]	[0.128]	[0.143]
Limits on women's hours lagged level	---	0.123	-0.138	-0.086	---	---
		[0.088]	[0.151]	[0.053]		
Minimum age requirments lagged level	-0.051	---	---	---	---	-0.162
	[0.073]					[0.077]**
Factory inspections lagged level	-0.027	---	---	-0.121	0.114	---
	[0.054]			[0.084]	[0.111]	
Lagged level of *EX/IM*	-1.271	-1.15	-0.627	-0.645	-0.625	-0.932
	[0.342]***	[0.341]***	[0.761]	[0.333]*	[0.460]	[0.355]**
Lagged first difference of *EX/IM*	-0.094	-0.107	0.347	0.049	0.332	-0.035
	[0.243]	[0.189]	[0.611]	[0.299]	[0.306]	[0.201]
Lagged level of *RER*	-0.251	-0.758	-0.218	0.137	0.881	---
	[0.565]	[0.472]	[0.897]	[1.064]	[1.152]	
First difference of *RER*	0.573	-0.096	0.717	0.07	0.22	---
	[0.593]	[0.479]	[0.509]	[0.696]	[1.154]	
Lagged ln (real GDP per capita)	-0.014	-0.368	0.04	0.304	0.142	0.544
	[0.393]	[0.182]*	[0.240]	[0.308]	[0.244]	[0.472]
First difference ln (real GDP per capita)	0.345	-0.521	0.001	-0.988	-0.545	0.71
	[0.503]	[0.370]	[0.580]	[0.764]	[0.640]	[0.748]
Constant	1.085	3.556	-0.056	-2.718	-3.651	-4.447
	[4.908]	[1.054]***	[3.679]	[3.301]	[4.574]	[3.528]
Observations	32	32	32	32	32	32
R-squared	0.72	0.79	0.27	0.55	0.29	0.58

Notes: Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1% Sample is 1882 to 1913. * significant at 10%; ** significant at 5%; *** significant at 1%.. Dependent variable in each column is the change in the log of the export/import ratio. Robust standard errors in brackets. A "---" symbol indicates the coefficient could not be estimated due to insufficient data. For sources, see Table 3.

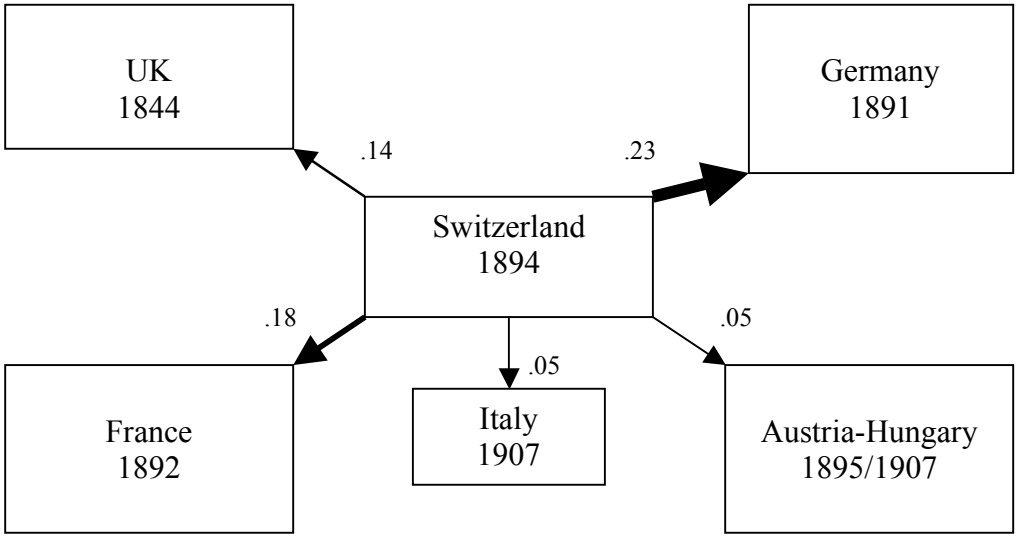
TABLE 5 Determinants of Labor Standards. 1880-1913

Regressors	(1) Factory Inspection	(2) Min. Age Requirements	(3) Women's Hours Limits
ln (GDP per capita)	0.58	0.41	1.07
	[0.20]***	[0.25]*	[0.40]***
Voter turnout	-0.24	0.27	-0.15
	[0.23]	[0.44]	[0.34]
Voter turnout * New World	2.7	2.04	0.86
	[0.78]***	[0.79]***	[0.53]
New World	-0.97	-0.75	-0.26
	[0.05]***	[0.15]***	[0.20]
Exports/GDP	0.09	0.76	0.05
	[0.21]	[0.50]	[0.25]
Trade partners' average tariff	-0.02	-0.01	-0.01
revenue/imports	[0.02]	[0.02]	[0.03]
Trade weighted avg. of trade partners'	-2.09	-0.74	-0.48
labor standard	[0.68]***	[0.40]*	[0.37]
Observations	481	481	481
Time Dummies	yes	yes	yes
Psuedo-R-Squared	0.61	0.42	0.47

Notes and sources: Dependent variable in column (1) an indicator if a country had mandatory factory inspections; column (2) if there was a minimum age restriction; column (3) whether a country had a limit on women's working hours. Estimation is by probit. For countries see text. We report the marginal effects on the probability of adopting a minimum age requirement. Robust standard errors clustered at the country level are in brackets. Time indicators are included but not reported. See the text for descriptions of variables and countries. * significant at the 10% level; **significant at the 5% level; *** significant at the 1% level. GDP per capita - Maddison. *World Economy*; voter turnout - Lindert. *Growing Public*; tariffs - Barbieri, *Economic Interdependence*, and López-Córdova and Meissner, "Exchange Rate Regimes."

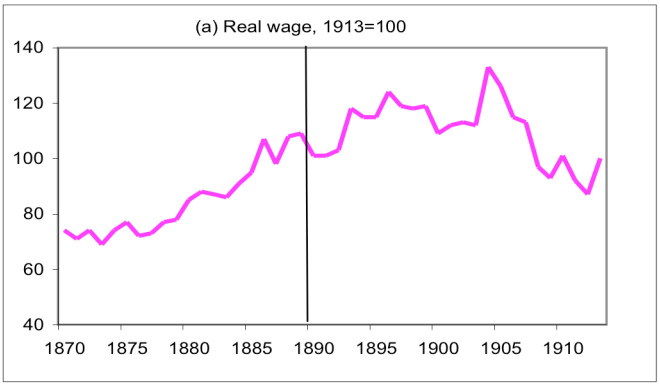
FIGURE 1

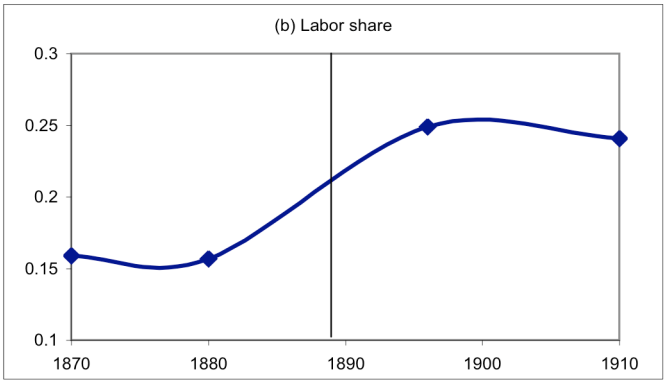
The Prohibition of Women's Night Work

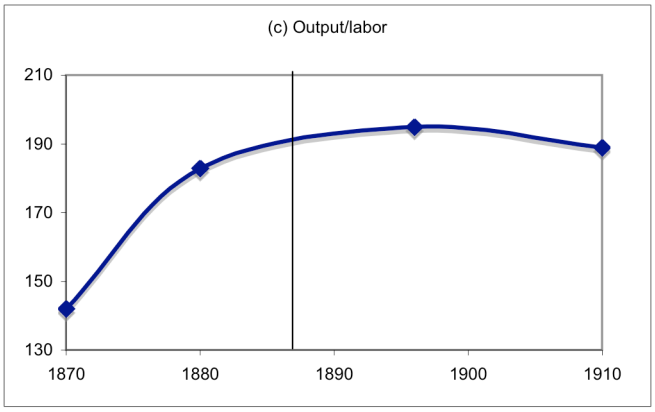


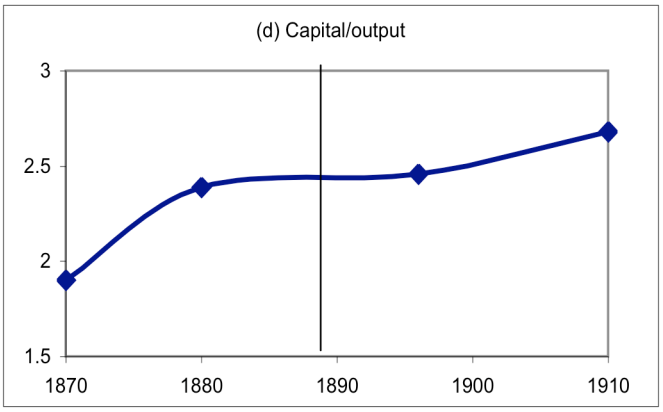
Notes and sources: The figures refer to the share Switzerland's exports with each trading partner. Dates of legislation from Table 1. Trade share from Mitchell. *Historical Statistics*.

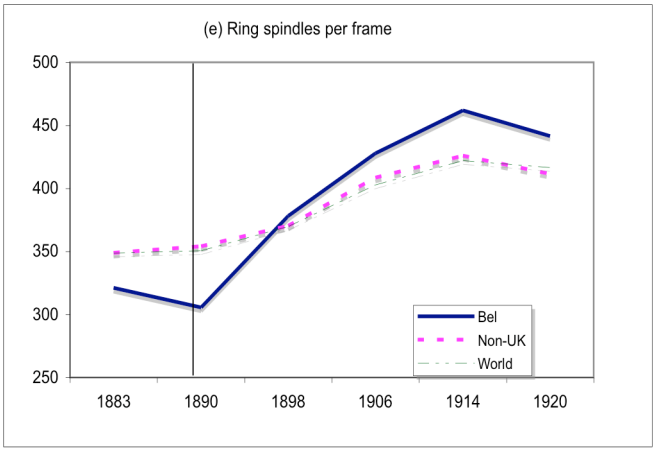
FIGURE 2
Labor and Capital: Belgian Textiles. 1870-1913

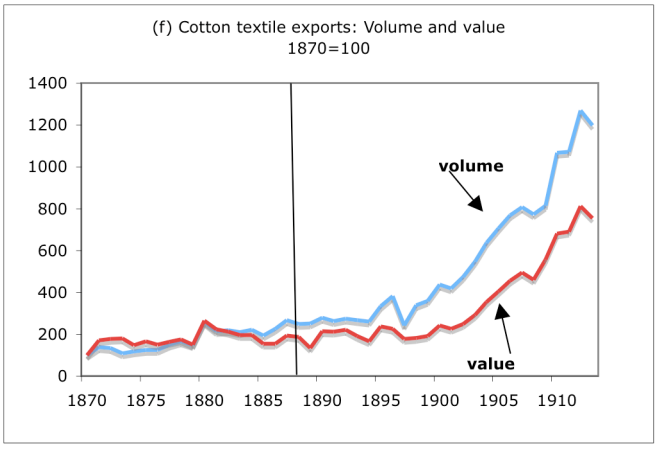




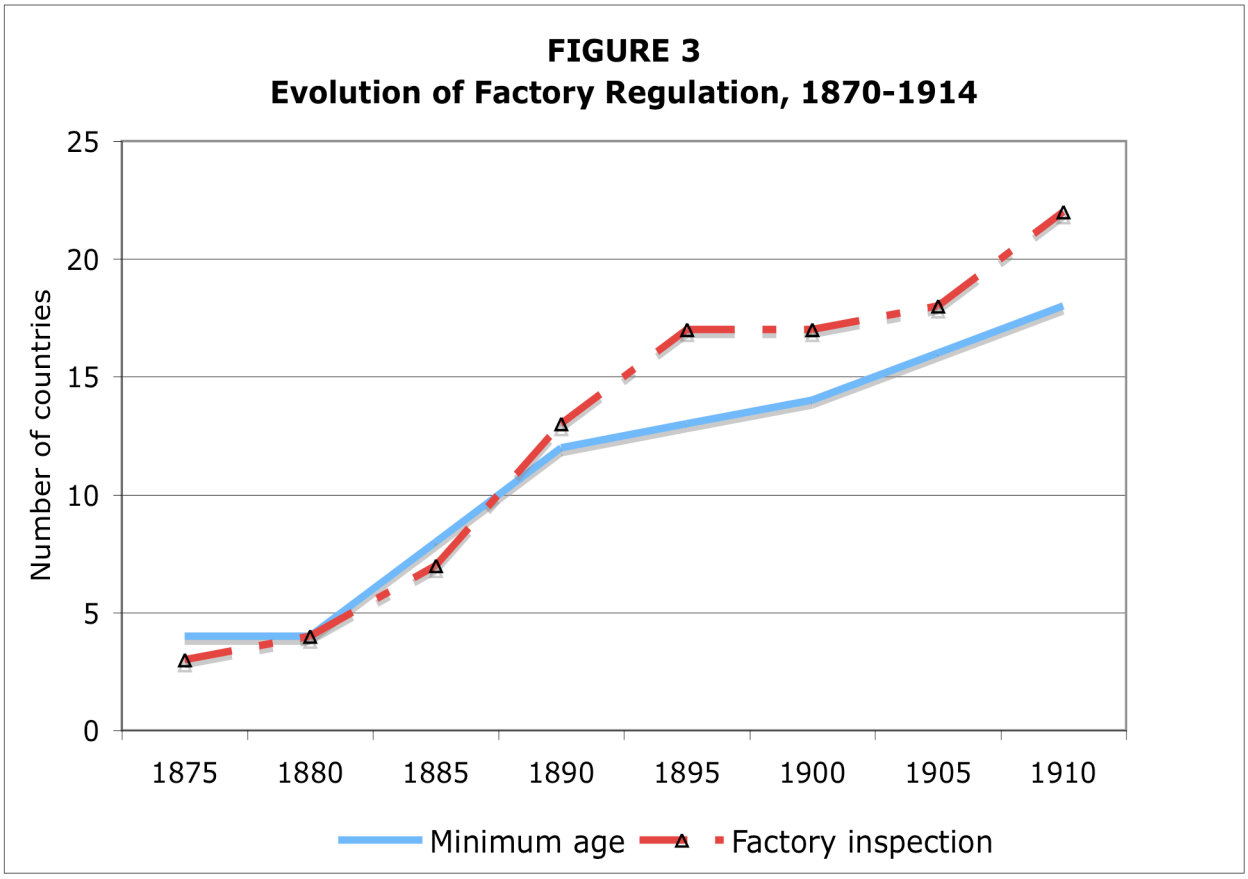






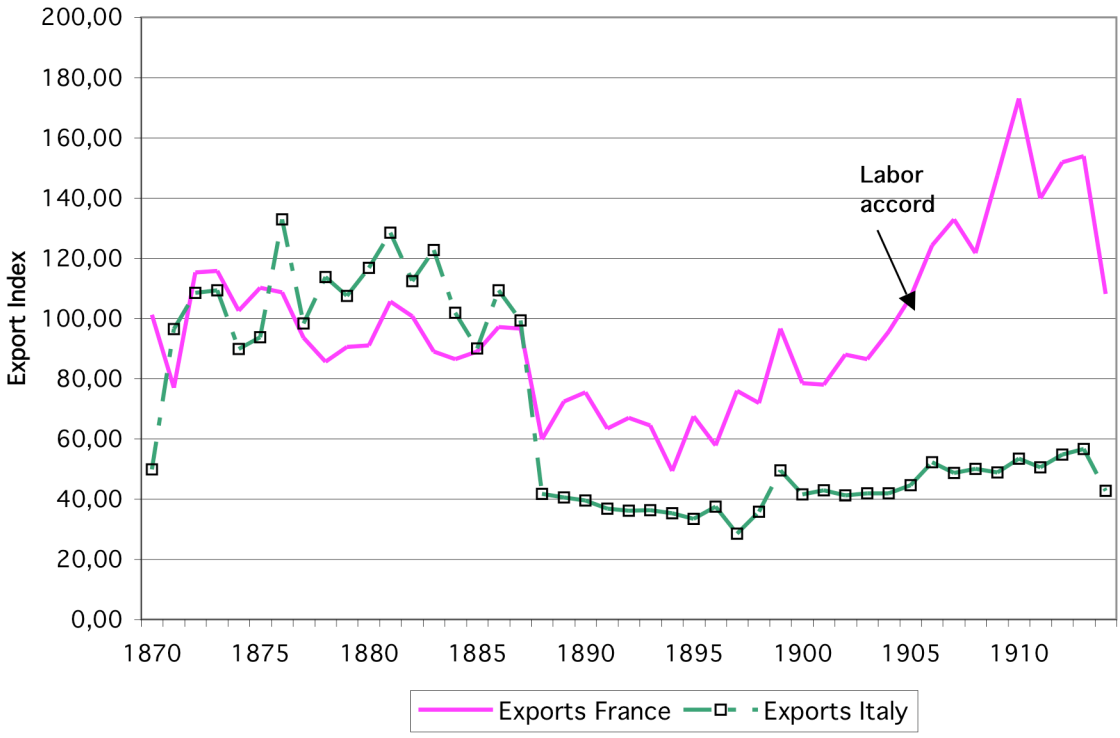


Notes and Sources: The vertical line refers to the date of introduction of factory legislation. Figures (a) – (d) from Van Houtte. *L'évolution.* pp.101-02. 229-30. 271-73; panel (e) from Saxonhouse and Wright, "Technological Evolution," p. 144; panel (f) from Degrève. *Commerce extérieur*. pp. 187-92.

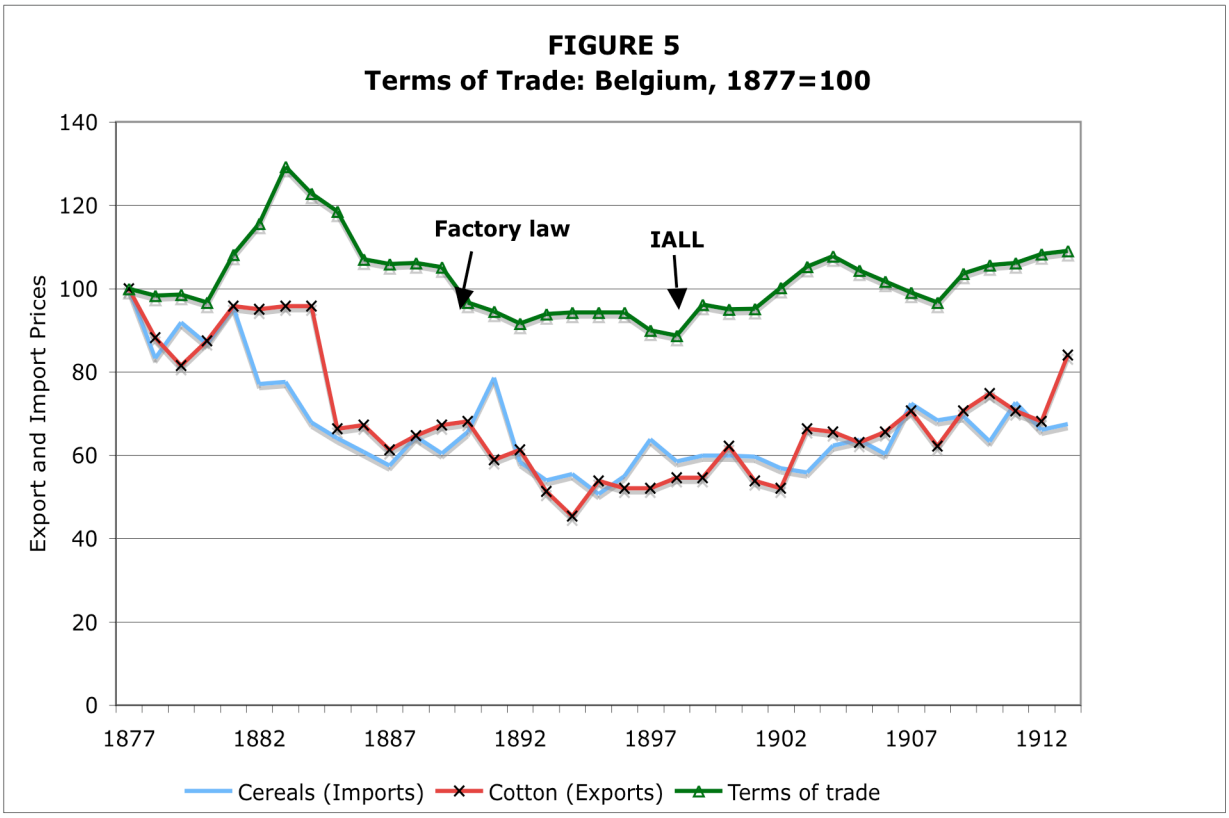


Notes and sources: Recorded at five year intervals beginning in 1870-1874. See Table 1 and Appendix for sources.

FIGURE 4
French-Italian Trade, 1870-1914



Notes and sources: Exports values from France to Italy and Italy to France. 1870 French exports = 100. All values in French francs from *Annuaire statisique*. 1870-1913.



Notes and sources: All values 1877 = 100. Cereal (import) price index from Blomme. *Economic Development*. p. 418. Cotton textile export prices from Van Houtte. *Évolution*. pp. 268-69.