**Inequality and Labor Market Coordination**

**in the Early 20th Century**

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# Abstract

The understanding of observable associations between institutions and inequality today requires a better grasp of the process driving the selection of economic institutions, in particular wage bargaining centralization agreements, as the outcome of a distributive conflict in which inequality itself plays a prominent role. Low levels of inequality facilitated the adoption of encompassing wage centralization agreements during the early 20th century in Europe, thereby creating a long-term association between low inequality and high centralization that, for a large subset of cases, remained stable throughout the century. We develop a theoretical argument as to why inequality should lead to lower levels of coordination and test it against competing hypotheses on the basis of a database on eleven OECD nations between the 1910s and the 1950s.

 A cursory overview of recent scholarship on inequality suggests that it is institutional in nature. Wage bargaining institutions explain pay inequality, electoral institutions drive the politics of redistribution, as do different types of federalism and decentralization of political authority.[[1]](#footnote-1) The recognition of the importance of institutions in explaining distribution and redistribution is clearly on the rise.[[2]](#footnote-2) However, while most of the recent comparative political economy literature has emphasized the causes of inequality,[[3]](#footnote-3) we want to return to one of the main themes in politics: the analysis of how inequality affects coordination and, ultimately, democracy and representation (see Schattschneider 1960 or Dahl 1971).

Existing data constraints reduce our historical and geographical breadth and limit our universe of reference to, at best, twenty advanced industrial societies for the last three decades. More importantly, our observations for the post-1973 period represent a specific sub-period of a longer process in which causality might work in very different ways. This is a point made forcefully in a recent article by Stasavage and Scheve (2009), whose analysis of inequality data based on the share of top 1% of the income distribution (as documented from available tax records in Atkinson and Piketty 2007) casts doubt on the alleged egalitarian effects of certain economic and political institutions. Making use of this new source, Stasavage and Scheve (2009) point out that the downward trend in the top income share started before these institutions were adopted, thus opening new questions on the direction of causality and the actual role of institutions such as wage coordination agreements in promoting and/or securing equality. This brings us back to endemic issues of endogeneity and to the need to extend our historical breadth to fully establish the nature of the causal links among institutions, political choices, and distribution.

This paper extends this line of work. We posit that to understand the observable associations between institutions and inequality today, it is critical to see the selection of economic institutions, and in particular wage bargaining centralization agreements, as the outcome of a distributive conflict in which inequality itself plays a prominent role. The argument goes as follows. Overall levels of economic coordination build, respectively, on the coordination within labor and capital. That is to say, before a large scale nationally binding agreement between peak capital and labor organization occurs, labor and employer organizations must overcome a collective action problem within each specific factor. Unions must agree to coordination amongst themselves first, prior to adopting coordination with capital. Likewise, employers have a choice between negotiating with labor individually or adopting a common position in advance. Herein lies the specific focus of this paper. We argue that the resolution of these conflicts is to a large extent a function of the levels of inequality: higher levels of concentration of income at the top end exacerbate the distributive trade-offs associated with economic coordination and hence reduce the likelihood of coordination between capital and labor. By contrast, lower levels of inequality ease the distributional trade-off faced by workers and employers. As a result, decreasing inequality facilitated the adoption of encompassing wage centralization agreements during the early 20th century in Europe, thereby creating a long-term association between low inequality and high centralization that, for a large subset of cases, remained stable throughout the 20th century, as documented by a large empirical literature.

By endogenizing economic coordination with respect to inequality, this article contributes in various ways to the literature on comparative politics and political economy. Primarily, the paper contributes to the comparative study of the origin and evolution of institutions (Thelen 2005). By identifying levels of equality as a necessary condition for coordination to emerge and persist over time this paper highlights a potential engine behind institutional change among coordinated market economies. With high levels of inequality, the incentives to challenge and/or abandon pre-existing coordination agreements increase. In this paper we argue that higher levels of inequality nourish institutional changes that in turn will contribute to a larger spread in the overall income distribution.

By exploring this process, our analysis sheds light on the causal links between economic institutions and income inequality over the long term, thus contributing to tease out chronic issues of causal identification in the existing literature. This has implications for several literatures, including those on the origins of varieties of capitalism and production regimes (Hall and Soskice 2001) and on the political origins of distribution and economic inequality (Iversen and Soskice 2009; Beramendi and Anderson 2008; Stasavage and Scheve 2009). Additionally, the paper also helps us understand the historical basis of specific country configurations which in more recent times have been able to overcome the equality-growth trade-off (Pontusson 2006; Kenworthy 2008).

The remainder of the paper is organized as follows. First, we describe our dependent variable, namely the patterns of economic coordination during the early 20th century. Second, we build a theoretical argument for the reasons why inequality is a major factor conditioning the incentives of capital and labor to pursue or reject these agreements. Third, we develop a set of exploratory analysis of the relationships implied by our theoretical argument. Fourth, we develop a multivariate analysis of the relationship between inequality and labor market coordination on the basis of data from eleven OECD nations between the 1910s and the 1950s. In this section we also test for alternative arguments about the origins of wage bargaining institutions. Finally, we draw the main implications from our results and point to additional lines of research.

# 1. Patterns of Coordination in the First Half of the 20th Century

The central claim of this paper is that the levels of inequality in a country are a very important determinant of coordination in the labor market. While we will explain the reasons for this relationship in more detail below, we start our analysis by describing the patterns of labor market coordination that we find in our sample. We use a measure of coordination between employers and unions provided by Martin and Swank (2008). It captures the centralization of collective bargaining between unions and employers. The variable receives scores between 1 (when collective bargaining centralization is low) and 3 (when it is high), and the coding is done in .5 increments.[[4]](#footnote-4)

## [Table 1]

Table 1 presents our data for collective bargaining coordination. The first thing to note about our collective bargaining data is the limited number of countries that they capture. Although Martin and Swank’s data are available for 16 nations, the availability of our inequality variable (to be described in detail below) limits our analysis to 11 countries: Australia, Canada, France, Germany, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the UK, and the USA. With some exceptions, we have coordination data for 4 decades: 1910s, 1920s, 1930s and 1950s. Although the observations are understood to reflect coordination in these decades, as Martin and Swank make clear, they reflect scores circa 1914, 1925, 1938 and 1955.

The data reflect a substantial amount of cross-national variation. The average collective bargaining coordination level for all our countries is 1.59. The countries characterized by low collective bargaining coordination are Australia, Canada, the USA, the UK, and France and New Zealand (until the 1950s). The countries with high levels of collective bargaining coordination are Sweden, and, starting in the 1930s, Germany, the Netherlands, Norway, and Switzerland. Also, there appears to be a considerable amount of within-country temporal variation in Table 1. The majority of countries experience an increase in collective bargaining coordination from the 1910s to the 1950s. This is the case in Australia, France, Germany, the Netherlands, New Zealand, and Switzerland. In Canada, the UK and the USA, collective bargaining coordination does not change at all during the period under analysis. Finally, in Norway and Sweden, collective bargaining coordination increases until the 1930s, but experiences a slight decline since then until the 1950s.

The paragraphs above make clear that patterns of coordination in the first half of the 20th century have been widely different. Whether we look at differences across countries or developments through time, a remarkable amount of variation emerges. In the following section, we explain why we think inequality is an important factor behind these differences.

# 2. The Argument: Economic Coordination as a Distributive Conflict

### 2.1 Different Approaches to Coordination

 The main thrust of this paper’s argument can be summarized quite simply: high levels of inequality limit the probability of collective bargaining coordination in the labor market. In this context, our argument highlights distributional considerations as a key factor accounting for cross-national differences in the levels of economic coordination.

Economic institutions (and, particularly, those related to the labor market) are indeed no new acquaintance to political economy for it has been the object of a rich stream of scholarship, with two aspects worthy of particular attention: the problem of (1) intra-class coordination, and (2) inter-class coordination. The former concerns the incentives and constraints facing workers, on the one hand, and employers, on the other, to coordinate with other members within their same class. The latter concerns the incentives and constraints of relatively unified class actors to coordinate with one another on labor market and economic issues. Both problems are in turn directly affected by the expected behavior of governments, which constitutes an additional dimension to the origins of economic coordination (see Hernandez and Rueda 2008). In grappling with these relationships, previous scholarship shows two features. First, most authors, for the sake of analytical tractability, normally endogenize one of these factors, while choosing to exogenize the rest. Second, the general context is one of bias in focus towards labor and in detriment of employers despite the fact that, given the relational nature of the institution, the three dimensions involved, namely coordination within labor and capital, and coordination between the latter two and left-wing governments, are bound to covary (Iversen 1999; Hernandez and Rueda 2008). Within these coordinates, one might distinguish four logics in existing accounts of labor market coordination.

The first logic is *structuralist* (Gerschenkron 1962; Kurth 1979). It posits that the nature of economic institutions is a function of the level and timing of industrialization (Wilensky 2002). In addition, arguments placing trade dependence as the key explanatory variable of wage bargaining coordination also show a certain structuralist flavor in as much as actors’ preferences depend on their position in the international economy. Ultimately, outcomes reflect differences within nations in the relative distribution of beneficiaries (and cost bearers) of exposure to trade (Cameron 1978; Katzenstein 1985). Structuralist accounts do not fully flesh out the specific mechanisms behind the association between late industrialization/international openness and economic coordination. As a result, subsequent authors developed a number of alternatives.

The notion of coordination as an efficient institutional device to internalize externalities and prioritize society’s interest over those of specific interest groups (Olson 1965; Lange 1984) provides a second framework to understand economic coordination. Within this family of arguments, actors’ motivations appear primarily driven by a concern for the overall *functional efficiency* of the economy. In a well-known contribution, Calmfors and Driffill (1988) considered the macroeconomic effects of three levels of wage bargaining. They argued that good economic performance would result if wage bargaining took place either at the individual company or at the national level. In the first case the actions of unions would not be powerful enough to distort efficient market outcomes, while in the second unions would be encompassing enough to act in favor of the interests of society as a whole. The worse macroeconomic performance would be associated with wage bargaining at the industry level because wage bargaining would be powerful enough to affect the market equilibrium outcome while not being encompassing enough to take society’s interests into consideration.[[5]](#footnote-5) The pay-off awaiting social partners who engage in collective action is not only the possibility of good macroeconomic outcomes (as shown by, among others, Alvarez, Garrett and Lange 1991) but also a more equal society free of industrial unrest. Note as well that the pursuit of society’s interest may also work in favor of employers as a class. If adopted, employer’s coordination offers a risk-sharing mechanism. Mares (2003) and Swenson (1991, 2002) show how coordination with labor, and support for the welfare state, is in the interest of employers commanding firms of small size in particularly exposed sectors. Moreover, external conditions may provide employers with additional reasons to embrace coordination. Faced with a highly mobilized labor force, presenting a united front increased the bargaining power of the business community (Martin and Swank 2008). Finally, there may be efficiency gains for employers themselves, not only for society, as they can benefit from coordination also in terms of training and high-skilled production. In coordinated labor markets employers are more likely to invest in general training for workers because poaching and free riding is then institutionally limited (see, Acemoglu and Pischke 1998, Hall and Soskice 2001, and Thelen 2004). In sum, the efficiency gains associated with improved macroeconomic conditions should spur coordination not only among worker’s organizations, but also among employers.[[6]](#footnote-6) Indeed, both are a pre-requisite for centralized wage bargaining to occur, since fragmented factor representation renders institutionalized economic coordination very unlikely.

A third logic, *partisan* in nature, shifts the focus from efficiency to politics as the key to understand the origins of these agreements. According to this logic, coordination emerges as a political exchange among actors concerned first and foremost with their own welfare. In “ideal type” terms, unions commit to wage moderation and social peace in return for the provision of a generous welfare state by social democratic governments. Capital accepts the development of a large public insurance system in exchange for the unions’ moderation and the availability of a well-qualified labor force. Capital also commits to stable investment and long-term growth in return for the social democratic government’s promise not to tax their benefits to finance the welfare state (Cameron 1984; Wilensky 2002; Przeworski and Wallerstein 1988; Cusack and Beramendi 2006; Beramendi and Rueda 2007). Given the potential benefits in place, left government plays a critical role in the formation and sustainability of this agreement over time. As a result, the exchange described above builds upon strong ties not only between left government and labor (Wallerstein 1989; Western 1997) but, as importantly, between left government and capital (Hall and Soskice 2001; Hernandez and Rueda 2008). Left governments value the potential for consensus-building of peak business associations, and this provides further incentives for business to coordinate (Windmuller and Gladstone 1984). Moreover, when there is more than a single interest group, the government must weigh the credibility of the various groups and decide what advise to consider and what to dismiss. Left governments therefore may promote business coordination so that they can use competing information sources to its advantage when lobbies have conflicting policy aims (Krishna and Morgan 2001). Regardless of the specific motivations at work, employer coordination is, according to this logic, the reflection of the incumbent’s partisan concerns.

While the efficiency and partisan logics are built primarily around the nature of specific actors’ preferences, a fourth stream of scholarship points to yet another relevant factor, namely the political institutions through which contending preferences are aggregated. Wilensky (2002: 119) discusses electoral systems as a cause of corporatism, pointing to the fact that “historically the PR compromise in 11 out of our rich democracies preceded the corporatist compromise.” According to this *institutional* logic (Lijphart 1984), PR systems foster consensual bargaining among interests groups, thereby facilitating the formation of democratic corporatist arrangements and economic coordination more generally. More recently, Martin and Swank (2008) have revisited this claim to argue that the corporatist organization of employers is a positive function of the level of proportionality in voting, as well as an inverse function of fragmentation of political power (federalism/decentralization). They offer a mechanism beyond the consensual nature of PR systems. To the extent that each party has a dedicated business base, the fact that a large number of parties is necessary to change policy in PR systems, facilitates the emergence of policy commitments between parties first, and, subsequently among employers associations. Federal institutions, in contrast, work to undermine the feasibility of these commitments as national employer organizations lack political clout.

There is no gainsaying that each and every one of these arguments illuminates some aspect of the processes behind the origins and workings of economic coordination. We contend, however, that to understand the observable associations between institutions and inequality today, it is critical to see the adoption of labor market institutions, and in particular wage bargaining centralization agreements, as the outcome of a distributive conflict in which inequality itself plays a prominent role. Thus, we propose an alternative *distributional* logic that situates income inequality at the time of negotiation of the very first wage bargaining centralization agreements as a key explanatory factor of economic coordination.

We follow in the footsteps of a relatively small number of very insightful models. Common across these models is the recognition that precisely because collective bargaining produces numerous externalities (e.g., between high and low skill producers of good A, between producers of A and producers of either complements or substitutes of A, between current producers and potential entrants in the market for A, and between workers and society at large), the prospect of wage bargaining centralization triggers multiple distributive conflicts within labor (Przeworski and Wallerstein 1982), employers (Mares 2003) as well as between them.

Wallerstein (1990) focuses on the tension between high and low wage earners and its implications for the dynamics of bargaining centralization and its ability to internalize the cost of externalities. Swenson (1991) and Iversen (1999), among others, focus on the importance of international openness to explain the cleavages within labor and the cross-class alliances between those workers and employers exposed to international competition. More recently, Lee and Romer (2005) place the distribution of skills at center stage by linking the level of inequality among workers to the incentives of the “pivotal” worker to coalesce with either the low skill, low earning workers or with high skill earners and capital owners. The model predicts that when inequality is either very high or very low, the former occurs, thus giving birth to a highly unionized labor market. In turn, intermediate levels of inequality are the breathing ground for majorities in favor of more deregulated, competitive labor markets. Finally, Ahlquist (2010) creatively makes use of recent analytical models of federalism and decentralization to revisit the question of confederation within labor, a prerequisite for the bargaining with employers to occur. His analysis, the closest to our interests, emphasizes the trade-off between the scope and the size of union confederations.[[7]](#footnote-7) Distributional concerns are at the core of this trade-off. Large confederations are likely to be more heterogeneous in terms of the endowments of their members. Along with such heterogeneity comes an exacerbation of distributive trade-offs. If the poorer members of the union use the binding rules of the confederation to make demands from the wealthier members that go beyond what the latter find beneficial, there is no incentive for the wealthier sector of the labor to join or remain in the confederation.

This general logic applies broadly to problems of integration in other settings. In the context of a study of the determinants of endogenous fiscal policy in complex unions, Beramendi (2007; 2011) uses a similar framework to understand the conditions under which different members of an economic union decide to oppose/endorse the adoption of a centralized redistributive system. In pure income terms, and in the absence of cross-regional economic externalities, wealthier members of any given union have no incentive to delegate fiscal policy decision-making to bodies whose decision is, in part or in full, affected by the preferences of the poorer members of the union. Our analysis below shows that, much like the issues of fiscal policy integration in complex unions or the problem of confederation within labor, distributional concerns are central to understand the incentives of different types of workers and firms to coordinate their wage bargaining strategies with one another.

 When thinking about the institutional design of their economy, employers and workers face a choice between three options: full coordination (C), no coordination at all (D), and a mixed-system in which salary and contribution decisions remain decentralized at the company level but there exist inter-company transfers and coordination at the sectoral level (H). Substantiating the notion that economic coordination is essentially a distributive issue requires analyzing how pre-existing distributive configurations shape the political feasibility of such arrangements.

###  2.2 Our Argument

 In developing the argument, we consider an economy with just two firms (f), A and B, in which economic coordination is an institutional arrangement that generates costs and benefits at the level of both individual workers and firms. The model analyzes these two dimensions by studying how they shape individual workers’ preferences. The analysis builds on the assumption that workers and their representative organizations cannot be forced into comprehensive coordination agreements.

At the individual level, coordination means wage compression, which poses a direct cost (and benefit) to workers. For the upper half of the distribution, wage compression is the share of earnings (wi) that workers forego by being part of agreements that rest on wage restraint. For the lower half of the distribution, wage compression means a benefit that tops up their wages up to a level it could not have reached without coordination. In this respect, wage compression under coordination is akin to progressive taxation. It represents a tax (t) for those whose individual abilities would have produced an uncoordinated higher wage and a benefit (b) for those whose individual abilities would have produced an uncoordinated lower wage. In the model below, we therefore denote the costs and benefits of coordination, respectively, with t and b. The model also assumes that individuals contribute to the cost of coordination when they are doing well (good state of the world) and benefit from it when they are below the mean of the individual income distribution (the bad state of the world). All workers, even if at present in the good state of the world (above the mean), are vulnerable to the bad state of the world (whatever their personal characteristics, they face unemployment spells, salary reductions, transitions between sectors, etc). More formally, individual consumption is defined by  in the good state of the world and by *ci=wi+b* in the bad state of the world, where  represents the benefits individuals receive if in the latter. In addition, we assume a budget constraint given by, where  is the average output in the national economy, and the presence of efficiency costs of coordination (deadweight losses captured by*).[[8]](#footnote-8)*

 At the firm level, coordination poses a redistributive conflict between companies with varying degrees of output per worker. The intuition is as follows: coordination implies unequal firm-level contributions to a larger pool of firms with access to a number of “club goods”. The form these contributions take includes investments in technology and information, subsidies, financing interest representation, delegating sovereignty over bargaining with other sectors, price regulations, etc. Each of these instruments is costly, with wealthier, more productive firms bearing a share of the burden of relatively less successful producers. These transfers implicit in coordination are denoted by T below. Critically, the model explores how these company characteristics, and their distributive implications, feed back into the preferences of workers. Low wage earners in rich and poor firms are bound to evaluate these transfers differently (as are high wage earners in both kinds of firms). In other words, the implicit transfer between firms factors in the calculations of workers considering coordination agreements.

 To summarize, citizens face a decision about two policy instruments, namely, the level of salary sacrifice (t), and the level of resources transferred to other companies in the economy (T). The first instrument captures primarily the individual redistribution inherent to coordination through wage compression agreements. The second instrument captures the redistribution between companies also inherent to coordination. Given this setup, workers, *i*, in any given firm, *f*, in a coordinated economy have the following utility:



The following insights emerge from this expression:

1. any worker in any firm with income above *wu* will oppose coordination
2. any citizen anywhere with income at or below  will want *t\*=*1;
3. ;
4. the more citizens below *wu* the greater the demand for redistribution;
5. a rise in average income of firms in the economy raises the demand for redistribution between workers within firms.
6. It is also clear that all citizens in firms with will support the highest value of *T* feasible, and those where will want *T =* 0.

In a decentralised, uncoordinated world, the solution to the maximization problem yields:

 

and all the corresponding results apply within firms.

## [Figure 1]

These results map formally onto the distribution of preferences for workers in different types of firms displayed in Figure 1. Critically, however, the political implications of inequality depend on our assumptions about the decision rule between workers. Under a standard median voter framework (Meltzer and Richard 1981), the position of the median worker determines the demand for redistribution/coordination. It would follow from this approach that the larger the gap between the earnings of the median worker and the average level of earnings, the stronger the demand for coordination. Our analysis on the effects of inequality on preferences for coordination proceeds on different grounds: we assume that if a sufficiently large group of workers within a firm opposes coordination, the adoption of a new institutional framework for the economy will not take place.

 Consider first the incentives of low-wage earners in relatively less successful companies. They would clearly benefit from encompassing wage compression agreements as they would be the direct beneficiaries at the expense of high-income earners ( as). Moreover, they would also benefit from their companies receiving transfers from other sectors in the economy (T>0). Their preferences will depend on the combination of the size of the pool of resources and the expected level of redistribution implicit in different coordination agreements. This in turn will depend on the structure of salary differences within and between firms. For these workers, full economic coordination (C) is the first preference, for the reasons outlined above. Their second best option would be a mixed system (H), in which inter-company transfers out of the base of the wealthier (T>0) companies take place, thereby increasing resources to allow wage compression. Finally, they would be worst off under fully decentralized economic institutions (D). Therefore, low-wage earners in poor companies have institutional preferences that would rank C>H>D.

The preferences of high wage earners in successful, wealthy firms are very different. Indeed, their preference ranking is the reverse of that of low-wage earners in poorer firms, namely D>H> C. As one moves up in the income scale, the tolerance towards wage compression among this particular subset of citizens declines ( as ).[[9]](#footnote-9) In addition, they have no incentive to accept any transfer of their resources towards an inter-company common pool of resources that poorer firms are bound to dip into (T=0). Thus, they are better off under a fully decentralized system (D) in which t is kept as low as possible. Under these circumstances, their second best option is a system that minimizes wage compression, even if it is at the expense of side payments to other firms (H). Obviously, the smaller these side payments the better, as they would optimally like to see T=0. By implication, full fiscal coordination (C) would be their last choice. In addition to opposing the tax implicit in the wage compression ensuing from coordination agreements, these workers have little incentive to support costly institutional investments in arrangements geared towards general benefits like more egalitarian skill acquisition. Put differently, inter-company transfers (like vocational training) are not in the interest of these (mostly) high skilled workers. They rather use these funds to invest in, for example, company specific technology from which they are likely to reap larger returns.[[10]](#footnote-10)

We turn now to high income earners in relatively poorer companies. Their approach is driven by the fact that their individual and firm ascriptions do not overlap. On the one hand, they want to minimize the costs of wage compression ( as), at the same time, they want to extract as much rent from wealthier companies (T>0). This combination triggers a dilemma for this group of employees. A fully centralized system will liberate them from some of their fiscal burden. This benefit, however, may be offset by the need to cope with a larger pool of heavily mobilized low income workers, which may result in a scenario in which the cost associated with wage compression actually become higher. Faced with these concerns, the optimal fiscal structure for high income earners in poor firms is one that keeps control over the degree of wage compression and maximizes redistribution of resources between firms in a hybrid system (H). In turn, the worst case scenario for this subgroup of citizens would be a fully coordinated system (C) in which they are exposed to the redistributive demands of a coalition of low income workers across all firms. Therefore, their preferences rank yields H>D>C.[[11]](#footnote-11)

 Finally, low income workers in powerful companies need to balance the amount of additional resources they would be able to extract by coalescing with other low income workers across society against the loss they would incur because of a change in their relative position within a potential economy-wide wage agreement. Such loss would take the form of an implicit transfer of resources from the low income earners in the rich company to the low income earners in other companies. In determining the size of this loss the key factor is the skew of the wage distributions within companies. If the rich company is relatively equal, full coordination would imply a large transfer from low income earners in top companies to other less successful ones. As a result, given a relatively equal wage scale, low income workers put firm before class: decentralized economic institutions (D) would be preferred to any system implying any kind of transfer to other firms. In turn, their second choice would be to continue their alliance with high wage earners in support of a system that provides some transfers but respects wage setting autonomy at the company level (H). Accordingly, their preference ranking would then be D>H>C. In contrast, if the rich company had a very unequal distribution of earnings, then a large share of the low wage earners would remain net beneficiaries under full coordination. Only under these circumstances would class allegiances be more attractive than company ones.[[12]](#footnote-12)

## [Table 2]

Table 2 summarizes worker’s preferences given their relative position in terms of firms and earnings. The central insight emerging from the analysis is clear: higher levels of inequality between and within firms pull workers’ preferences on coordination apart, thereby making economic coordination itself less feasible. If the concentration of income at the top end of the distribution imposes a critical constraint on the possibility of economic coordination, one should observe that coordination emerges and survives only when the distribution of resources in society is more even. In other words, lower levels of income inequality should be associated over time with a higher likelihood that coordination will succeed. The next two sections provide an empirical evaluation of this argument.

# 3. Empirical Analysis: Exploring the Relationship between Inequality and Coordination

While we will provide a more systematic test of our hypothesesin the next section, a preliminary exploration of the plausibility of our theoretical claims is in order. We propose to do this by looking at the relationship between inequality and coordination in the first half of the 20th century. In previous sections, we have provided a detailed account of what our measure of coordination consists of and also a detailed description of the patterns of coordination in our sample. Our measure for inequality comes from three main sources Atkinson and Piketty (2007), Aaberge and Atkinson (2008), and Leigh (forthcoming).[[13]](#footnote-13) Our measure of inequality captures the share of income held by the richest 1% of the population, derived from tax return data. Although there are some complications inherent in these data (for example, do individuals underreport income to tax authorities?), we are convinced by the arguments in, among others, Atkinson and Piketty (2007) and Leigh (forthcoming) about the data’s success at capturing inequality. In the words of Leigh, panel data on top income shares are “a useful substitute for other measures of inequality over periods when alternative income distribution measures are of low quality, or unavailable” (forthcoming: 1). Several characteristics of the data, however, should be kept in mind: (1) the data are based on individual tax return data and its units vary (the tax unit is the individual, married couple, or household); (2) the income total used to derive the top income shares in each country is the sum that would have been reported were all adults to have paid tax (Leigh forthcoming: 9); and (3) the measure for income excludes capital gains (for Australia and New Zealand, a measure excluding capital gains is not available, so for these countries it include realized capital gains to the extent that such gains were taxable).[[14]](#footnote-14)

A critical issue in this paper concerns the quality of these data as a proxy for inequality between firms (the second dimension affecting individual preferences for redistribution in our paper). This emerges from the fact that a direct comparable measure of inequality between firms during the first half of the 20th century (be it in terms of assets, number of employees, or share of the market) is yet to be compiled. The question is simple: why should we assume that inequality among firms is a significant part of the measure of inequality used in our analysis (top 1% share of income)? There is no a priori reason to be certain that the measure we have chosen, mostly on grounds of data availability, is a good reflection of both inequality dimensions (earnings and company) emphasized in our argument. To alleviate this concern we explore the connection between our measure of inequality, the top one percent share of income, and a direct measure of inequality between firms, namely the level of inter-industry (average) wage inequality. The latter is defined as the share of overall inequality that is to be attributed to differences among firms in the average level of pay.[[15]](#footnote-15) The companies analyzed belong to the manufacturing sector. The intuition behind this analysis is as follows: average levels of pay by company reflect average levels of productivity. Therefore, a measure of interindustry wage inequality effectively captures the distance between companies in terms of average levels of productivity. For our proxy to be legitimate, the levels of inter-industry productivity differences and the top income shares should display a strong correlation over time and space throughout the period for which we have data on both dimensions. Figure 2 explores this link for the countries in our sample during the period 1975-2002.

## [Figure 2]

The association displayed in Figure 2 is reassuring. The x axis displays the level of interindustry wage inequality whereas the y axis captures the top income share by country-year. Clearly, there is a strong positive association between the level of interindustry wage inequality and the top income shares in the OECD between 1975 and 2002. The correlation coefficient is 0.70, and a time series cross-sectional regression indicates that the level of inter-industry inequality alone accounts for one half of the total variance of top income shares across OECD countries in the last quarter of the century.[[16]](#footnote-16) These are, in our view, solid grounds to assume that the top income shares significantly reflect the levels of inter-industry inequality during the historical period of interest in this study.

We have explained in the previous sections why we think that greater levels of inequality should be associated with a higher likelihood of coordination in the labor market. Our theoretical claims have clear empirical implications: we expect low shares of income held by the richest 1% of the population to be associated with high levels of coordination. Figure 3 illustrates the relationship between coordination and inequality in the 1910s, 1920s, 1930s, and 1950s. Because of the availability of inequality data, a few observations are lost from those presented in Table 1.

## [Figure 3]

Figure 3 presents the levels of coordination (in the x axis) and the decade averages for the share of income held by the richest 1% of the population (in the y axis) for all the countries and decades in our sample.[[17]](#footnote-17) The line represents a simple bivariate regression linking the two variables. The figure provides some support for our hypothesis. It is clear that high levels of inequality are associated with low levels of coordination, while low levels of inequality correspond with high levels of coordination. Let’s focus on some cases in the figure. France from the 1910s to the 1930s is one of the countries characterized by very high levels of inequality (the share of income held by the richest 1% of the population is between 15% and 20%). The figure also shows that, consequently, the levels of coordination were very low during this period (they equaled 1 from 1910 to 1920 and 1.5 in 1930). France is not unusual in having this combination of high inequality and low coordination; Australia, the USA and New Zealand from the 1910s to the 1930s and Canada in the 1920s and 1930s are very similar. On the other side of the spectrum, we have Norway and Sweden in the 1930s and 1950s, and the Netherlands and Australia in the 1950s. These country-decades are characterized by low levels of inequality (the share of income held by the richest 1% of the population is between 7% and 13%) and high levels of coordination (scores higher than 2.5). The negatively sloped line is consistent with the thrust of our argument, with decreasing levels of inequality promoting higher levels of coordination and most observations concentrated around the line.

The second implication of our theoretical claims is that changes in inequality affect the probability of coordination. We have argued that a high increase in inequality should make individuals less likely to believe that they have anything to gain from coordinating. If inequality is perceived to be on the wane, on the other hand, individuals are more likely to perceive coordination as advantageous. Given the strong contemporaneous decade relationships shown in Figure 3, it is pertinent to ask whether the changes in inequality experienced in these countries in the first half of the 20th century are a good predictor of the levels of coordination at the end of our time seriers (the 1950s).

To test this claim, we first calculate the percentage change in inequality from decade to decade and then we calculate the average decade percentage change in each country in our sample. For example, in the USA, the average share of income held by the richest 1% of the population was 17.37% in the 1910s, 16.98% in the 1920s, 15.87% in the 1930s, and 9.49% in the 1950s.[[18]](#footnote-18) This means that inequality decreased by around 2% from the 1910s to the 1920s, by around 7% from the 1920s to the 1930s, and by around 28% from the 1930s to the 1950s. The average decade percentage change in inequality in the USA is, therefore, a 12.5% decrease.

## [Figure 4]

Figure 4 presents the average decade percentage change in inequality plotted against coordination for each of the countries in our sample in the 1950s.[[19]](#footnote-19) Again the figure supports our argument. The greater the decrease in inequality, the greater the coordination in the 1950s. In the Netherlands, for example, inequality decreased by a decade average of around 30% from the 1920s to the 1950s (or -.3 in the figure). The level of coordination in the 1950s was the highest in the sample (a score of 3). In the USA, on the other hand, inequality decreased by a decade average of only 12.5%, and coordination remained at a low score of 1 in the 1950s. In the figure, Canada, New Zealand, France, and Switzerland all experience low decreases in inequality (below 10%) and therefore possess average and below levels of coordination in the 1950s. In Australia, Norway and the Netherlands, inequality decreases more and coordination is high in the 1950s. The UK and Sweden emerge as outliers, since they experience large decreases in inequality that are not matched by high levels of coordination in the 1950s. Australia, on the other hand, is a particularly good example of the relationship we hypothesize. It has low inequality levels from 1910s to the 1930s, which initially are accompanied by very low levels of coordination. By the 1950s, however, the low levels of inequality in Australia are matched by high levels of labor market coordination.[[20]](#footnote-20)

# 4. A Multivariate Analysis of the Relationship between Inequality and Coordination

### 4.1 Model Specification

While the previous section’s preliminary analysis supports our theoretical argument, it follows from our discussion above that labor market coordination may be the result of several additional variables, as suggested by a number of authors in the comparative political economy literature. Given the constraints imposed by data availability, our approach to alternative hypotheses in the multivariate analysis runs as follows.[[21]](#footnote-21) In an effort to account for the *structuralist* logic, we include controls for country size,[[22]](#footnote-22) a measure of GDP per capita[[23]](#footnote-23) that is meant to capture the level of industrialization during the period of interest, and a measure of international openness.[[24]](#footnote-24) The latter two also serve as indirect controls for the evolution of the economy, and together with a measure of union density,[[25]](#footnote-25) tap on some of the aspects of interest from the perspective centered around *functional efficiency*. Our control for union density also helps us differentiate between the distributional motives implied in our variable of interest and what is an exogenous factor putting pressure for employers to organize (simply as a defensive response to labor coordination). In addition, to incorporate the *partisan* logic into the empirical estimations, we also include a measure of the ideological profile of government incumbents.[[26]](#footnote-26) Finally, the *institutional* logic is directly captured by the same measures of federalism[[27]](#footnote-27) and proportionality[[28]](#footnote-28) used by Martin and Swank (2008).

 To identify the effect of inequality on the level of economic coordination in the presence of this set of controls, we adopt the following strategy. Given the dynamic nature of the data (and to make our results comparable to those in Martin and Swank 2008), we introduce all our explanatory variables as averages for the 5 years previous to the measure of coordination. As we mentioned above, although the observations are understood to reflect coordination in the entire decade, they reflect scores circa 1914, 1925, 1938 and 1955. Our measures for the explanatory variables look at the averages of the 5 years before these dates. For example, the 1950s measures of coordination are the scores for 1955, so our explanatory variables measure the averages from 1950 to 1954. This makes our results less vulnerable to accusations of reverse causality (i.e., the suggestion that coordination in fact determines inequality) since, given the temporal variance of inequality, it seems unlikely that coordination at time *t* would affect inequality in the previous 5 years.

As indicated above, our dataset combine time-series and cross-sectional variation. To analyze our data, we estimate two different models. First, we run the following model:

*Yit = β0 + β1X1it-1 +* … + *βnXnit-1 +* ε*it*

where *β0* represents a general intercept, *X1* to *Xn* are the explanatory variables, *β1* to *βn* are the slopes of the explanatory variables, and ε*it* denotes the errors. Our explanatory variables are subscripted as *t-1* to signify that they are the average of the previous 5 years.

A modified Wald test for panel-specific heteroscedasticity revealed a significant amount of heteroscedasticity in our data. We therefore estimate ordinary least squares (OLS) models with panel-corrected standard errors (PCSEs).[[29]](#footnote-29) Beck and Katz (1995) show that, in the absence of autocorrelation, PCSEs are consistent even when there is panel-specific heteroscedasticity. Our model also assumes that the errors are contemporaneously cross-nationally correlated.

Secondly, we also estimate:

*Yit = β0 + β1X1it-1 +* … + *βnXnit-1 + Ni +* ε*it*

where *β0* represents a general intercept, *X1* to *Xn* are the explanatory variables, *β1* to *βn* are the slopes of the explanatory variables, *Ni* are country fixed effects, and ε*it* denotes the errors.

In this model, we introduce fixed effects to deal with country-specific omitted variables. This make a good deal of sense in comparative political economy analyses since there are bound to be country-specific factors that matter to the outcomes of interest but cannot be introduced into the model (specific historical circumstances, difficult to capture institutional developments, etc). In dealing with these country-specific factors, however, fixed-effects specifications focus on the within-unit share of the variance in the data (in our case, over-time patterns of association among our variables). This, when put together with the fact that our country series are very short (we have a maximum of 4 observations per country), severely limits our fixed-effects analysis.

### 4.2 Findings

Table 3 presents our first set of results. The dependent variable is the level of collective bargaining coordination and we estimate 7 different models. In each of these models we add an increasing number of the explanatory variables described above. And we use two alternative measures of electoral disproportionality. In model (1), we introduce only our measure of inequality as an explanatory variable. In model (2), we add the variables measuring the proportionality of the electoral system (as the actual difference between votes and seats), federalism, international openness and union density. Model (3) is the same as model (2), but it uses the alternative measure of proportionality (as categorical electoral system). In model (4), we reproduce model (2) and add variables capturing the size of a country and its economic development (measured as log of GDP per capita). Model (5) is the same as model (4), but it once again uses the alternative measure of proportionality. Finally, models (6) and (7) add one more variable, our country-specific measure of Left party support.

## [Table 3]

The most important point to make about Table 3 is that, as hypothesized in previous sections, inequality emerges as a very significant determinant of employer coordination. The share of income held by the richest 1% of the population is associated with lower levels of coordination in a highly significant way (at higher than the 1% level of confidence, no matter what model we look at). In fact, the number of control variables that we throw into the analysis does not fundamentally change the estimate of the effect of inequality on employer coordination since the coefficient ranges from -0.054 to -0.0800. If we take the coefficient of model (1) as our guide, our results suggest that changing the level of inequality from 9.38 (the level in Norway in the 1930s) to 15.865 (the level in the USA also in the 1930s) would promote a increase in collective bargaining coordination of 0.5 units (as a reminder, our measure of collective bargaining coordination ranges from 1 to 3).

The estimates for the control variables in the models are not as important to the main argument in this paper, but Table 3 still presents some interesting findings. Our results provide some confirmation of Martin and Swank’s (2008) argument about proportionality, but only when we use the electoral system categorical variable (and not completely, see model (5)). When we use the, arguably, more accurate measure of the actual difference between votes and seats, the effects of proportionality become more ambiguous. They are negative and significant in model (2), as Martin and Swank hypothesize, but insignificant in models (4) and (6). Moreover, the effects of federalism do not seem to support Martin and Swank (2008). They are insignificant (or positive and significant, the opposite of what Martin and Swank hypothesize) in all the models.

Our results also show international openness to be mostly significant and consistently negative. This seems to contradict the generally accepted views on the effects of trade. Economic openness and international dependence, Katzenstein argues, establishes a “compelling need for consensus” (1985: 34). Our results seem to suggest this is not the case.[[30]](#footnote-30) Table 3 also shows union density to be statistically insignificant predictors of employer coordination and that a country’s area and GDP per capita are negatively associated with the levels of collective bargaining coordination (although the significance of these findings goes away when we use the categorical control for proportionality, which has little within-country variability). Finally, our results show that Left party support is not a significant determinant of collective bargaining coordination.

## [Table 4]

Table 4 presents the results from our country fixed effects analysis. In these regressions we have eliminated those variables that exhibit no (or very little) within-country variation. They include the electoral system measure of proportionality, federalism, and Left party support. They leave 3 models to be estimated in Table 4. Once again, the most important point to make is that inequality emerges as a very significant determinant of coordination. In Table 4, the share of income held by the richest 1% of the population is associated with lower levels of coordination in a highly significant way (at higher than the 1% level of confidence, no matter what model we look at). In fact, when we look at within-country variation (admittedly, in a limited way, given the short length of our time series), inequality is one of the very few significant predictors of coordination (the only additional one is union density in model (10)). The control variables do not fundamentally change the estimate of the effect of inequality on employer coordination since the coefficient ranges from -0.50 to -0.057.

# 5. Conclusion

The role of economic institutions in shaping the politics of redistribution and inequality has been the object of careful scholarly scrutiny over the past two decades. In line with the shift of attention from the exogenous effects of institutions to its endogenous nature, we have developed an argument about the origins of coordination in the labor market. Our argument differs from previous contribution in that it places inequality and the distributive conflicts associated with it as the key factor to understand the patterns of variation in the levels of coordination, both cross-nationally and over time. Our empirical results suggest that our measure of inequality is the one predictor of coordination whose effects remain substantively and statistically significant regardless of the specification or econometric strategy adopted. Higher levels of inequality limit the possibility of coordination agreements because they exacerbate the distributive trade-offs among individuals.

These results have a number of implications for the way the field conceptualizes the relationship between institutions and inequality. To identify the exogenous effects of institutions, their impact on the outcome of interest must be clearly differentiated from the conditions under which these institutions came into existence in the first place (Przeworski 2007; Beramendi 2011). Particularly if, as suggested by the findings of this paper, what is normally considered the result of coordination happens to be its primary determinant a few decades earlier. This challenge calls for a much needed increase in the historical breadth of our analyses as the only feasible strategy to identify the marginal effects of political agents and institutions over time, and therefore to establish empirically the direction of causality between inequality and political factors at different points in time. Otherwise, one runs the risk of misreading the outcome of historical selection as exogenous effects. To confront this logic, Rogowski and MacRae (2008) propose a framework in which social and structural changes alter the relative value of assets and produce changes in inequality, which, in turn, leads to institutional changes that may bring about further changes in inequality. Our analysis follows this lead and shows that at the time in which the first labor market coordination agreements were adopted, inequality played a prominent role in shaping the incentives of actors towards them. Thus, contrary to what is the dominant practice in the literature (see fn. 1-2), any consideration about the ulterior distributive effects of coordination ought to pay careful consideration to the fact that equality caused coordination in the first place.

Finally, a number of aspects of our research are in need of further scrutiny in subsequent iterations. First, while we have offered only preliminary evidence on the dynamic effects of inequality on coordination, a more systematic analysis of this contention is warranted, possibly using data spanning across the entire 20th century to evaluate if changes in inequality at *t* constitute a good predictor of changes in the level of labor market coordination at *t*+1. Second, it is plausible to think that inequality does not relate additively to some of the other determinants of coordination. Parties may have incentives to adjust their strategies under different distributive scenarios, and it is equally plausible that some of the effects attributed to political institutions vary in their scope as a result in the surrounding distribution of assets. The proper exploration of these contingencies will require richer and more nuanced data, and remains the object of future research efforts.

***References***

Aaberge, Rolf and Anthony B. Atkinson. 2008. “Top Incomes in Norway.” SSB Discussion Paper No. 552. Statistics Norway, July 2008-07-16.

Acemoglu, Daron, and Jörn-Steffen Pischke. 1998. "Why Do Firms Train? Theory and Evidence." *Quarterly Journal of Economics* 113 (1):79-119.

Ahlquist, John S. 2010. “Building Strategic Capacity: the Political Underpinnings of Coordinated Wage Bargaining.” *American Political Science Review* 104(1):171-88.

Alvarez, Michael, Geoffrey Garrett, and Peter Lange. 1991. "Government Partisanship, Labor Organization, and Macroeconomic Performance." *The American Political Science Review* 85 (2):539-56.

Atkinson, Anthony B. 2007. “The Distribution of Top Incomes in the United Kingdom, 1908-2000.” In Anthony B. Atkinson and Thomas Piketty (eds.), *Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries*. Oxford, England: Oxford University Press.

Atkinson, Anthony B. and Andrew Leigh. 2007. “The Distribution of Top Incomes in Australia,” *Economic Record*.

Atkinson, Anthony B. and Andrew Leigh. 2005. “The Distribution of Top Incomes in New Zealand.” Australian National University CEPR Discussion Paper 503.

Atkinson, Anthony B. and Thomas Piketty (eds.). 2007. *Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries*. Oxford, England: Oxford University Press.

Austen-Smith, David. 2000. “Redistributing Income under Proportional Representation.” *Journal of Political Economy* 108(6): 1235-1269.

Austen-Smith, David and Jeffrey Banks. 1988. “Elections, Coalitions and Legislative Outcomes.” *American Political Science Review* 82(2): 405-422.

Beck, Nathaniel, and Jonathan Katz. 1995. “What to Do and Not to Do with Time Series Cross-Section Data.” *American Political Science Review*, 89: 634-647.

Beramendi, Pablo 2007. “Inequality and the territorial fragmentation of solidarity.” *International Organization* 61: 783-820.

Beramendi, Pablo 2011  *The Political Geography of Inequality: Regions and Redistribution. New York, Cambridge University Press.*

Beramendi, Pablo and Christopher Anderson (eds.) 2008. *Democracy, Inequality, and Representation*. New York: Russell Sage Foundation.

Beramendi, Pablo and Thomas R. Cusack. 2008. “Diverse Disparities: the Politics and Economics of Wage, Market, and Disposable Income Inequalities.” *Political Research Quarterly*, forthcoming.

Beramendi, Pablo, and David Rueda. 2007. "Social Democracy Constrained: Indirect Taxation in Industrialized Democracies." *British Journal of Political Science* 37: 619-641.

Boix, Carles. 1999. “Setting the Rules if the Game: The Choice of Electoral Systems in Advanced Democracies.” *American Political Science Review*, 93 (3): 609-24.

Calmfors, Lars, and John Driffil. 1988. "Centralization of Wage Bargaining." *Economic Policy* 6 (April):14-61.

Cameron, David. 1978. "The Expansion of the Public Economy: A Comparative Analysis." *The American Political Science Review* 72 (4):1243-61.

Cameron, David. 1984. "Social Democracy, Corporatism, Labor Quiescence, and the Representation of Economic Interest in Advanced Capitalist Society." In *Order and Conflict in Contemporary Capitalism*, ed. J. Goldthorpe. New York: Oxford University Press.

Cusack, Thomas, and Pablo Beramendi. 2006. "Taxing Work." *European Journal of Political Research* 45 (1):43-75.

Dahl, Robert. 1971. *Polyarchy, Participation, and Opposition*. New Haven, Yale University Press.

Dell, Fabien. 2007. “Top Incomes in Germany Throughout the Twentieth Century: 1891–1998.” In Anthony B. Atkinson and Thomas Piketty (eds.), *Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries*. Oxford, England: Oxford University Press.

Fabien Dell, Thomas Piketty and Emmanuel Saez. 2007. “Income and Wealth Concentration in Switzerland over the Twentieth Century.” In Anthony B. Atkinson and Thomas Piketty (eds.), *Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries*. Oxford, England: Oxford University Press.

Gallagher, Michael. 1991. “Proportionality, Disproportionality and Electoral Systems.” *Electoral Studies* 10(1): 33-51.

Gerschenkron, Alexander.1962. *Economic Backwardness in Historical Perspective*. Cambridge, MA.: Harvard University Press.

Hall, Peter, and David Soskice, eds. 2001. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford: Oxford University Press.

Hall, Peter, and Robert Franzese. 1998. "Mixed Signals: Central Bank Independence, Coordinated Wage Bargaining and European Monetary Union." *International Organization* 52:502-35.

Hall, Peter. 1994. "Central Bank Independence and Coordinated Wage Bargaining: Their Interaction in Germany and Europe." *German Politics and Society* 31:1-23.

Golden, Myriam. 1993. "The Dynamics of Trade Unionism and National Economic Performance." *The American Political Science Review* 87:439-54.

Hernandez, Marco and David Rueda. 2008. “Taking Exogeneity for Granted: The Political Economy of Coordination in Industrialized Demicracies.” Unpublished manuscript. Department of Politics and International Relations, Oxford University.

Iversen, Torben. 1999. *Contested Economic Institutions: The Politics of Macroeconomics and Wage Bargaining in Advanced Democracies*. Cambridge: Cambridge University Press.

Iversen, Torben, and David Soskice. 2006. "Electoral Institutions and the Politics of Coalitions: Why Some Democracies Redistribute More Than Others." *American Political Science Review* 100 (2):165-81.

Jaggers, Keith and Ted Robert Gurr. 1996. POLITY III: Regime Change and Political Authority, 1800-1994. Ann Arbor, MI: Inter-University Consortium for Political and Social Research.

Katzenstein, Peter. 1985. *Small States in World Markets: Industrial Policy in Europe*. Ithaca: Cornell University Press.

Krishna, Vijay, and John Morgan. 2001. "A Theory of Expertise." *Quarterly Journal of Economics* 116:747-75.

Kurth, James R.1979. “The Political Consequences of the Product Cycle: Industrial History and Political Outcomes” *International Organization* 33,1: 1-34.

Lange, Peter. 1984. "Union, Workers and Wage Regulation: The Rational Bases of Consent." In *Order and Conflict in Contemporary Capitalism*, ed. J. Goldthorpe. New York: Clarendon Press.

Leigh, Andrew. “How Closely Do Top Income Shares Track Other Measures of Inequality?” *Economic Journal*, forthcoming.

Lijphart, Arend. 1984. *Democracies*. New Haven: Yale University Press.

Mackie, T. & R. Rose. 1974. *The International Almanac of Electoral History.* New York: The Free Press.

Martin, Cathie Jo and Duane Swank. 2008. “The Political Origins of Coordinated Capitalism: Business Organizations, Party Systems, and State Structure in the Age of Innocence.” *American Political Science Review*, 102: 181-98.

Mares, Isabela. 2003. *The Politics of Social Risk: Business and Welfare State Development*. New York: Cambridge University Press.

Meltzer, Allen and Scott Richard. 1981. “A Rational Theory of the Size of Government.” *Journal of Political Economy* 89: 914-927.

Obinger, Herbert, Stephan Leibfried, and Francis G. Castles (eds.) 2006. *Federalism and the Welfare State*. Cambridge: Cambridge University Press.

Olson, Mancur. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.

Piketty, Thomas. 2007. “Income, Wage and Wealth Inequality in France, 1901-1998.” In Anthony B. Atkinson and Thomas Piketty (eds.), *Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries*. Oxford, England: Oxford University Press.

Piketty, Thomas and Emmanuel Saez. 2007. “Income and Wage Inequality in the United States, 1913-2002.” In Anthony B. Atkinson and Thomas Piketty (eds.), *Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries*. Oxford, England: Oxford University Press.

Pontusson, Jonas and David Rueda. 2008. “Inequality as a Source of Political Polarization: A Comparative Analysis of Twelve OECD Countries.” In Pablo Beramendi and Christopher Anderson (eds.), *Democracy, Inequality and Representation*. Forthcoming, Russell Sage Foundation.

Pontusson, Jonas and David Rueda. 2010. “The Politics of Inequality: Voter Mobilization and Left Parties in Advanced Industrial States.” *Comparative Political Studies*, 43(June): 675-705.

Przeworski, Adam 2007. “Is the Science of Comparative Politics Possible?” In Carles Boix and Susan Stokes (eds.) *Handbook of Comparative Politics*. Oxford: Oxford University Press.

Przeworski, Adam, and Michael Wallerstein. 1982. "The Structure of Class Conflict in Democratic Capitalist Societies." *American Political Science Review* 76 (2):215-38.

Przeworski, Adam, and Michael Wallerstein. 1988. "Structural Dependence of the State on Capital." *American Political Science Review* 82 (1):11-29.

Roine, Jesper and Daniel Waldenström. 2006. “Top Incomes in Sweden over the Twentieth Century.” Research Institute of Industrial Economics Working Paper 667, Stockholm, Sweden.

Rogowski, Ronald and Duncan MacRae. 2008. “Inequality and Institutions: What Theory, History, and (Some) Data Tell Us.” In Pablo Beramendi and Christopher Anderson (eds.), *Democracy, Inequality, and Representation.* New York: Russell Sage Foundation.

Rueda, David. 2008. “Left Government, Policy, and Corporatism: Explaining the Influence of Partisanship on Inequality,” *World Politics*, 60 (3): 349-89.

Rueda, David, and Jonas Pontusson. 2000. "Wage inequality and varieties of capitalism." *World Politics* 52 (3):350-83.

Saez, Emmanuel and Mike Veall. 2005. “The Evolution of High Incomes in Northern America: Lessons from Canadian Evidence.” *American Economic Review*, 95(3): 831-849.

Salverda, Wiemer and Anthony B. Atkinson. 2007. “Top Incomes in the Netherlands over the Twentieth Century.” In Anthony B. Atkinson and Thomas Piketty (eds.), *Top Incomes Over the Twentieth Century: A Contrast Between Continental European and English-Speaking Countries*. Oxford, England: Oxford University Press.

Schattschneider, E.E. 1960. *The Semisovereign People: A Realist’s View of Democracy in America*. Hinsdale, Illinois: Dryden Press.

Stasavage, David and Kenneth Scheve 2009. “Institutions, Partisanship, and Inequality in the Long Run.” *World Politics* 61 (2): 215–53.

Stephens, John D. 1980. *The Transition from Capitalism to Socialism*. Atlantic Highlands, NJ: Humanities Press.

Swenson, Peter. 1991. "Bringing Capital Back In, or Social Democracy Reconsidered: Employer Power, Cross-Class Alliances, and Centralization of Industrial Relations in Denmark and Sweden." *World Politics* 43 (4):513-44.

Swenson, Peter. 2002. *Capitalists against Markets: The Making of Labor Markets and Welfare States in the United States and Sweden*. Oxford: Oxford University Press.

Thelen, Kathleen. 2004. *How Institutions Evolve: The Political Economy of Skills in Germany, Britain and the United States*. Cambridge Cambridge University Press.

Wallerstein, Michael. 1989. "Union Organization in Advanced Industrial Democracies." *American Political Science Review* 83 (2):481-501.

Wallerstein, Michael. 1990. “Centralized Bargaining and Wage Restraint” *American Journal of Political Science* 34: 982-1004.

Wallerstein, Michael. 1999. "Wage-setting institutions and pay inequality in advanced industrial societies." *American Journal of Political Science* 43 (3):649-80.

Western, Bruce. 1997. *Between class and market: Post-war unionization in the capitalist democracy*. Princeton: Princeton University Press.

Wilensky, Harold. 2002. *Rich Democracies: Political Economy, Public Policy, and Performance*. Berkeley: University of California Press.

Windmuller, John P., and Alan Gladstone. 1984. *Employers associations and industrial relations : a comparative study*. Oxford: Clarendon Press.

|  |  |
| --- | --- |
| **Table 1** |  |
| **Collective Bargaining Coordination** |
|  Country |  1910s |  1920s |  1930s |  1950s |
| Australia |  1 |  1 |  1 |  2.5 |
| Canada |  - |  1 |  1 |  1 |
| France |  1 |  1 |  1.5 |  2 |
| Germany |  - |  1.5 |  - |  2 |
| Netherlands |  - |  1.5 |  2 |  3 |
| New Zealand |  1 |  1 |  1 |  2 |
| Norway |  - |  1.5 |  3 |  2.8 |
| Sweden |  - |  2 |  3 |  2 |
| Switzerland |  1.5 |  1.5 |  2 |  2 |
| United Kingdom |  - |  1.5 |  1.5 |  1.5 |
| USA |  1 |  1 |  1 |  1 |
| *Average* | 1.59 |
| *Standard Deviation* | 0.64 |
| ***Notes and Sources*:** See Appendix.  |

## Table 2: Summary of Preferences

|  |  |
| --- | --- |
| ***Low wage earners in poor firms*** | C>H>D |
| ***High wage earners in rich firms*** | D>H>C |
| ***High wage earners in poor firms*** | H>D>C |
| ***Low wage earners in rich firms*** | D>H>C |

|  |  |
| --- | --- |
| **Table 3** |  |
| **The Determinants of Collective Bargaining Coordination, No Fixed Effects** |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Inequality (Income | -0.08 | -0.065 | -0.072 | -0.065 | -0.069 | -0.054 | -0.067 |
| Held by Rich 1%) | (0.030)\*\* | (0.015)\*\* | (0.017)\*\* | (0.015)\*\* | (0.016)\*\* | (0.020)\*\* | (0.022)\*\* |
| Disproportionality |  | -0.042 |  | -0.01 |  | -0.01 |  |
|  |  | (0.015)\*\* |  | (0.018) |  | (0.016) |  |
| Electoral System |  |  | 0.405 |  | 0.333 |  | 0.325 |
|  |  |  | (0.061)\*\* |  | (0.172) |  | (0.137)\* |
| Federalism |  | 0.346 | 0.282 | -0.144 | 0.175 | -0.126 | 0.168 |
|  |  | (0.100)\*\* | (0.037)\*\* | (0.075) | (0.179) | (0.078) | (0.143) |
| Openness |  | -2.376 | -1.551 | -2.963 | -1.804 | -2.562 | -1.768 |
|  |  | (0.798)\*\* | (0.811) | (0.846)\*\* | (0.669)\*\* | (0.864)\*\* | (0.794)\* |
| Union Density |  | 0.000 | 0.006 | 0.017 | 0.011 | 0.006 | 0.009 |
|  |  | (0.021) | (0.022) | (0.014) | (0.023) | (0.024) | (0.030) |
| Log of Area |  |  |  | -0.178 | -0.034 | -0.149 | -0.034 |
|  |  |  |  | (0.034)\*\* | (0.085) | (0.012)\*\* | (0.086) |
| Log of GDP per  |  |  |  | -1.091 | -0.403 | -0.782 | -0.378 |
| Capita |  |  |  | (0.531)\* | (0.255) | (0.171)\*\* | (0.374) |
| Left Party Support |  |  |  |  |  | 0.01 | 0.002 |
|  |  |  |  |  |  | (0.012) | (0.010) |
| Constant | 2.615 | 2.941 | 2.162 | 6.573 | 3.221 | 5.491 | 3.151 |
|  | (0.389)\*\* | (0.481)\*\* | (0.463)\*\* | (1.214)\*\* | (1.406)\* | (0.506)\*\* | (1.756) |
| Observations | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Countries | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| ***Notes*:** OLS results. Numbers are estimated coefficients; numbers in parentheses are panel-corrected standard errors. \* if significant at 5% level; \*\* if significant at 1% level. |

|  |  |
| --- | --- |
| **Table 4** |  |
| **The Determinants of Collective Bargaining Coordination, Country Fixed Effects** |
|  | (8) | (9) | (10) |
| Inequality (Income | -0.057 | -0.055 | -0.05 |
| Held by Rich 1%) | (0.022)\*\* | (0.016)\*\* | (0.009)\*\* |
| Disproportionality |  | -0.01 | -0.016 |
|  |  | (0.038) | (0.036) |
| Openness |  | -3.373 | 0.002 |
|  |  | (8.824) | (10.762) |
| Union Density |  | -0.032 | -0.093 |
|  |  | (0.044) | (0.043)\* |
| Log of Area |  |  | -2.552 |
|  |  |  | (11.554) |
| Log of GDP per  |  |  | 2.636 |
| Capita |  |  | (1.345) |
| Constant | -0.057 | -0.055 | -0.050 |
|  | (0.022)\*\* | (0.016)\*\* | (0.009)\*\* |
| Observations | 28 | 28 | 28 |
| Countries | 11 | 11 | 11 |
| ***Notes*:** OLS results. Numbers are estimated coefficients; numbers in parentheses are panel-corrected standard errors. \* if significant at 5% level; \*\* if significant at 1% level. Country dummy estimates not reported, available from the authors. |

## Figure 1: Inequality and Preferences for Coordination



## Figure 2: The Relationship between Top-Income Shares and Inter-Industry Wage Inequality



## Figure 3:



## Figure 4:



##  ***Appendix:***

**Employer coordination:** We use an index of employer organization created by Martin and Swank (2008). Their index covers three dimensions of employer coordination: (1) the scope of employer organization; (2) the centralization of power in these organizations, and (3) the integration of these employer organizations into national policymaking forums (for more details, see Martin and Swank 2008: 186). Each of these dimensions receives a score between 1 and 3, and the three dimensional scores are added into an aggregate index.

**Collective bargaining coordination:** We use a measure of coordination between employers and unions provided by Martin and Swank (2008). It captures the centralization of collective bargaining between unions and employers and it ranges between 1 (when collective bargaining centralization is low) and 3 (when it is high). The coding is done in .5 increments.

**Inequality:** Share of income held by the richest 1% of the population, derived from tax return data. Data for Norway in Aaberge and Atkinson (2008). Data for Sweden in Leigh (forthcoming) and, originally, in Roine and Waldenström (2006). Data for the rest of countries in Atkinson and Piketty (2007) and originally in Atkinson and Leigh (2007) for Australia; Saez and Veall (2005) for Canada; Piketty (2007) for France; Dell (2007) for Germany; Salverda and Atkinson (2007) for the Netherlands; Atkinson and Leigh (2005) for New Zealand; Dell, Piketty and Saez (2007) for Switzerland; Atkinson (2007) for the UK; and Piketty and Saez (2007) for the USA.

**Federalism:** All countries (in each decade in our sample) are classified as federal (0), semi-federal (1), or unitary (2). Source: Martin and Swank (2008), who use data from Jaggers and Gurr (1996).

**Electoral System Proportionality:** We use two measures. First, the disproportionality of the electoral system is measured using the vote and seat shares of parties. Source: Martin and Swank (2008), who use data on elections from Mackie and Rose (1974) and the formula developed in Gallagher (1991). Second, all countries (in each decade in our sample) are classified as SMDP (0), semi-proportional (1), or proportional (2). Source: Martin and Swank (2008), who use data on elections from Mackie and Rose (1974).

**International Openness:** Level of merchandise exports expressed in 1990 Geary Khamis Dollars (thousands), divided by GDP in 1990 Geary Khamis Dollars (thousands). Source: Martin and Swank (2008).

**Union density:** Union membership as percentage of labor force. ). Source: Martin and Swank (2008), who use data from Stephens (1980).

**Log of area:** The area surface in thousands square miles (natural log). Source: Martin and Swank (2008).

**Log of GDP per capita:** GDP in 1990 Geary Khamis Dollars (thousands), divided by the population of each country expressed in thousands of inhabitants (natural log). Source: Martin and Swank (2008).

**Left party support:** Country average of interwar parliamentary vote for Left parties. Source: Martin and Swank (2008), who use data from Boix (1999).

1. For analysis of the influence of labor market institutions on pay inequality, see Wallerstein (1999); Rueda and Pontusson (2000); Beramendi and Cusack (2008) and Rueda (2008). On the effects of electoral institutions on redistribution and inequality, see Austen-Smith (2000), Austen-Smith and Banks (1988), Iversen and Soskice (2006), and Martin and Swank (2008). On the effects of federalism on the welfare state, see Obinger et al. (2006); and Martin and Swank (2008). [↑](#footnote-ref-1)
2. For a detailed discussion, see Beramendi and Anderson (2008). [↑](#footnote-ref-2)
3. See the references in footnote 1. For an analysis that, like ours, explores the consequences of inequality, see Beramendi (2008) and Pontusson and Rueda (2008 and 2010). [↑](#footnote-ref-3)
4. Martin and Swank rely on a number of sources for the coding of these two variables. See details in Martin and Swank (2008: Appendix). [↑](#footnote-ref-4)
5. In analyzing the effects of labor market organization over macroeconomic outcomes, other authors have suggested that the level of wage bargaining centralization is not as important as “the degree to which bargaining is coordinated across the economy” (Hall 1994, 4). See also: Soskice (1990), Golden (1993), and Hall and Franzese (1998). [↑](#footnote-ref-5)
6. The idea that businesses may promote coordination is relatively recent (see Swenson 1991, 2002 and Mares 2003). [↑](#footnote-ref-6)
7. A related point about the degree of labor coordination being inversely related to the size of the labor force is made by Wallerstein (1989). [↑](#footnote-ref-7)
8. In the standard models of redistribution this term usually captures inefficiency costs associated with reductions in labor supply. In our case, it captures the impact of different forms of protection (subsidies, regulation) associated with coordination on the incentives of less performing firms to improve. [↑](#footnote-ref-8)
9. For an analysis of how tax pressures feed-back into political conflict over wage bargaining institutions in more recent periods, see Mares (2006). [↑](#footnote-ref-9)
10. Note however, that other scenarios emerge depending on the structure of inequality within and between companies. If a company is more unequal and only moderately wealthier than the rest, and provided that the low income workers are mobilized, the marginal cost of sharing economy-wide the burden of wage compression falls below the marginal cost of coping with a larger number of low income workers in an uncoordinated regime. Under these specific circumstances, the preference ordering for high wage earners would, counter-intuitively, become C>D>H. [↑](#footnote-ref-10)
11. Again, this ranking may change under specific conditions: if poor workers are mobilized under conditions and inequality among them is very high in A, then it is possible that the cost associated with wage compression for the rich within the poor firm is potentially higher in the absence of coordination (). In this case, the new ranking would then be C>H>D. However, the levels of mobilization and inequality within such a firm must be very high for this to be the case. [↑](#footnote-ref-11)
12. More formally, insofar as the income of the median worker in the poor firm is equal or less than the income of the median voter of the workforce, a majority among low income earners would support full fiscal centralization (C). Their preference ranking would be C>D>H. [↑](#footnote-ref-12)
13. See Appendix for country-specific sources. [↑](#footnote-ref-13)
14. Capital gains refer to profits derived from the sell or exchange of assets such as stocks, bonds, or real state. The measure does include other forms of capital income. [↑](#footnote-ref-14)
15. Technically, this corresponds to the between-group share of the Theil Index, where the partition criteria is industry. The data on inter-industry inequality are available from the University of Texas Inequality Project (http://utip.gov.utexas.edu/data.html). [↑](#footnote-ref-15)
16. The panel corrected standard errors for the 221 observations available yields the following estimates (standard errors in parentheses) : Top-Income=3.90 (.19)+247.54(15.93)\*Interindustry Inequality+ Error. Adjusted R-Squared:0.5013. [↑](#footnote-ref-16)
17. We transform the original yearly inequality data into decade averages. Some decades have years with missing data (the exact years used for the decade average calculations are available from the authors). [↑](#footnote-ref-17)
18. We don’t have data for the 1940s for any country in our data set so we calculate the change from the 1930s to the 1950s. [↑](#footnote-ref-18)
19. We lose Germany because we only have inequality data for the 1920s and 1950s. [↑](#footnote-ref-19)
20. We could push the theoretical claims presented in the previous section even further and argue that the starting level of inequality in the 20th century should be a significant determinant of the levels of coordination that different countries developed in the 1950s. Our data do in fact show this is the case. Those countries with low (high) levels of initial inequality tend to exhibit high (low) levels of coordination in the 1950s. [↑](#footnote-ref-20)
21. All these variables were generously provided by Cathie Jo Martin and Duane Swank. See Appendix for more details on the variables and their sources. [↑](#footnote-ref-21)
22. Log of area: The area surface in thousands square miles (natural log). [↑](#footnote-ref-22)
23. Log of GDP per capita: GDP in 1990 Geary Khamis Dollars (thousands), divided by the population of each country expressed in thousands of inhabitants (natural log). [↑](#footnote-ref-23)
24. International openness: Level of merchandise exports expressed in 1990 Geary Khamis Dollars (thousands), divided by GDP in 1990 Geary Khamis Dollars (thousands). [↑](#footnote-ref-24)
25. Union density: Union membership as percentage of labor force. [↑](#footnote-ref-25)
26. Left party support: Country average of interwar parliamentary vote for Left parties. [↑](#footnote-ref-26)
27. Countries (in each decade in our sample) are classified by Martin and Swank (2008) as federal (0), semi-federal (1), or unitary (2). [↑](#footnote-ref-27)
28. Electoral system proportionality is measured in two ways. First, the disproportionality of the electoral system is measured using the vote and seat shares of parties. Second, all countries (in each decade in our sample) are classified by Martin and Swank (2008) as SMDP (0), semi-proportional (1), or proportional (2). [↑](#footnote-ref-28)
29. Alternative results without PCSEs and estimating Huber/White robust standard errors instead produce similar results to those reported. [↑](#footnote-ref-29)
30. This finding also questions the implications emerging from arguments by Swenson (1991) and others on the importance of international openness to explain the cleavages within labor and the cross-class alliances between those workers and employers exposed to international competition. According to these arguments, international exposure creates incentives for the exposed sector to coordinate with the non-exposed one. In Swenson’s view, employers and labor exposed to international competition have no choice but to engage in wage moderation. The main engine behind coordination, therefore, would be the cross-class alliance of labor and employers in internationally exposed companies. [↑](#footnote-ref-30)