



## ORIGINAL ARTICLE

# On the emergence of cooperative industrial and labour relations

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## Abstract

We explore the long-run determinants of current differences in the degree of co-operative labour relations at the local level. We do this by estimating the effect of the medieval communes – that were established in certain cities in Centre-Northern Italy towards the end of the 11th century – and that contributed to the emergence of a co-operative attitude in the population on various proxies for current co-operative labour relations. Conditional on a large set of firm and municipality level controls, as well as a full set of province fixed effects, we find that firms located in municipalities that had been a free medieval commune in the past have higher current probabilities to adopt two-tier bargaining structures and to be unionized. We also report instrumental variables (IV) and propensity score estimates that confirm our main results.

## 1 | INTRODUCTION

A growing body of literature in economics, sociology and political science has highlighted the powerful role that culture, to be understood as the set of beliefs, values and rules of thumb that different groups transmit fairly unchanged across generations (Alesina & Giuliano, 2015; Guiso et al., 2006), exerts on the extent of trust and co-operation among individuals in various dimensions of life. Moreover, higher levels of trust and co-operation at the local level are typically found to be positively correlated with local development through various channels, such as by fostering trade, innovation and financial development or by influencing the internal organization of firms and the labour market (Algan & Cahuc, 2014, among the others). This literature has shown that local areas where individuals tend to display higher levels of trust and co-operation

are also more likely to overcome the free rider problem in the provision of local public goods. This is precisely what Guiso et al. (2016), building on Putnam (1993), call social or civic capital, that is the set of shared beliefs and values that help a group to overcome the undersupply of public goods, especially in the pursuit of socially valuable activities.<sup>1</sup>

More recently, various authors have shown that current levels of trust and social capital at the local level are often the by-product of the interactions between the slow development of culture over time (Bisin & Verdier, 2001) and past institutions, wars, or other types of economic and natural shocks (see, among the others, Alesina & Giuliano, 2015; Belloc et al., 2016; Buggle & Durante, 2021; Guiso et al., 2016; Nunn & Wantchekon, 2011; Tabellini, 2010). This strand of literature has, therefore, made clear that long past institutions, by affecting the evolution of social capital, trust and co-operative behaviour between individuals, might still have important effects on contemporary economic outcomes.

More specifically, in the field of labour and industrial relations, Aghion et al. (2011), building on Crouch (1993), show – in a seminal contribution – that past government attitudes towards unions might still exert a strong influence over current workers' preferences for unionization. Indeed, since participation in unions allows workers to experiment with co-operation with employers, and thus can be seen as evidence of co-operative labour relations,<sup>2</sup> too pessimistic beliefs about the scope of co-operation, associated with repressive attitudes of governments in some European countries at the dawn of the modern workers' movement, tend to lower current incentives to join unions in the first place in those very same countries. This, in turn, favours an increase in the demand for tight labour market regulation. Moreover, beside by shaping the current demand for state intervention in the labour market, more trust and co-operation in the realm of industrial relations can also have additional important microeconomic effects: indeed, by influencing the bargaining process within the firm, the degree of co-operation in labour and industrial relations might have important effects on firms' investment, innovation and productivity.<sup>3</sup>

In this study, we follow the insights of Aghion et al. (2011) and explore the long-run determinants of current differences in the degree of co-operative labour relations at a local level. We do this by seeking to estimate the causal effect of the free medieval communes – that were established in certain cities in Centre-Northern Italy towards the end of the 11th century – on various proxies for current co-operative labour relations for a pooled cross section of Italian firms observed over the period 2010–2018. A free medieval commune was the result of a series of institutional developments that occurred in certain cities in the Centre-North of Italy since the beginning of the XII century. Although still a formal part of the Sacred Roman Empire, those cities gained a *de facto* form of independence (self-rule) from the imperial power and developed a similar set of participatory institutions, with elected representative bodies and leaders. In particular, we analyse the impact that the presence of a free commune in the late Middle Ages still has on the quality of the current system of labour and industrial relations. The latter is proxied primarily by the presence of a two-tier bargaining agreement between the firm and the workers' representatives. Moreover, following the results of Aghion et al. (2011), we also consider the presence of unions (work councils) within a firm and the level of unionization (union density) as additional proxies of co-operative labour and industrial relations.

The theoretical mechanism that we consider is that the experience of the free commune, by fostering more positive stances towards non-family members and a more proactive attitude to take part in the community life might have contributed to the creation of a positive approach towards the establishment of less-conflicting labour and industrial relations. Indeed, Guiso et al. (2016) show that, despite the disappearance of the institutions of the free medieval communes more than five centuries ago, the latter, by favouring the empowerment of individuals, might have

contributed to the development of a deeper sense of civic attitudes and co-operative behaviour (Alesina & Giuliano, 2015). This, by fostering trust towards non-family members (as participation in communal life necessarily involved some form of co-operation across kinship lines), may still spur current degrees of co-operative relations. Interestingly, Guiso et al. (2016) show that, conditionally on controls, Italian municipalities that had once been exposed to the experience of a free commune are today more likely to have not-for-profit institutions and organ donation organizations, while cheating in school examinations is less widespread.

Historical research (see Section 2.1) has highlighted that a series of local institutions like guilds, mutual associations (which provided security services and mutual aid) and Confraternite (religious associations whose main aim was to hold religious festivals but also to assist the poor or the sick) have been probably spurred by the participatory experience to public life that free communal institutions made possible.<sup>4</sup> More importantly, these institutions have survived the formal collapse of free communes more than five centuries ago, and they were still active at the beginning of the 20th century. The mere existence of these voluntary associations, which provided welfare assistance to their members and the wider local community, might have thus helped to keep alive more participative attitudes in local communities and higher levels of generalized trust, thus instilling more positive beliefs about the workability of co-operation. In the realm of industrial relations, this might have favoured on one side the formation of unions but also a less confrontational stance between capitalists and worker representatives and, more broadly, positive beliefs in the possibility that industrial relations, like other features of social and economic life, do not necessarily entail a zero-sum game (Henrich, 2020). The higher levels of social capital in the local communities that witnessed the experience of the medieval free commune might therefore explain local variation in the current quality of labour and industrial relations at the local level in contemporary Italy.

As mentioned above, the presence of a two-tier bargaining structure (Boeri, 2014; Cardullo et al., 2020) might provide a very good direct proxy for the degree of co-operation of labour and industrial relations within the firm, at least as far as it concerns the Italian experience. In the Italian system of industrial relations, wage floors and working conditions are generally set by sectoral bargaining at the national level (first stage) and cannot generally be undone at the firm level.<sup>5</sup> However, the second tier agreement, at the firm level, might be used to deal with features that are not covered in the national agreement, such as the existence and structure of performance-related-pay schemes, the levels of workers' training provided by firms or to agree how to split of rents that might be associated with future productivity gains. It seems fair to say that, in a world characterized by asymmetric information between workers and firms and by imperfect contracts, two-tier agreements are more likely to be reached whenever labour relations are more co-operative and parties tend to trust each other to start with.<sup>6</sup>

In this study, we also explore the effect of the experience of the free communes on the presence of unions within a firm (the so-called Rappresentanze Sindacali Unitarie [RSU] and Rappresentanze Sindacali Aziendali [RSA]; see Section 3.1) and on union density for two reasons. First, we follow the insights of Aghion et al. (2011), who suggest that strong unions (high density) may emerge as an equilibrium outcome in an environment in which individuals are more likely to cooperate and learn about the gains from negotiation. Hence, both the presence of worker representatives and union density might be seen as an (admittedly) imperfect proxy of co-operative labour and industrial relations. Indeed, their cross-country empirical results show that countries with higher union density are also those with a larger share of both executives and workers that report positive beliefs in co-operative industrial relations.<sup>7</sup> Second, because, independently from whether or not one agrees on unions as favouring the development of co-operative labour rela-

tions, the free commune experience, by increasing trust towards non-family members, might have helped to overcome the free rider problem workers face when deciding whether or not to join a union (Naylor, 1989).

In our empirical analysis, we use a repeated cross section for a representative sample of firms active in the Centre-North of Italy – where the experience of the free communes unfolded – in order to assess the impact of social capital associated with the experience of a medieval free commune on co-operative labour relations by comparing firms in treated municipalities – i.e., firms that are based in municipalities that once were free medieval communes – to firms in control ones – i.e., firms that are based in municipalities that were not medieval free communes. The identification assumption is that, conditionally on a rich set of firm-level controls, industry fixed effects, municipality controls as well as province fixed effects, the presence of a medieval free commune is exogenous, i.e., not correlated to unobserved time-invariant municipality characteristics that might explain both the establishment of a free commune and current propensity to unionize and more generally to establish co-operative labour relations. The inclusion of province fixed effects ensures that the identification is achieved by comparing firms in treated and control municipalities that are located within relatively small local areas; moreover, we include additional controls for the current economic conditions of the municipalities as well as for both geographic characteristics and proxies for the level of economic development of the various municipalities at around 1300 C.E.

However, since one might not completely rule out the existence of such unobservables at the municipality level, we also pursue an additional identification strategy. We follow Guiso et al. (2016), and we instrument for the free medieval commune using a dummy variable equal to one for those municipalities that used to have a bishop before the establishment of the free commune. Indeed, as shown by Guiso et al. (2016), who relied on historical research on the origins of Italian free medieval communes, bishops acted as a sort of commitment device for the different layers of civil society that gave rise to the sworn pact which created the commune in the first place. Moreover, we deal with the possibility that firms self-select into municipalities combining both an ordinary least squares (OLS) and instrumental variables (IV) approach with propensity score matching (PSM). We will probe the exclusion restriction of the instrument by showing that the presence of a bishop in the Middle Ages does not seem to have any explicative power on contemporary labour relations in the South of Italy where the free municipality experience did not happen. However, we are aware that there might be reasons to believe that, in the Centre-North of the country, the existence of a bishopry in a city before the beginning of the free municipality experience might have driven contemporary outcomes through various channels other than the development of the municipality institutions, thus violating the exclusion restriction. Thus, our empirical results should be more cautiously seen as evidence of the existence of a robust correlation in the data.

Again, we find that being exposed to an area whose culture and attitudes still reflect the participatory behaviour, co-operation and trust favoured by the experience of the free medieval commune, tends to significantly increase the likelihood that two-tier bargaining agreements are signed at the firm level as well as to foster unionization, through the set-up of union representation and through higher union density, thus contributing to the development of co-operative industrial relations.

This study speaks to different strands of literature, which are surveyed in more detail in the Online Appendix A. First, our article is related to the very large and growing literature on the long-run effects of culture and institutions (and their interplay) on current individual behaviour (Alesina et al., 2015; Algan & Cahuc, 2014; Belloc et al., 2016; Tabellini, 2010; Voth, 2021).<sup>8</sup> Second,

this article contributes to a small subset of this literature on the long-run effects of culture and institutions, namely the very few studies that have explored the role of past formal and informal institutions in shaping the current systems of labour relations, such as the family in Alesina et al. (2015) or political history, as in Aghion et al. (2011) and Müller and Philippon (2011).<sup>9</sup> In particular, with respect to Aghion et al. (2011), we take a step further by arguing that co-operation in industrial and labour relations might arise out of more long-term implicit rules that favour co-operation among the individuals living in particular local areas; in other words, the origin of the current quality of labour relations might be embedded in the trust endowment and, more broadly, in the social capital of local areas. More importantly, we use additional proxies for co-operative labour relations; indeed, unlike Aghion et al. (2011), that focus on union membership, we use firm-level data and consider the presence of unions within a firm as well as union membership but also the existence of a two-tier bargaining agreement, which is clearly a superior proxy for the existence of co-operative labour relations, especially with respect to surveys conducted on samples of top executives of multinational firms, as in Müller and Philippon (2011) but also in Aghion et al. (2011).

The remainder of this work is organized as follows. Section 2 discusses the historical background and details the transmission mechanism. Section 3 presents the institutional background and discusses the data, while Section 4 contains the identification strategy. Finally, Section 5 provides the empirical results and Section 6 concludes. The Online Appendix contains both a more structured review of the literature and further additional results.

## 2 | HISTORICAL BACKGROUND AND TRANSMISSION MECHANISM

### 2.1 | The Italian Medieval commune and its offspring

During the 10th century, Western Europe witnessed a spur in urbanization. In that period, the declining influence of the Holy Roman Empire, was filled by the bishop (if he was present in the city) together with a small assembly of *boni homines* (literally, good men) (Montesano & Cardini, 2007). Things began to change in the middle of the 11th century when the upper classes in Northern Italy attributed themselves to greater autonomy in the management of the city. This process was not possible in Southern Italy where the invasion of Normans between 1061 and 1091 led to the creation of a strong central authority.

The first documentary evidence of a free commune in Italy goes back to the end of the 11th century. Initially, the city was run by a small assembly of consules, who were the expression of the urban elite. It is important to note that the elite and the ordinary people were quite permeable so that *minores* could climb the social ladder and become part of the elite. The period between 1158 and 1183 constitutes a defining moment in the conflict between Emperor Frederick I – who tried to regain power – and the Italian communes. In particular, the Emperor's defeat in the battle of Legnano in 1176 persuaded Frederick I to award a series of prerogatives to the communes.

After the end of this period, the remarkable improvement in population and living conditions increased social tensions and the solution in most communes was the appointment of a *podestà*, a professional politician chosen outside the city, with a 1-year mandate to run the government, whose behaviour was, however, controlled by an assembly. The political system became, however, more complex, as the number of city stakeholders increased: corporations, *compagnie d'armi* (*militias*), *mercanzie* (confederation of corporations, from the 14th century) all put forward their interests and political and economic agendas, sometimes reaching mutually beneficial agree-

ments, in other cases provoking overt conflicts (Artifoni, 1990). It is important to stress that the growing importance of corporations and other intermediate bodies within the urban civic life was a characteristic feature of the free cities in Northern Italy (Greci, 1995). In the Southern regions, under the Norman rule, corporations were less present and less strong, confirming the hypothesis that the autonomy of the communes was a crucial breeding ground for the proliferation of such a variety of interest groups.

The excessive fragmentation of the political system was in some cases the main cause of the end of the communal age and the advent of the *Signoria* (govern of the lord or *Signore*), which occurred during the 14th century. In most cases, the *Signore* was no longer under the control of the communal assemblies and statutes. Still, it was explicitly expressed that his power came from the people's decision. Only in the late 14th and early 15th centuries, the *Signorie* were transformed into principalities, in which the ruling dynasty exercised its power thanks to the explicit recognition of the Empire or the Church, and the main political entity was no longer the city but the regional state.

Nevertheless, the most recent historiography (Chittolini, 1995) tends to emphasize the continuity between the communal age and the principalities. The formation of a system of regional states, which often took the form of principalities, did not mean that cities decayed in the face of rising states. Although the remarkable trajectory of the independent city-state came to an end almost everywhere, its heritage still left a strong imprint on the Renaissance political order.

## 2.2 | Transmission mechanism

How is it possible that a historical event that occurred almost one thousand years ago may explain the geographical disparities for some relevant industrial relations variables in present-day Italy?

Our hypothesis is that the free city experience was the breeding ground for the development of those social skills and that kind of civic engagement that are the necessary ingredients for an active and participating system of industrial relations. Indeed, the free commune system can be viewed as an agglomeration of different interest groups, sometimes in overt conflict with each other, but often in search of mutual agreements. For interest groups, we mean all those intermediary institutions representing the stances of fractions of the population, but distinct from the formal branches of the communal government: indeed, limits on the abuse of power by the sovereign come not only via the division of state functions but also through the mitigating role played by such autonomous entities (Urbinati, 2015). It is well known that such institutions prospered in the communal system, whereas their importance was much limited in the Southern parts of Italy, under the Norman's rule (Greci, 1995). This was not by chance, but precisely because of the relative autonomy they could enjoy in the communes compared to the centralizing power of the Normans.

The most prominent examples of intermediary institutions were the merchant and craft guilds. While part of the literature has taken an essentially negative view of the latter, some recent research has re-examined their contribution to the economic progress in medieval and early modern Europe, in terms of innovation, technological change and entrepreneurship (Epstein & Prak, 2008), as providers of public goods and as welfare institutions. The growing relevance of the guilds within the free cities is recognized by many scholars, who identify the 13th century as the period when they ceased to be organizations just operating in the product and labour markets and became a linchpin of the communal political system (Artifoni, 1990).



Under this lens, it seems reasonable to assume that individuals living in the communes became more conscious of the advantages of being part of an association and that this propensity to affiliate persisted over the centuries, even after the dissolution of the free-city experience.

This argument holds even for other intermediary bodies that either originated in or gained strength under the free-city period. The *compagnie d'armi* or *società d'armi* were militias composed of residents of the city whose original goal was to protect the commune against invasions. The Italian philosopher and politician Antonio Gramsci was one of the first scholars that emphasize the relevance of such militias as social aggregators (see Gramsci, 1975). Indeed, the war against the emperor in the second half of the 12th century had forced the enlistment of many citizens of lower classes.

The repeated battles helped to create a team spirit that remained even in periods of peace. Thus, especially during the 13th century, the *società d'armi* became one of the vehicles for the participation of the plebs in the governance of the Commune. Interestingly, Gramsci observed that in the modern states that came after the dissolution of the communal era the exercise of power was more centralized, but the variety of organizations and institutions active in that period did not disappear completely: 'The Modern State [] abolishes certain autonomies, which nevertheless are reborn in other forms, as parties, trade unions, and cultural associations' (Gramsci, 1975).<sup>10</sup> Other organizations that gained importance in the communal era were the *confraternite*, religious associations whose primary tasks involved charity for the needy, education activities, and health assistance for its members.

In conclusion, it is clear that the relevance and the diffusion of these organizations differed across cities. If establishing a direct causal link (in both directions) between the formation of the free communes in Northern Italy and the emergence of intermediary institutions is not certain, the historiography broadly agrees on the fact that the Communal institutions and such entities reinforced each other. Our theoretical mechanism indicates that the willingness to engage in the civic life by promoting your own interests and points of view persisted over centuries, remained under the surface during more authoritarian periods and is still discernible today once we look at the level of co-operation of labour and industrial relations.

### 3 | INSTITUTIONAL BACKGROUND AND DATA

#### 3.1 | The industrial relation system in Italy

The Italian industrial and labour relations system presents a two-tier bargaining (TTB) structure, with a relevant sectoral tier and a supplementary decentralized tier where bargaining is usually realized at the company/local level (Devicienti et al., 2017). The first level of bargaining is the national collective one, with contractual labour agreements that extend virtually *erga omnes* at the sectoral level: it sets minimum wage schedules and work standards at the industry level and is targeted to preserve the purchasing power of wages. The second level is the decentralized one, with firm (or establishment) level agreements that supplement the national collective contracts: it negotiates additional components of wages and other regulatory aspects and is linked to firm's economic performance. Firm-level agreements are not allowed to prevail on national collective contracts that represent the floors in terms of wage agreements and working conditions.<sup>11</sup>

Recent estimates on the diffusion and content of second-level bargaining show that the coverage ranges between 15 and 25 per cent of firms and about 60 per cent of employees, with a

prevalence in the case of manufacturing and larger firms (Damiani & Ricci, 2014). The majority of second-level agreements regard wage increases related to productivity gains (60 per cent), while agreements containing workplace organizational changes, performance-based human resource management practices and employment flexibility are related to the remaining 40 per cent of cases (Damiani & Ricci, 2014; Devicienti et al., 2017). Boeri (2014) shows that two-tier bargaining covers about 50 per cent of firms with more than 200 employees in Europe, while such a percentage is about 20 per cent for firms below 50 employees.

Union presence at the firm level takes place through somewhat different forms. On the one hand, traditional union representation emerges through union membership, with a proportion of employees being union members. On the other hand, union representation is also related to the presence of RSA or, more recently, RSU. As discussed in the literature (Cardullo et al., 2020; Devicienti et al., 2017), although RSA and RSU are quite similar to traditional work councils along some dimensions (voting on their set-up is attributed to all workers at the firm level, independently on union status), on the other hand, they have some peculiar characteristics that can make them closer to traditional union representation bodies. As an example, members elected in RSA/RSU boards are chosen from different lists provided by the most representative union organizations at the local and national level, turning into a very strict connection between union representatives and these bodies. Moreover, although firm-level two-tier agreements can be signed by RSA and RSU, this process also involves local union representatives within the framework of the national collective agreements. Still, two-tier bargaining may also take place at the firm level without considering union representatives.

### 3.2 | Data

The empirical analysis is based on the last three waves of the Rilevazione su Imprese e Lavoro (RIL) survey conducted by INAPP (the Italian National Institute for Public Policy Analysis) in 2010, 2014 and 2018 on a large representative sample of partnerships and limited liability firms operating in the non-agricultural private sector. A subsample of the included firms (about 35 per cent) is followed over time, making the RIL dataset partially panel over the period under study.<sup>12</sup>

These data provide a rich set of information on industrial relations at the workplace. Most important to our purposes, RIL data provides detailed information on agreements on second-level (two-tier) bargaining, trade union presence (RSA/RSU) and union density, defined as the ratio between the number of unionized workers over the total number of employees. We also take advantage of the rich set of information provided by the RIL survey on management and corporate governance, workforce characteristics and firms productive specialization (see Section 5).

Out of the overall data source, we excluded firms with less than 10 employees, where second-level bargaining and other measures of industrial relations are relatively unstructured. In Table 1, we provide descriptive statistics for the variables of interest, that is, our dependent variables and main controls.

Data at the municipality level come from Guiso et al. (2016). We refer to their study for detailed explanations regarding the creation of each variable. Here, we briefly explain how the main variables of interest are derived. In particular, following the original source, we define as free communes those municipalities that were independent in 1176. In our sample, as reported in Table 2, about 31 per cent of observations refer to firms that are currently located in municipalities that were a free-commune in the past. Remaining controls refer to urbanization dummies in 1300,



TABLE 1 Descriptive statistics at firm level.

Variable	Observations	Mean	Std. dev.	Min.	Max.
Dependent variables					
Two-tier bargaining	25,888	0.1090074	0.3116546	0	1
Union presence (work councils)	24,957	0.2033223	0.4024784	0	1
Union density	25,457	0.0676839	0.1623593	0	1
Management characteristics					
Age>50	25,888	0.3467297	0.475938	0	1
34<age<50	25,888	0.2526009	0.4345124	0	1
Age<35	25,888	0.0563157	0.2305349	0	1
Female	25,888	0.1219574	0.3272429	0	1
Workforce characteristics					
Share of tertiary education	25,888	0.1099216	0.1885081	0	1
Share of upper secondary education	25,888	0.4631837	0.2800898	0	1
Share of lower/no education	25,888	0.4268921	0.3187764	0	1
Share of female	25,888	0.3526388	0.2619204	0	1
Share of immigrants	25,888	0.0723473	0.13483	0	1
Share of fixed-term contracts	25,888	0.1421888	0.2041153	0	1
Share of executives	25,888	0.0413438	0.0893331	0	1
Share of white collars	25,888	0.3585844	0.298651	0	1
Share of blue collars	25,888	0.6000707	0.3230275	0	1
Firms characteristics					
Multinationals	25,888	0.0329439	0.1784932	0	1
Product innovation	25,888	0.4285004	0.494871	0	1
Process innovation	25,888	0.3852099	0.4866543	0	1
Foreign markets	25,888	0.3462939	0.4757974	0	1
Trade agreements	25,888	0.1560056	0.3628676	0	1
ln sales per employment	25,888	11.74127	1.264963	0.0895499	16.65808
Employment	25,888	45.5622	350.3771	10	144624

Note: Our calculations on RIL 2010-2014-2018 sample data. Two tier bargaining is a dummy equal to one for firms with a two-tier agreement in place; Union presence (work councils) is a dummy equal to one for firms with a RSA/RSU in place (see Section 3.1 for details); Unions density is the ratio between union members over total employees. Management characteristics are dummy variables reported in the Table. Shares are calculated at the firm level over total employees. Multinationals, product innovation, process innovation, foreign markets, trade agreements are dummies. Note: sampling weights applied.

geographic location dummies and, finally, modern characteristics of the municipalities, such as population levels and the Gini inequality index measured as of 2001.<sup>13</sup>

## 4 | IDENTIFICATION

We seek to identify the long-term causal effects of the experience of the medieval free commune on current quality of the system of industrial relations in a representative sample of Italian firms in the Centre-North (where free medieval communes developed) by comparing selected features of the system of industrial relations in firms that are located in treated municipalities – i.e., those

TABLE 2 Descriptive statistics municipality level.

	Mean	Std. Dev.	Min.	Max.
Free commune	0.31	0.46	0	1
Medium population	0.03	0.18	0	1
Large population	0.25	0.43	0	1
Coastal	0.17	0.38	0	1
Near the sea	0.01	0.13	0	1
Altitude	0.15	0.17	0	2.04
Population 2001	0.32	0.61	0	2.55
Gini inequality	0.41	0.04	0.30	0.61
Number of observations	25,888			

Note: Source of data: Guiso et al. (2016). Free commune is a dummy equal to one for municipalities that experienced a free-commune in the Middle Ages. Medium and large population are dummies for population size in the Middle Ages. Coastal, near the sea and altitude are geographic dummy variables. Population 2001 is expressed in millions inhabitants and rounded. Gini income inequality index varies at municipality level.

municipalities that experienced a spell of free commune in the late Middle Ages – with those that, in turn, characterize similar firms that are, however, located in control municipalities – i.e., those that never experienced a spell of a free commune in the Middle Ages. We exclude firms in the South of Italy because in that area the municipality experience did not take place.

The identification strategy involves the estimation of the following equation by OLS:

$$IR_{impt} = \alpha FC_{mp} + \beta X_{impt} + \theta M_m + u_p + u_t + v_{impt}, \quad (1)$$

where  $i$  indexes firms,  $m$  municipalities,  $p$  provinces and  $t$  the RIL waves 2010, 2014 and 2018, respectively. As already discussed, the sample is a repeated cross section with a panel component, that is, a fraction of the sample is made up of firms that are observed over the three waves.

More specifically, the dependent variables  $IR$  may represent, alternatively (i) a dummy taking the value of 1 if firm  $i$ , located in municipality  $m$  and province  $p$  in wave  $t$  is recorded as having a second-level agreement, (ii) a dummy indicating whether a formal union representation is in place at the firm level and (iii) the percentage share of unionized workers over total employment.  $FC$  is equal to 1 if firm  $i$ , in province  $p$ , is located in a municipality  $m$  that was exposed to the institutions of a free commune in the late Middle Ages.

Moreover,  $X$  is a vector of firm-level controls, which capture firm-level differences in corporate governance, management characteristics, workforce composition and firm productive specialization, besides a full set of industry and year dummies.<sup>14</sup> In turn,  $M$  represents a vector of some historic,<sup>15</sup> geographic<sup>16</sup> as well as modern<sup>17</sup> characteristics of the municipality  $m$  where firm  $i$  is located. These historical and geographical controls, reported in Table 2, are very common in the empirical historical economics literature, as they are meant to capture pre-determined economic and geographic characteristics that might still have important effects on contemporary outcomes but that might also have shaped the historical municipality experience.

Finally,  $u_p$  represents a full set of province fixed effects capturing the province where each firm is located during wave  $t$ ,  $u_t$  includes year fixed effects, while  $v_{impt}$  is an error term. The inclusion of the province fixed effect<sup>18</sup> controls for any time-invariant heterogeneity at the province level, which in turn ensures that identification of (1) is achieved by comparing firms in treated and control municipalities that are located within the same province, thereby effectively controlling, for

example, for historic differences in past local institutions which might still affect the current institutional quality<sup>19</sup> or by regional specific shocks that might have affected trust and institutional development.<sup>20</sup> Moreover, the historic, geographic and current municipality controls should capture, within any given province, possible heterogeneity among municipalities, while firm-level controls are supposed to take into account possible differences among firms.

As noted above, the identification assumption is that firms in untreated municipalities represent a valid counterfactual for those located in treated ones. The inclusion of the municipality controls as well as of the province fixed effects is, therefore, precisely meant to make the identification assumption more credible. Nevertheless, one might still argue that  $FC_{mp}$  is capturing local unobservables, even within the same province, that drive both the establishment of a free commune and the current quality of industrial relations. For instance, some Italian municipalities were important trade centres during the Middle Ages: if a trade is associated with more development, and this brings with it more trust and civic engagement, then one might find better quality industrial relations in treated municipalities, but independently from the effects brought about by the institutions of a free commune.<sup>21</sup> Moreover, one might also argue that firms self-select into municipalities that used to be medieval communes because of individual characteristics that are correlated with a more positive attitude towards co-operative labour relations. In both cases, the identifying assumptions in Equation (1) would be violated and we should not give a causal interpretation to our empirical estimates. Therefore, we consider two other approaches.

First, we run the OLS regressions after performing PSM. Using the PSM technique is expected to combine a group of treated firms located in a free Medieval commune – with a group of untreated firms having similar observable characteristics in terms of management, workforce composition and productive specialization. This control group is then used to estimate the counterfactual effects of the free Medieval commune on our measures of industrial relations. In other words, the rationale of this approach is that, by taking into account selection into treatment, we should be more likely to compare firms in treated municipalities with a control group of firms located in municipalities that were not free communes in the Middle Ages and that are as similar as possible to the former along a large set of observed dimensions; this, in turn, should hopefully take into account possible concerns related to firms self-selection issues.<sup>22</sup>

Second, we also perform an IV approach, following Guiso et al. (2016): indeed, according to many historians, the emergence of a commune was more likely in cities that were already seats of a bishop. This is because bishops were usually the guarantors of a sworn pact between prominent citizens that stood as the linchpin of the free commune state. Moreover, bishops could punish the pact breakers with the exclusion from the religious communion. Interestingly, Guiso et al. (2016) find that current social capital is positively associated with the presence of a bishop before the year 1000 C.E. only in the Centre-North of the country, that is, where free communes arose. Authors interpret this lack of correlation between today's social capital and the presence of an early medieval bishop in the South of Italy (where no room for greater autonomy at the city level was possible under the rule of the Normans) as suggestive that the exclusion restriction for using the existence of a bishop as an instrument for  $FC$  in Equation (1) may be likely to hold. In other words, the identification assumption that we make is that the presence of a bishop around the year 1000 C.E. affects today's quality of industrial relations only because it favoured the establishment of a free commune in the late Middle Ages and not directly.<sup>23</sup>

Moreover, in the spirit of Guiso et al. (2016), we regress our dependent variables on the bishop dummy (and the other additional controls) separately for the Center-North and the South of Italy. In the case of the Centre-North, this is just the reduced form of the IV model, and we expect a

positive correlation between the dependent variables and the bishop dummy, conditionally on controls. By way of contrast, in the South, if the role played by the bishop on the evolution of trust worked through only via the arising of free municipalities, we do not expect any correlation. This is, therefore, an indirect test for the validity of the exclusion restriction for the instrument in the IV specification.

Finally, we combine the two approaches (i.e., IV after performing a propensity score approach); this provides a robust estimator in the spirit of Smith and Todd (2005), which should perform reasonably well in addressing identification threats stemming from local unobservables and firms self-selection into former Medieval communes.

An additional point that may be worth mentioning is that, in our empirical approach, we estimate linear models with OLS and IV even if our dependent variables are either binary or fractional. While Angrist and Pischke (2009) argue that this can be a reasonable approximation, especially if the focus is on trying to estimate causal effects, it nonetheless is an approximation, as noted by Lewbel et al. (2012) who argue that, in the binary choice model, the linear probability model can provide a poor approximation, especially when data contain a large fraction of zeros. On the other hand, in an IV setting, the estimation of a linear probability model is free of strong, and sometimes debatable, distributional assumptions. A possible way to gain at least some knowledge about whether the approximation provided by the estimation of linear models is adequate is to check whether its predictions are within the unit interval. We will show that this is indeed the case for this empirical application.

Finally, standard errors are clustered at the municipality level. We have chosen to cluster at this level because, if we adopt a design-based setting à la Imbens et al (2003), then the treatment assignment must be at the municipality level. Indeed, in this study, individuals have been historically treated by the presence of a free municipality: this is why, even today, they might experience a different attitude about co-operation and trust outside their family with respect to untreated individuals. As noted in Abadie et al. (2023), if units are sampled from the population, but treatment is assigned at the cluster level (which is precisely our case), then clustering of the standard error at the level the treatment is administered (i.e., municipality level in our case) is necessary.<sup>24</sup>

## 5 | RESULTS

### 5.1 | Main results

We set the scene in column 1 of Table 3 with a parsimonious specification that includes, for the entire set of our dependent variables reported in panels A, B and C, as main regressor a dummy equal to 1 for those firms located in a municipality where a free-commune was present in the Middle Ages. In this specification, we also include (arguably exogenous) baseline controls as the province, year, sector fixed effects and a quadratic in employment. We find that the experience of a spell of free commune in the late Middle Ages for firms located in the Centre-North of Italy is positively associated with the current probability of having a two-tier agreement in place and the presence of unions (work councils). Interestingly, results also suggest that the free commune experience is also related to traditional measures of union strength, as in our case, union density. The coefficients of interest in column 1, panels A and B of Table 3 are broadly similar and statistically significant at conventional levels, suggesting that two-tier agreements are mostly signed in firms with unions and that the two regressions are broadly capturing the pattern of emergence of co-operative labour relations.

TABLE 3 Main results..

	(1)	(2)	(3)
Panel A: Dependent variable two-tier bargaining			
Free commune	0.040*** [0.009]	0.036** [0.015]	0.033** [0.014]
Observations	25,888	25,888	25,888
Panel B: Dependent variable union presence (work councils)			
Free commune	0.034*** [0.010]	0.040*** [0.015]	0.043*** [0.014]
Observations	24,957	24,957	24,957
Panel C: Dependent variable union density			
Free commune	0.010** [0.004]	0.014* [0.007]	0.016** [0.007]
Observations	25,457	25,457	25,457
Controls			
Employment	Yes	Yes	Yes
Year, sector, province fixed effects	Yes	Yes	Yes
Municipality controls	No	Yes	Yes
Firms characteristics	No	No	Yes
Workforce characteristics	No	No	Yes

*Note:* Our elaborations on RIL 2010-2014-2018 data. Dependent variables: in Panel A it is a dummy equal to one for firms with a two-tier agreement in place; in Panel B it is a dummy equal to one for firms with a RSA/RSU (union representation) in place; in Panel C it is the ratio between union members over total employees. Controls at the bottom of the table refer to regressions in panels A, B and C. All regressions control for number of employees, number of employees squared, sectors of activity, province fixed effects and year fixed effects. Municipality controls include altitude, coastal location, near sea, dummies for population in the middle ages, current population, gini inequality index; firm characteristics include dummies for age and gender of the manager, foreign trade, log of sales per employee, multinationals, product innovation, process innovation, foreign trade agreements; workforce characteristics controls for the composition of the firm workforce by education, gender, contractual arrangements, occupation and citizenship. Standard errors clustered at municipality levels in parentheses. Regressions have been run using the command `reghdfe` in STATA, version 17.

We augment the set of controls in order to check the robustness of our main results in column 2 of Table 3. In particular, we consider the possibility that some municipality-level characteristics may have impacted both the probability of the emergence of a free commune in the Middle Ages and the quality of current industrial relations today. On the one hand, we consider the role of geographic and modern municipality characteristics as the current population levels and the Gini inequality index that, again, may be correlated to the emergence of high-quality labour relations. On the other hand, we include other municipality levels controls (geographical location, historical population, among the others) that may impact both the establishment of a free commune in the Middle Ages as well as the long-run patterns of growth that might be correlated with the current quality of firm-level industrial relations. The inclusion of the two sets of controls does not change the overall picture: firms located in municipalities that in the Middle Ages experienced a free commune have higher probabilities of experiencing co-operative labour relations in terms of two-tier agreements, presence of unions (work councils) and union density. The coefficients of interest are of similar magnitude with respect to our previous parsimonious specification, although the

statistical significance is barely reduced, in particular for the regressions where the dependent variable is union density.

In order to control for additional firm-level characteristics that may have an impact on the emergence of co-operative labour relations today, in column 3 of the same table, we augment our models with a set of firm-level characteristics. We include managerial demographic characteristics (age and gender of the manager), workforce composition (shares of workers by education, gender, type of contracts, share of immigrants, main occupations, etc.), firms' productive characteristics (export in foreign markets, trade agreements, (log of) sales per employee and innovation and multinationals dummies). Of course, this set of controls might be endogenous, and a bad control problem might arise with our estimates. Reassuringly, our coefficients of interest are barely changed, suggesting that the size of the effect is not driven by the inclusion of such controls. If any, the statistical significance of our estimates improves with respect to the previous set of regressions.<sup>25</sup> The fact that the step-by-step introduction of such a rich set of controls leaves the impact of the free commune on our proxies for current co-operative industrial relations barely unaltered is clearly reassuring and possibly suggests that unobservables might not be very important in our identification setting.

As far as the magnitude of the coefficients is concerned, we note that the impact of the free medieval commune is quite important, especially in the case of the two-tier bargaining. Indeed, our results suggest that being located in a municipality that used to be a free medieval commune is associated with an increase of about 3.3 per cent in the probability that a two-tier bargaining agreement exists in a given firm. This is a quite large effect if we consider that, in our sample, such agreements exist in just 11 per cent of our firms. In the case of the two other proxies of co-operative industrial and labour relations, the magnitude of the effects is perhaps slightly smaller but not negligible.

We mentioned above that we have estimated linear models even if our dependent variables are binary or fractional. In order to test whether our results might be driven by functional form misspecification, we have computed the predicted values from the OLS estimates that are reported in Table 3. In the case of functional form misspecification, one might expect that, for a large fraction of observations, the predicted probabilities are lower than zero or larger than one in the case of the binary-dependent variables (i.e., the probability of a two-tier agreement or the existence of a union within the firm) or a fraction lower than zero or higher than one in the case of the fraction of employees that are also union members. Reassuringly, the violations (i.e., the number of predictions outside the unit interval) are only 3.6 per cent in the case of the two-tier agreements, 0.6 per cent in the case of the presence of a union and 3.2 per cent in the case of the fraction of employees that belong to a union. We believe that such a low degree of violation is indicative of the fact that, at least for our sample, the linear approximation is a reasonably good one.

## 5.2 | Instrumental variables and propensity score estimates

As discussed in the Identification section, although our OLS estimates control for a large set of current and past observable characteristics both at the firm and municipality level, there still could be some unobservable characteristics that may be positively correlated to our main regressor of interest, that is, the dummy for being a free commune in the Middle Ages. In that case, our OLS estimates cannot be given a causal interpretation of the effect of the free commune on the quality of industrial relations. Hence, in Table 4, we report the results for our IV estimates in which we instrument the dummy for the free commune with a dummy equal to one for the presence of



TABLE 4 Instrumental variables estimates.

	(1)	(2)	(3)	(4)	(5)	(6)
	Two-tier Bargaining		Union (work councils)		Union density	
Free commune	0.061*** (0.012)	0.093*** (0.034)	0.035*** (0.013)	0.031 (0.035)	0.016*** (0.006)	0.043** (0.017)
Controls						
Employment	Yes	Yes	Yes	Yes	Yes	Yes
Year, sector, province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Municipality controls	No	Yes	No	Yes	No	Yes
Firms characteristics	No	Yes	No	Yes	No	Yes
Workforce characteristics	No	Yes	No	Yes	No	Yes
Observations	25,857	25,857	24,928	24,928	25,429	25,429
First-stage statistics						
Excluded instrument						
Bishop	0.651***	0.329***	0.647***	0.328***	0.649***	0.328***
<i>p</i> -value	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Weak identification F	262.65	43.03	254.43	42.43	259.03	42.60
<i>p</i> -value	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Note: See footnote to Table 3 and Section 4.

a bishop in the past. While we extensively discussed the rationale for using such an instrument in previous sections, here we just mention that the emergence of a commune was more likely in cities that had a bishop in place. Our first stage estimates, which are reported at the bottom of the table, confirm our expectations. Indeed, the bishop dummy is positive and highly statistically significant; second, the standard test for identification suggests that we do not have a weak identification problem.<sup>26</sup>

Results from our IV regressions, reported in Table 4, confirm our main OLS results, both for the more parsimonious specification reported in columns 1, 3 and 5 and for the fully saturated model with the entire set of controls and fixed effects reported in columns 2, 4 and 6.<sup>27</sup> This is true for the three dependent variables used as proxies of high-quality co-operative industrial and labour relations. The estimated effects for our IV are larger than the OLS ones. For example, the estimated coefficient for the presence of a two-tier agreement at the firm level is equal to 0.093 (against 0.033 obtained in the OLS regressions).<sup>28</sup> This somewhat larger effect in the IV estimates might suggest that OLS are downward biased, possibly because of, for example, some local unobservables at the municipality level that favoured the birth of a medieval free commune but that currently discourage co-operative labour relations. Nevertheless, it is important to recognize that OLS and IV might be estimating different average treatment effects: indeed, IV estimates should identify a local average treatment effect, namely the effect of the free medieval commune on compliers, that is, firms located in those municipalities that become a free medieval commune precisely because of the presence of a bishop. If the effect of the free medieval commune experience is heterogeneous across locations, then it is possible that the local average treatment effect is different from the average treatment effect estimated by OLS.

As explained in the Identification section, in order to check the validity of our exclusion restriction, we show the relevant reduced form equation for the Centre-North (i.e., a regression of the three dependent variables on the bishop dummy plus the controls) and a similar specification for

TABLE 5 Reduced form equation for Center-North and South of Italy.

	(1)	(2)	(3)	(4)	(5)	(6)
	Two-tier Center-North	Union	Density	Two-tier South	Union	Density
Bishop	0.031*** (0.011)	0.043*** (0.014)	0.016** (0.007)	0.004 (0.009)	0.019 (0.015)	0.006 (0.008)
Controls						
Employment	Yes	Yes	Yes	Yes	Yes	Yes
Year, sector, province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Municipality controls	Yes	Yes	Yes	Yes	Yes	Yes
Firms characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Workforce characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,857	24,957	25,457	7,769	7,493	7,655

Note: See footnote to Table 3 and Section 4.

the south. While in the case of the Center-North, we find that the presence of a bishop is positively related to our dependent variables (as it should if the instrument is relevant), this is not the case in the South of Italy where the bishop dummy is not correlated to union density or the presence of two-tier agreements and unions (results are reported in Table 5). The absence of a correlation between the presence of a bishop and the three dependent variables in the south, which did not experience the institution of the free commune, lends some support to our exclusion restriction (i.e., that the presence of a bishop before the year 1000 affects the three dependent variables only indirectly by easing the creation of the free commune and not directly). Nevertheless, we cannot completely rule out the possibility that some unobservables might have driven both the fact that, in the Centre-North of Italy, a city hosted a bishop in the first place and the subsequent development of the conditions for a free municipality to raise and flourish. For example, the presence of a bishop might have altered the underlying religiosity of individuals, which in turn might affect generalized trust and more generally local culture and, through this channel, the current system of labour relations, thus violating the exclusion restriction. Although the fact that the presence of a bishop in the South of Italy is somewhat reassuring, we believe that the IV results (as well as the IV with propensity score discussed further below) should be more properly seen as additional evidence that confirms, at least, the existence of a very robust correlation in the data between the existence of a spell of free communal institutions in the Middle Ages and more co-operative labour relations today.

Finally, in order to take into account possible problems of selection into treatment, we run our OLS and IV estimates after running PSM. This allows us to find a group of treated municipalities that are similar to the control group in all relevant characteristics; the only difference being that one group was exposed to the treatment, whereas the other group was not. Results are reported in Table 6. For the entire set of our dependent variables, the estimates reported for the matched sample are in line with those reported in previous tables both for OLS and IV regressions. In particular, the estimates reported in column 1 show that firms located in a municipality that in the Middle Ages was a free commune have about a 5 per cent higher probability of adopting a two-tier bargaining scheme (our OLS estimates were equal to 3.3 per cent), whereas estimates for the IV regressions reported in column 2 for the same dependent variable are almost identical to those reported in column 2 of Table 4 (9.8 against 9.3).

TABLE 6 Pooled OLS and IV with propensity score.

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Two-tier Bargaining		Union (Work councils)		Union density	
	OLS	IV	OLS	IV	OLS	IV
Free commune	0.051*** (0.025)	0.098** (0.038)	0.104*** (0.031)	0.125*** (0.047)	0.066*** (0.023)	0.066*** (0.023)
Controls						
Employment	Yes	Yes	Yes	Yes	Yes	Yes
Year, sector, province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Municipality controls	Yes	Yes	Yes	Yes	Yes	Yes
Firms characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Workforce characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,939	3,939	3,803	3,803	3,893	3,893
First stage statistics for IV						
Excluded instrument						
Bishop		0.747***		0.799***		0.799***
<i>p</i> -value		[0.000]		[0.000]		[0.000]
Weak identification F		51.52		53.90		60.17
<i>p</i> -value		[0.000]		[0.000]		[0.000]

Note: See footnote to Table 3 and Section 4.

## 6 | CONCLUDING REMARKS

In this article, we have explored the long-run determinants of the emergence of co-operative labour relations. Indeed, a large literature has documented that high levels of trust and co-operative attitudes are positively correlated to development along various dimensions at the local level. Moreover, current levels of social capital are found to be highly persistent over time, with a key role for historical institutions to explain current levels of trust and co-operation.

We provide empirical evidence on the emergence of co-operative labour and industrial relations using Italian data for a sample of firms observed over the period 2010–2018. We find that, conditional on a large set of observable characteristics at the province, municipality and firm level, higher levels of trust and co-operation in the past (proxied by the presence of a free commune in the Middle Ages) are positively correlated to co-operative attitudes in the labour market today. In particular, we find a positive relation with the presence of second-level bargaining agreements at the firm level and with different proxies for the presence of unions.

We also complement our main empirical results using an instrumental variable strategy and propensity score methods. Consistently with Guiso et al. (2016), we find that the emergence of a free commune was more likely in cities that were already seats of a bishop. Our IV estimates confirm our main findings of a positive correlation between the free commune experience and current co-operative labour and industrial relations. Results are also confirmed when taking into account possible selection effects using PSM.

Our study refers to Italy. Some might argue that it lacks strong external validity, since our main result – namely, that labour relations seem to be more co-operative in local areas that, because of the free municipality experience in medieval times, have developed stronger generalized

trust – could be very specific of Italy and not easily generalizable to other countries. Nevertheless, it is important to acknowledge that the municipality experience was by no means a phenomenon unique to Italy. Indeed, in other European countries (Germany, France, Spain, among the others) certain cities enjoyed periods of freedom from the central power during which local participatory institutions – that correspond quite well to the Italian municipality experience – arose, as reported in the dataset by Bosker et al. (2013). Even more importantly, our main point is that the current labour relations arrangements, such as the propensity to join unions or to have co-operative labour relations, might be (also) shaped by cultural and institutional developments that may have their roots in a more remote past than currently acknowledged in the literature (e.g., the repression of the labour movement at the end of the 19th century, as in Müller & Philippon, 2011). In other words, the finding that cultural elements might be important to explain the way industrial relations system operate is, in our opinion, a general message that could be interesting for other countries as well.

What can we infer in terms of policy implications? Our work's central premise is that a historical event of nearly a millennium ago created an atmosphere of civic confrontation that endured for centuries. This historical context aids in elucidating why co-operative labour systems emerged more prominently in certain locations than in others. Consequently, the first obvious observation is that altering the environment is a challenging undertaking, especially in the short term. Additionally, certain reforms, unless accompanied by broader interventions encouraging co-operative behaviour, may have unintended consequences. Conversely, particular policy measures that may not appear to directly impact unionization could enhance the quality of local labour relations. For example, establishing more participatory forms of local governance is crucial. In general, initiatives aimed at creating an environment conducive to the growth of intermediate organizations and non-family networks could promote employee participation within companies and address the free-rider problem associated with unions.

Further research may investigate if the long-run effects of the Medieval communes might also indirectly impact the system of industrial relations by affecting corporate governance arrangements (e.g., the diffusion of family firms and the selection of external managers), as the latter might contribute to shape the degree of co-operation of the former.

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## CONFLICT OF INTEREST STATEMENT

The authors declare they do not have any conflict of interest.

## DATA AVAILABILITY STATEMENT

The empirical analysis is based on a restricted access version of the last three waves of the Rilevazione su Imprese e Lavoro (RIL) conducted by INAPP (the Italian National Institute for Public Policy Analysis) in 2010, 2015 and 2018. We have access to this version of the database as two coau-

thors are affiliated with INAPP. Additional information about RIL data is publicly provided at the following website: [https://urldefense.com/v3/\\_\\_https://inapp.org/it/dati/ril\\_\\_;!!N11eV2iwtfs!t0RIY7P3B7sXc43A6sfFwH9FWjRKwJzQsngja6ARTQjVutkVfGE91NVFwQ6hHrdHAW2cqwc2R XAQfvD9j4wO3NQT\\$](https://urldefense.com/v3/__https://inapp.org/it/dati/ril__;!!N11eV2iwtfs!t0RIY7P3B7sXc43A6sfFwH9FWjRKwJzQsngja6ARTQjVutkVfGE91NVFwQ6hHrdHAW2cqwc2R XAQfvD9j4wO3NQT$). The restricted access version of the dataset allows us to get information on the municipality where firms are located. Hence, for key explanatory variables we merge municipality-level measures of civiness, and historical characteristics kindly obtained from Guiso, L., Sapienza, P., and Zingales, L. (2016). Long-term persistence. *Journal of the European Economic Association*, 14(6):1401–1436. To request access to elementary INAPP-RIL data, please consult the available procedures at the following site: [https://urldefense.com/v3/\\_\\_https://inapp.org/it/dati/accesso\\_micro\\_file\\_\\_;!!N11eV2iwtfs!t0RIY7P3B7sXc43A6sfFwH9FWjRKwJzQsngja6ARTQjVutkVfGE91NVFwQ6hHrdHAW2cqwc2RXAQfvD9j-FvZGTt\\$](https://urldefense.com/v3/__https://inapp.org/it/dati/accesso_micro_file__;!!N11eV2iwtfs!t0RIY7P3B7sXc43A6sfFwH9FWjRKwJzQsngja6ARTQjVutkVfGE91NVFwQ6hHrdHAW2cqwc2RXAQfvD9j-FvZGTt$). The procedures to be adopted to request access to the Micro Files for Research (MFR) of INAPP are illustrated below at that site. The Micro Files for Research (MFR) of INAPP are elementary data files, without direct identifying elements, to which control methods have been applied for the protection of confidentiality. Access to MRF-Inapp data is allowed only to researchers belonging to organizations recognized as research bodies by Comstat or Eurostat and can only be requested for the implementation of a specific research project.

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## ENDNOTES

- <sup>1</sup>The term social capital is associated with different definitions. In general, it combines the set of beliefs, values and rules of thumb that are found to foster trust and co-operative action. Some authors also distinguish between bonding social capital, which fosters trust and inclusiveness within a (small) group, and bridging social capital, which in turn favours collaboration across groups. (See also the distinction between limited and generalized morality in Banfield, 1967).
- <sup>2</sup>This is because the existence of a representative union can make voice attitudes more attractive relatively to exit ones.
- <sup>3</sup>Some recent articles point out towards the interaction between unions and the environment in which they operate. A study by Addison et al. (2017) shows that unions may have a positive impact on innovation, even when bargaining is conducted at the collective level in Germany, a country with a high degree of co-operative relations. Similar findings are recently offered by Bryson and Dale-Olsen (2021) that argue that union voice effects reduce the cost of adoption of innovations at the local level in countries with quite different bargaining environments as the United Kingdom and Norway. Barth et al. (2020) also find that higher union density at the firm level in Norway a country characterized by a high level of co-operative industrial relations leads to a substantial increase in both productivity and wages. Cardullo et al. (2020) also find some evidence for Italy that stronger unions are more likely to promote two-tier bargaining agreements and thus indirectly increase investment in both physical and intangible capital. In general, results from single countries studies point out towards positive effects of unions compared to the evidence for the United States (Bradley et al., 2017), suggesting that the co-operative environment in which unions operate is a crucial element in identifying the effects of unions. Indeed, using establishment-level data for a large set of European countries, Addison and Teixeira (2020) show that trust of both management and employees (based on the two parties' reciprocal ratings) has a positive effect on measures of firm performance and labour productivity. Interestingly, they also show that a positive relationship between the presence of works councils and performance measures disappears when including their preferred measure of trust, suggesting that what really matters for performance is the (quality of) interaction of employees' representative and management at the workplace.

- <sup>4</sup>See also Greif (2006).
- <sup>5</sup>But on this, see Section 3.1.
- <sup>6</sup>In general, the recent literature that uses cross-country data emphasizes that co-operative institutions are often accompanied by strong unions, even if results from this literature suggests that the interaction between unions, institutions and the quality of industrial relation systems is complex. In a cross-country setting, codetermination (representation of workers in the governance of firms), which is a typical example of a co-operative institution, is found to have a small positive effect on various outcomes, such as physical capital investment, labour productivity and profitability even in the presence of strong unions (Jäger et al., 2022). Cardullo et al. (2015) show that in countries in which the degree of co-operation is higher (e.g., through social pacts) or where some institutional features favour the sustainability of co-operative equilibria, the negative effect of unions on investment in physical capital disappears.
- <sup>7</sup>The literature is not unanimous on how the effects that union structures might have on the development of a co-operative system of labour relations. On the one side, some scholars tend to view unions as rent-seekers, thereby leading to conflicting labour relations. Nevertheless, there is also a long-standing tradition (e.g., Freeman & Medoff, 1984) that sees unions as bodies that might favour the option value of voice over exit, thus favouring the development of co-operative labour relations, as forcefully argued by Aghion et al. (2011). As far as the role of work councils is concerned, they again might help workers to have their concerns heard by managers, thus possibly favouring co-operative labour relations. However, if dominated by conflicting unions, this mechanism might become mute. Indeed, Addison and Teixeira (2019) found that, in Germany, work councils are associated with lower strikes, provided they are not unionized. Interestingly, Addison and Teixeira (2020) find that the positive effect of the representation channel of work councils on productivity and performance disappears once adequate measures of trust are included in the analysis, pointing out towards a complex relation between voice and co-operation.
- <sup>8</sup>See also Bisin and Federico (2021).
- <sup>9</sup>This article is also related to the literature on the determinants of union membership (Farber et al., 2021) and, in particular, on the role that past unionism traditions play in shaping current unionization attitudes in local communities (see Bryson & Davies, 2019, among the others). Finally, the article is related to the literature on two-tier bargaining arrangements (Boeri, 2014).
- <sup>10</sup>Gramsci (1975) also noted that Communes were, therefore, a trade union kind of state, that never succeeded in overcoming this phase to become a fully fledged one, as Machiavelli vainly indicated.
- <sup>11</sup>An exception applies in the areas of economic distress, where local-level bargaining has the possibility to derogate from higher-level agreements to preserve employment levels, improve job quality or fight undeclared work (D'Amuri & Giorgiantonio, 2014).
- <sup>12</sup>The RIL survey is included in the National Statistic System (SISTAN). The RIL sample is stratified by size, sector, geographic area and the legal form of firms. Inclusion depends on firm size, measured by the total number of employees. This choice has required the construction of a direct estimator to take into account the different probabilities of inclusion of firms belonging to specific strata. In particular, the direct estimator is defined for each sample unit (firm) as the inverse of the probability of inclusion in the sample. By using this estimator, the RIL sample reproduces all active firms for each stratum and, simultaneously, the total number of employees in a given stratum (size, sector and other characteristics). For more details on RIL questionnaire, sample design and methodological issues, see <http://www.inapp.org/it/ril>.
- <sup>13</sup>As we will explain in the Identification section, in some specification we adopt an IV strategy, using the presence of a bishop as instrument for free-commune.
- <sup>14</sup>The controls we consider are reported in Tables 1 and 2. The RIL survey we consider in this study has the most comprehensive information on firm-level characteristics for the Italian case. We have decided to consider the most important information that is available in the survey as far as it concerns workforce characteristics, management as well as firms strategies. Results are not changed in any way when we control for these firm-level controls, which in turn suggests that we should not have a bad control problem.
- <sup>15</sup>We consider dummy variables for whether municipality  $m$  was a large or medium town as of 1300, as in Guiso et al. (2016). These two dummies proxy for historic urbanization, which is considered a good proxy for per capita incomes in the Middle Ages. As a result, these dummies are meant to capture possible unobservables that might have explained both the establishment of a free commune in the Middle Ages as well as the long-run patterns of growth that might be correlated with the current quality of firm-level industrial relations. Ideally, one would



need city size as of 1000 C.E., when most communes were established; unfortunately, the information as of about 1300 is as far as back that one can go. It is interesting to note that Bosker et al. (2013) show that, all over Europe, the establishment of a free commune was not correlated to initial city size. However, they also show that the presence of a commune was associated with stronger future population growth. This suggests that controlling for city size as of 1300 should be enough.

<sup>16</sup>We consider a dummy for whether the municipality is near to the sea, its altitude as well as a dummy for coastal municipalities. These geographic characteristics can be considered proxies, among the others, for the trade potential of a municipality, which in turn can foster trust and co-operative behaviour. (See also Bosker et al., 2013.)

<sup>17</sup>We consider predetermined modern characteristics of the municipalities, such as population levels and the Gini index of inequality, both measured as of 2001.

<sup>18</sup>Italy is currently divided into 110 provinces, with populations ranging from 70 thousand people to 3.7 million people (average about 0.5 million).

<sup>19</sup>For instance, Di Liberto and Sideri (2015) use province-level data and found that the current public administration quality is significantly influenced by the quality of past local institutions associated with the past dominations that prevailed in Italy in the 16th and 17th centuries.

<sup>20</sup>Buggle and Durante (2021) find that European regions which were characterized by more significant climate variability before the industrial revolution are characterized by higher current levels of trust.

<sup>21</sup>We control for proxies of per capita income as of 1300 C.E. as well as for geographic characteristics that might have favoured trade in the Middle Ages, like location near the coast, but the controls are clearly imperfect.

<sup>22</sup>We proceed as follows. In order to adjust for observable differences between the treated and untreated firms, the matching procedure consists of running a pooled logit model to estimate those observable factors that are expected to affect the probability of being located in a Medieval Comune, that is, of being treated over the period 2010–2018. In detail, we implement the PSM using the nearest neighbour method with replacement. This allows us to keep only observations that are in the common support, that is, to drop treatment observations whose propensity score is higher than the maximum or less than the minimum propensity score of the controls. Finally, to assess the quality of the matching, we also check the differences between the mean values of the variables that are used to match the treatment and control groups for each outcome variable.

<sup>23</sup>In particular, in the case of heterogeneous treatment effects, the IV estimation of Equation (1) should deliver an estimation of a local average treatment effect, that is, it should identify the effect of the free communes on co-operative industrial relations in firms located in municipalities that became free communes because of the original presence of a bishop (the so-called compliers).

<sup>24</sup>However, as a robustness check, we have also explored the impact of clustering at a higher level of aggregation, namely at the NUTS-3-by-year level, thereby allowing the error term to be correlated for firms within the same province and year. Reassuringly, this does not seem to matter as far as the statistical significance of our estimates is concerned. The empirical estimates are available upon request.

<sup>25</sup>In tables not reported, but available from the authors upon request, we run the same regressions on the sample of firms located in the municipalities in the north of the country, thus excluding those located in the centre. Results are confirmed.

<sup>26</sup>Complete first stage results are available from the authors upon request.

<sup>27</sup>The parsimonious specification corresponds to the OLS estimates reported in column 1 of Table 3, the fully saturated one corresponds to column 3 of the same table.

<sup>28</sup>We also run our IV regressions on the sample of firms located in the north, thus excluding those located in the centre of Italy. Again, our main results are confirmed.

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## SUPPORTING INFORMATION

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