# An Institutional Approach to Trade Unions' Performance

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**Abstract**

Which institutions may be important in terms of trade unions' density and how significant they are? However, trade unions' status is very different among states, they are still a very meaningful component of labour markets. In this paper we contribute to the debate on the institutions, which may affect the outcome of trade unions in different legal systems. Firstly, we draw on theoretical underpinnings of trade unions' activity and density. Then, we conduct an empirical analysis of the relationships between trade union density in a particular country, its legal origin and government's ideology. In this way the paper enriches an underexploited niche in institutional research devoted to labour market issues

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**Introduction**

There is a lot of research on trade unions' role in modern labour economics (Oswald, 1985; Ebbinghaus, 2002; Ashenfelter, Johnson, 1969), but this sphere has to be examined with reference to other social sciences due to its complexity. With the interdisciplinary of academic research in mind, formal institutions should be designed so as to include the trade unions' nature and accomplish selected economic goals at the same time. This work is related to institutional forms of trade unions density, from a law and economics perspective. The main research question is whether legal origins and political parties' ideologies have an impact on union density.

Trade unions' functioning is an interdisciplinary and complex issue (Rees, 1989). Research tools taken from law and sociology significantly enrich formal economic trade unions models, making them easier to be applied in a law & economics perspective. The analysis presented in this article consists of three parts: of the presentation of trade unions basic foundations, of the review of literature on legal origins and political parties' ideology and their impact on trade union density, as well as of the empirical model. A particularly important section of this article is the last one, dedicated to an empirical evaluation of union density determinants. The model bases on the panel data for 30 OECD members and is devoted to union density issue. It includes general macroeconomic variables and the aforementioned legal origins and parliamentary ideology.

**Economic Foundations of Trade Unions**

Trade unions may be perceived as a form of voluntary organization associating employees and other social groups which interests are based on employment relationship. The main objective of unions is to protect employees' interests against employers (Wratny, Bednarski, 2010). Trade unions are the oldest and best known models of representation linked with

employment issues. They are defined as permanent associations, which aims are to keep or to improve working conditions (Webbs, Webbs, 2003). This designation is very general, but in fact, trade unions are heterogeneous. Numerous models have been developed among different countries (Lewkowicz, 2015). Employees' unions may differ by internal structure, range of agreements made, participation in management processes, relations with government and political parties or by contribution to social dialog (Wratny, Bednarski, 2010).

There are different approaches towards trade unions. The divergence approach assumes that differences between them have mostly historical roots (Clegg, 1976). This diversity is determined usually by organizational, technological, social, ideological, and political issues. Trade unions activity and involvement are specific for every particular country and this partially results from its unique development (Freeman, 1994). On the other hand, the convergence perspective emphasizes common patterns of diffusion between trade unions as a result of globalization and transnational institutions' presence.

Another important classification states that there are five trade unions systems: monocratic, radical-confrontational, pluralistic, corporatist, statist (Gardawski, 2001). The monocratic system assumes unions' role as a middleman between the party and society in a totalitarian regime. The radical-confrontational approach indicates a Marxist perspective in capitalistic states. The pluralistic system represents relationships between employees and employers that occur without any substantial role of government. The corporatist approach assumes that unions' important role in labour policy creation and bargaining often has a trilateral character. The statist system in turn permits the government to intervene in employment issues very seriously.

Additionally, B. Ebbinghaus investigates some European models of trade unions activity: labour unionism, solidaristic unionism, polarized pluralism, sectional pluralism and consolidated unionism (Ebbinghaus, Visser, 2000). Labour unionism is relatively typical for

the British system. Each trade union there (industrial, professional or general) is independent to a large extent. Solidaristic unionism originated in Scandinavian states. Solidaristic trade unions are much involved in welfare state model activity. Conflicts and political opportunism led to unions' representatives exclusion from political structures (e.g. Spain, Portugal, Italy). Sectional pluralism in turn, assumes that trade unions divide into different groups (religious and secular). Consolidated unionism bases on harmonization and social co-operation that may be reached because of dedicated institutions (Germany, Austria).

Trade unions may be also divided into confrontational, cooperative and focused on co-optation systems (Gardawski, 2001). Confrontational unions fight for employees' interests within a conflict with employers. Cooperative targets assume that unions have to accomplish their aims similarly to those dedicated to employed staff. Co-optation is interpreted as a subordination to the employer (evident or hidden).

Three types of unions' activity criteria should be highlighted (Lewkowicz, 2015). There are unions whose main aim is to be involved in conflict between work and capital. Secondly, some trade unions focus on improving working conditions (pure unionism). Last but not least, trade unions may try to cope with a broader scope of problems, e.g. linked with labour policy or globalization. These different types of trade unions' activity do not have to be treated as separate (Hollinshead, Leat, 1995). There are specific models, that include interactions between several trade unions' goals. For instance, R. Hyman (2001) analyzes the relationships and convergence that link different trade unions. These relationships may concern sectional unionism model, workers service orientation or on employees' role in the society.

Despite the large number of trade unions models and their strong heterogeneity, as well as political circumstances, their existence is still perceived as a necessary element of social order (Wratny, Bednarski, 2010). They are a significant social partner and some kind of force contrary to employers (Lewandowski, 1996).

Empirical research devoted to trade unions focuses to a large extent on their effects on wages and other labour market variables (e.g. productivity, employment) (Lewkowicz, 2015). Studies point out that union wage premium is positive, so in general unions members may earn more (Card, 1996). The scope of the premium depends on the way that wages in unionized sectors spread into those non-unionized. Union premium wages differ strongly between countries (Blanchflower, Bryson, 2002).

Higher bargaining power of trade unions results in the increase of wages. It depends in turn not only political links of a particular union, but also on union density. The more members a trade union has, the more bargaining power it gets. However, its impact on employment level is ambiguous (Card,1990). Trade unions are sometimes treated as a factor, which restrains the firm's development. Employers limited by trade unions' claim not to be able to use firm's potential fully (Addison, Hirsch 1986). Thus, as a result, unionized companies may be less attractive for investors (Machin, Wadhwani, 1999). On the contrary, another studies reveal that trade unions support the management and assist knowledge diffusion (Freeman, Medoff, 1985). Trade unions may influence firm's productiveness positively, because of employment rotation scale lowering. Wages negotiated by trade unions' representatives could motivate employees to perform better (Cahuc, Kramarz, 1997). There are some economic models assuming convergence of trade unions' and firms' objectives. Then trade unions should support the development of firms (Aidt, Sena, 2005). It is difficult to judge trade unions clearly, i.a. because of a hardship in isolating the casual effect of unions' activity from any selection biases. However, effects of their activity are related to their bargaining power and bargaining power depends mostly on union density.

**Trade Union Density**

Trade unions are perceived as successful organizations, if they manage to provide a collective protection of employment and in wage bargaining. The power of trade unions raises when

union density is higher. Their bargaining power usually develops then. Union density in turn, is dependent not only on a particular trade union characteristics (i.a. selective benefits or reputation), but also on institutional issues and political management of reforms (Lesch, 2004).

There is a broad literature on trade union membership (density), both in theoretical and empirical dimensions. Some papers contribute to bridge the gap between theoretical developments in economic models devoted to trade unions density and empirical framework (Checchi and Corneo, 2000). For example Checchi and Corneostress out the importance of so called social custom and other strategic factors. Their empirical model is narrowed to the Italian case. Authors reveal that in this particular circumstances, the social custom effect does not affect union membership. Their analyses provide a conclusion that Italian union representatives act strategically i.e. in order to promote unionism in periods of large available surplus. What is more, both labour legislation being in favour of union membership and the degree of centralization of union activity, foster unionization.

There are also other studies regarding the determinants of unionization during the last century. For instance, in Finland union density has risen about 60 percentage points in 32 years (Pehkonen and Tanninen, 1997). Authors of the paper base on theoretical underpinnings, with special attention on the institutional features of the Finnish labour market. Particularly, they take into account some background information obtained from surveys including questions why workers join or remain members of a union. Their findings concerning the period 1960-1992 reveal that empirical models are capable of explaining long-run changes in union density in a quite satisfactory degree. Institutional features of the Finnish labour market play a crucial role in determining union density (characterized mainly by the benefit mark-up and legislative changes and public policy).

Short-run and long-run analyses show that union membership decline during the 1980s and 1990s is endogenous to a large extent to labour market changes. The impact of such changes is being mediated by a specific set of labour market institutions (Checchi and Visser, 2005). In Europe, union density rates declined because of unemployment development, drop in public employment, inflation decrease, new workplaces less covered by unions and strike activity decline. However, it is important that institutional differences account for diverging union density rates in European countries. Even effects of economic globalization are marginal in terms of particular economic institutions that help to explain divergent trends in trade union density (Scruggs and Lange, 2002).

It seems that some institutions crowd out trade unions. For instance, job security legislation or wage indexation may result in lowering trade union density. On the other hand, some institutions are associated with higher degree of unionization – e.g. workplace representation or centralized wage bargaining (Checchi and Lucifora, 2002). An important finding is that there is no generalized downward trend in European trade union density. Aggregate figures tend to present a very heterogenous picture of unionization.

Trade union membership differs across countries. Particular legal and political factors determine the shape of unionization. As a result many empirical studies suffer measurement errors or inability to quantify some of the strategic factors. An example of such a strategic factor may be the quality of union leadership (Ashenfelter and Pencavel, 1969).

**Legal Origin and Political Parties**

It is necessary to refer to literature on labour regulation and legal origins. It may be stated that labour market legislation usually refers to different spheres, like minimum working conditions, minimum wages and many others (Siebert, 2005). What is important is that labour regulation requires also a monitoring mechanism, conducted by trade unions or labour

inspector or both. Siebert claims that both the political and the legal origin, may serve as the reasons behind particular labour market policies. The political theory is linked with the median voter theory. For instance, the median voter usually benefits from attractive wages and good working conditions. On the other hand, unemployed people are too dispersed to make some significant difference to political issues. Naturally, political parties strive to gain as much votes during the political cycle, as they can. Additionally, the legal origin theory can be applied to this problem as long as it influences the path dependence. The legal systems may be laden by specific regulations that are hard to change (high transaction costs of changes), for instance the French or German legal traditions. The English legal system is perceived as free-market tradition, which is much more elastic.

Studies on the importance of the legal origin on the path of economic development undoubtedly may provide some inspiring conclusions for analyses of trade union density. Ahlering and Deakin (2007) check if the common law of civil law origins of legal systems have influenced the development in different countries from economic perspective. It becomes more and more convincing that the law is significant for economic development. It is also often stated that common law institutions are better suited to the promotion of market-based economic systems. Ahlering and Deakin however came to a conclusion that the legal indexing methods, which are used by the legal origin school, are able to measure only formal law. Thus, they provide a relatively weak proxy of the economic and social impact of legal regulations. They also state that the theoretical basis dedicated for the legal origin claim is weak. In fact, the legal origin school does not describe properly the common law and civil law division. It is true, since those two systems are in fact incomparable, so it cannot be judged wisely, which system is better. Nevertheless, the legal origin issue remains very important in terms of path dependence.

In the long run, legal styles and origins have an influence on economic development. Additionally, enduring complementarities between legal and economic institutions may be significant for the diversity in labour regulation across states (Ahlering and Deakin, 2007). As long as the legal origin hypothesis suffers from limitations, deeper engagement with historical evidence is being proposed as a solution to this impasse. It becomes visible that a critical factor to the relationships between the legal system and economic development, is the timing of industrialization with reference to the core legal institutions of market economies. Naturally, it regards also labour markets. For instance, the Britain's early Industrial Revolution began before legal regulations for the employment relationships were introduced and in France or Germany, this sequence was reversed – the modernization of the legal systems preceded industrialization. In should be also noticed that national legal systems are specific and may be classified regarding legal orders just to some extent.

Cross-national differences in union density are also explained by the size of the labour force (Wallerstein, 1989). It may occur as long as trade unions' gains due to collective bargaining depend on the proportion of substitutable employees that are organised. Additionally, trade unions in larger and more developed labour markets will accept lower levels of unionization. On the other hand, trade unions being  present on smaller labour markets, may gain high levels of unionization more cheaply. What is crucial for this paper, also the cumulative participation of the leftist parties in government explain most of the differences in unionization rates among advanced societies in the late 1970s (the size of the labour force and the cumulative participation of the leftist parties in government explain almost three-quarters of the variance in trade union density).

New dynamic models of union density may in turn exhibit multiple equilibria and path-dependency (Palleyand, LaJeunesse, 2007). Also recent works on labour market and union density emphasize the significance of the state and socio-economic factors that may have an

impact on public attitudes to trade unions. In fact, trade unions are institutions, which exist within a society. Their ability to develop is dependent mostly on labour law and public support. Legal rules as well as administrative rules or restrictions, really matter (Morris, 1998). In more detailed terms, laws that govern employer rights of dismissal, employee rights to obtain redress in case of unfair dismissal or employee rights to form unions are critical (Palleyand, LaJeunesse, 2007). In other studies, crucial institutions for union density have been identified: strong working class political parties, union-run employment insurance and centralized collective bargaining (Western, 1997). These factors are inevitably linked with the supply and demand for union services, which affect union density in the next step.

The impact of the leftist parties in government on unionization is observable in most studies. Bean and Holden (2001) prove that higher trade union density is associated with centralization of wage bargaining, higher percentage of employees covered by collective bargaining, as well as a larger public sector and a more leftist parties in governments, regarding selected 16 OECD countries in the 1980s[1]. It could have occurred, because leftist parties are usually pro-labour in their ideology (equality and social justice). Thus, leftist parties very often support the labour movement and may lead to higher union density.

The main aim of the paper is to use the law & economics research apparatus to address the question whether the legal origin and parliament parties' ideology matter in terms of union density. Although there is a broad literature on the role of trade unions and union density, detailed research on the importance of the legal origin with reference to unionization, seems to constitute a lacuna. Additionally, there have been attempts to reveal the significance of parliamentary ideology. However, these studies covered the problem just in a small fraction (it was usually an additional issue within the papers described above).

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[1] Sweden, Denmark, Belgium, Norway, Austria, New Zealand, Australia, Ireland, UK, Italy, West Germany, Switzerland, Canada, Netherlands, Japan, France, USA.

**The Model**

*Database and variables*

In our empirical analysis we use the panel data for 30 OECD members[2] for period 1995-2014. The selection of the countries to the research has been predetermined by the availability of the data. In the database there are missing observations, therefore all of our calculations are conducted on the unbalanced panel data set.

For the purpose of our analysis we have divided variables into three groups i.e. labour force characteristics variables, economy characteristics variables and institutional characteristics variables. Therefore the key regression of our research is as follows:

$$trade\_density_{it} = LFCh_{it} + ECh_{it} + ICh_{it} + \varepsilon_{it}, \tag{1}$$

where $LFCh_{it}$ is a set of labour force characteristics variables that are: percentage of females in the labour force (*female_proc*), percentage of labour force in the age 15-24 (*lf_less_24*), percentage of labour force employed in the industry sector (*proc_industry*), percentage of labour force employed in the services sector (*proc_services*). $ECh_{it}$ stands for the economic characteristics of a given country and is expressed by: unemployment (*unempl*), inflation (*infl*), GDP *per capita* growth (*gdp_growth*), population growth (*pop_growth*). Finally, institutional characteristics ($ICh_{it}$) variables are: legal origins (*englo*, *gerlo*, *scanlo*, *soclo*, *frlo*), ideology of the head of the government (*centr_ideology*, *right_ideology*, *left_ideology*) and percentage of the leftist parties in the Parliament (*parl_left*). Detailed information about the construction and sources of abovementioned variables has been provided in the Appendix 1. Appendix 2 presents the descriptive statistics. All variables except for legal origins variables are time varying.

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[2] Australia, Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States.

*Analysis of variance model  - two-way ANOVA*

The first part of our empirical research concentrates on the issue of the relationship between the trade union density in a given country, its legal origin and government's ideology. According to the theory institutional environment in which trade unions function should have a impact on their number. Countries by their legal system can somehow support the trade unions' existence for example by convenient procedures of their establishment, by providing in the constitution the right to form or to join trade  unions or by protecting the rights of the trade union members from the employer's or state's interference. We assume that the channels of such support are predetermined by the legal origin of a country and political ideology of the government. Table 1 presents the mean values of the trade union density in groups determined by country's legal origin and its head of government ideology.

|  | head of government | | |
| --- | --- | --- | --- |
| legal origins | centre | left | right |
| English | 25.563 | 26.272 | 26.03 |
| French | 29.85 | 22.181 | 27.978 |
| German | 19.086 | 25.701 | 20.092 |
| Scandinavian | 34.998 | 66.181 | 60.281 |
| Socialist | 23.729 | 26.345 | 23.463 |

**Table 1.** Mean values of the trade unions density in groups determined by the legal origin and the ideology of the head of the government (for period 1995-2014).

Brief analysis of the data enables to conclude that probably the mean values of trade union density vary among countries of different legal origin  and political ideology of the head of the government. The highest values of the trade union density have been reported for the leftist countries of the Scandinavian legal origin and the lowest for the centrist countries with legal system of German origin.  Therefore the preliminary aim of our analysis is to test whether there is a significant difference between the mean values of the trade union density in groups of countries of different legal origin and government ideology.

The model that should be applied to verify this issue is a two-way analysis of variance model (two-way ANOVA). In case of our data we reported violations of the standard assumptions of ANOVA i.e. *inter alia* the trade union density data in groups of countries of a different legal origin do not have a normal distribution. However, in the literature it is stated that ANOVA is rather robust to the assumption of normal distribution of the observations and of homogeneity of variances as long as we have relatively large groups in the sample (more than 20 observations in each group) free from outliers (Theodorsson-Norheim, 1986). In case of our study we work with a large sample (574 observations) and for each group of countries we have more than 20 observations (Table 2).

| group | number of observations |
|---|---|
| countries of English legal origin | 118 |
| countries of socialist legal origin | 94 |
| countries of German legal origin | 96 |
| countries of French legal origin | 170 |
| countries of Scandinavian legal origin | 96 |
| countries with leftist ideology | 199 |
| countries of rightist ideology | 280 |
| countries of centrist ideology | 95 |

**Table 2**. Number of observations in groups.

Table 3 presents the results of the estimation of the two-way ANOVA model. The obtained values of F statistics suggest that there exist significant differences of mean values of trade union density data in groups of countries of different legal origin and government ideology.

| source | partial SS | degrees of freedom | MS | F | probability>F |
|---|---|---|---|---|---|
| model | 102504.81 | 14 | 7321.772 | 41.72 | 0.0000 |
| legalorigins | 60190.06 | 4 | 15047.515 | 85.74 | 0.0000 |
| governmentideology | 2478.682 | 2 | 1239.341 | 7.06 | 0.0009 |
| legalorigins # governmentideology | 12568.549 | 8 | 1571.069 | 8.95 | 0.0000 |
| residual | 98109.006 | 559 | 175.508 | | |

| | | | |
|---|---|---|---|
| total | 200613.816 | 573 | 350.111 |
| number of observations | 574 | | |
| Root MSE | 13.248 | | |
| R² | 0.5110 | | |

**Table 3.** Two-way ANOVA.

What is more, there is a significant interaction between independent variables (legal origin and government ideology) on dependent variable (trade union density). In other words the effect of legal origin of the country on the trade union density is influenced by the government ideology. To investigate the details of these interactions it is essential to conduct a graphical analysis. Figure 1 presents the interactions between legal origins and government ideology. From the graph it may be seen that for countries of Scandinavian, English, Socialist and German legal origins the mean values of the trade union density are higher when the head of the government represents leftist ideology and lower when she or he is of rightist ideology. For countries of French legal origin the dependence is of the opposite direction.
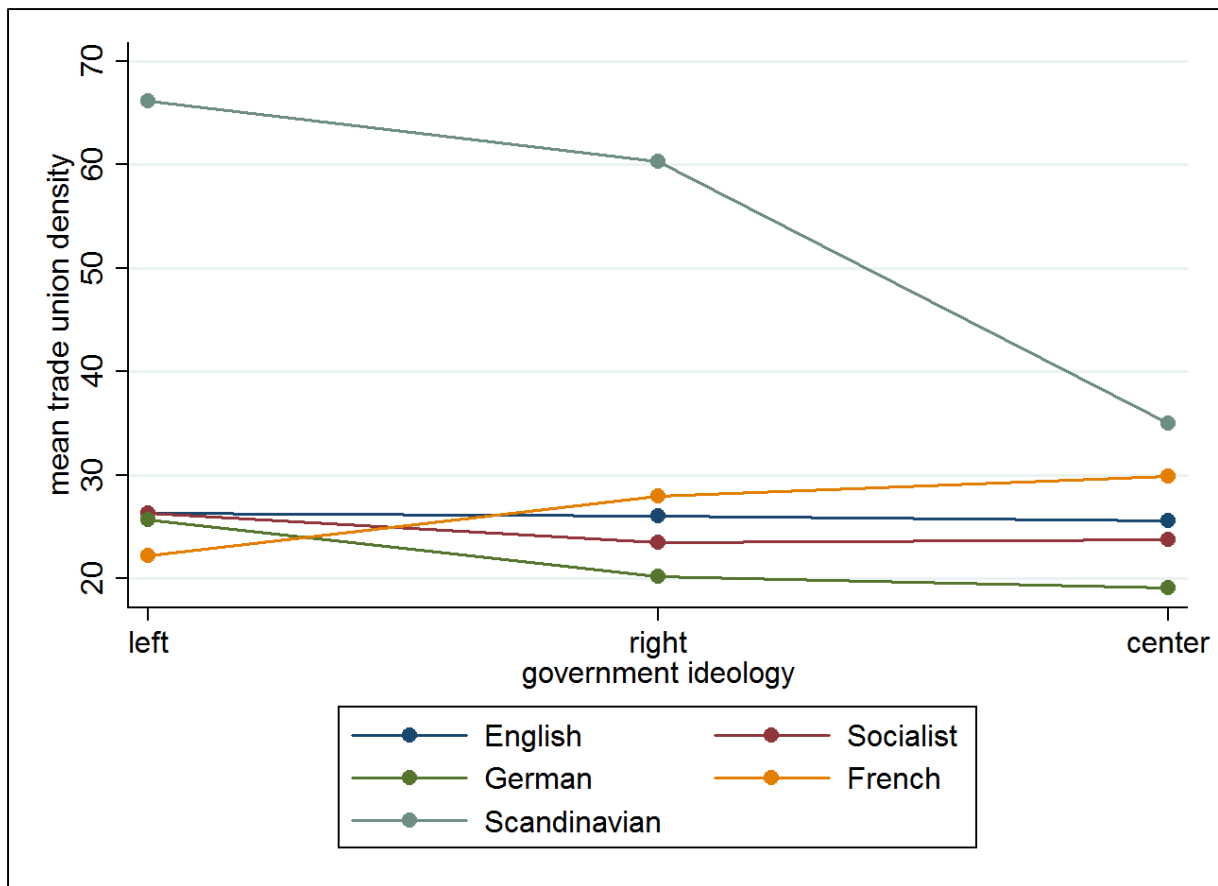
**Figure 1.** Interactions between legal origins and government ideology.

From the outcomes of the aforementioned analysis it appears that both country's government ideology and its legal origin may be perceived as determinants of the trade union density.

*Panel data estimation*

In order to specify the determinants of trade union density in OECD countries we have conducted a panel data regression. Table 4 presents the results of the panel data estimation for two models - pooled Ordinary Least Squares (pooled OLS) regression and Prais-Winsten regression with correlated panels and corrected standard errors. Such specification has been chosen on the basis of several diagnostics tests i.e. Jarque-Bera test of normality of residuals, Wald test of heteroscedasticity, Pesaran test of cross-sectional dependence and Woolridge test for first-order autocorrelation. The outcomes of the tests indicate that the model does not fulfil

assumptions indispensable for standard fixed effects or random effects estimation.[3] Therefore, panel-correlated standard error estimates have been calculated. This method is an alternative to feasible generalised least squares for fitting linear cross-sectional time-series models when the disturbances are not assumed to be independent and identically distributed. In this method it is assumed that disturbances are heteroscedastic and correlated across panels. An additional option specifying that there is a correlation across panels has been chosen and Prais-Winsten estimator has been used.

Table 4 presents the outcomes of panel data pooled estimations. The results of more reliable Prais-Winsten estimation suggest the presence of 6 significant determinants of the trade union density that are related to either characteristics of the labour force or of the economy or of the institutional environment. With regard to the first ones we confirm the relevance of the percentage of women in the labour force, the scope of the employment in the industry and services. According to our results women tend to engage less in the trade union activity than men do. An increase of employment in the industry - not unexpectedly as trade union activity is traditionally associated with industrial sector - causes an increase in the trade union density. On the contrary a rise of employment in services should contribute to its decline. Furthermore, within the scope of economic determinants we have found a significant positive effects of wage (although it is almost equal zero), unemployment and inflation. The effect of the unemployment may be attributed to the fact that people faced with the risk of losing their job, seek protection within the structures of trade unions that dispose of measures to protect their members form dismissals. Rising inflation contributes to higher trade union density. It may occur as long as employees seem to perceive trade unions as organizations successful in bargaining over wages. Thus, inflation may lead to wage pressure and employees are more prone to join unions then. Finally, our model indicates a significant impact of legal origins of

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[3]Jarque-Bera test: $\chi_2^2$ statistics equals 69.08, Wald test: $\chi_{26}^2$ equals 9088.42, Pesaran test of cross-sectional dependence 2.433, Woolridge test statistics F(1, 25) equals 142.735.

the country on the trade union density. The pooled OLS estimation indicates in addition the relevance of percentage of labour force in age less than 24, of population growth and of percentage of seats in the Parliament taken by leftist parties. To sum up, countries with higher levels of trade union density are those which, *ceteris paribus*, have the labour force characterised by low proportion of women in the labour force, high employment in the industry comparing to the one in other sectors and high unemployment. They should be also characterised by inflation.

| Independent variables | Pooled OLS Regression coefficients | Prais-Winsten regression, correlated panels corrected standard errors coefficients |
|---|---|---|
| wage | $6.673 \times 10^{-4}$*** | $2.815 \times 10^{-4}$*** |
|  | (6.90) | (3.95) |
| female_proc | -1.44*** | -1.216*** |
|  | (-6.25) | (-7.39) |
| lf_less_24 | -0.506*** | -0.04 |
|  | (-2.68) | (-0.27) |
| gdp_growth | 0.078 | -.0145 |
|  | (0.49) | (-0.29) |
| pop_growth | -2.87*** | -0.195 |
|  | (-2.69) | (-0.79) |
| proc_industry | 1.494*** | 0.99*** |
|  | (7.13) | (6.47) |
| proc_services | -0.192 | -0.177*** |
|  | (-1.25) | (-2.05) |
| parl_left | 0.0458*** | 0.002 |
|  | (2.38) | (0.26) |
| unempl | -0.172 | 0.137*** |
|  | (-1.32) | (2.00) |
| infl | 0.95*** | 0.208*** |
|  | (4.94) | (2.96) |
| englo | -44.59*** | -45.932*** |
|  | (-24.27) | (-61.26) |
| soclo | -59.69*** | -56.088*** |
|  | (-26.05) | (-26.34) |
| frlo | -47.883*** | -46.652*** |
|  | (-26.46) | (-48.45) |
| scanlo | - | - |
|  | - | - |
| gerlo | -54.477*** | -50.569*** |
|  | (-26.78) | (-38.21) |

| | | |
|---|---|---|
| *right_ideology* | - | - |
| | - | - |
| *centr_ideology* | -2.256 | -0.187 |
| | (-1.64) | (-0.40) |
| *left_ideology* | -2.353 | 0.3821 |
| | (-1.47) | (0.80) |
| *constant* | 109.507*** | 113.207*** |
| | (6.31) | (11.88) |
| number of observations/ number of groups | 447/- | 447/26 |
| $R^2$ | 79.75 | 81.51 |
| | F-statistic = 105.81 | Wald $X^2_{16}$= 18344.86 |

**Table 4.** Results of estimations.

**Conclusions**

To sum up, in this paper the main focus was on determinants of union density. Despite the fact that trade unions are very heterogeneous and differ strongly among states, they usually play an important role as a partner of a social dialogue and as a labour market actor in a broader perspective. In addition, economic effects of unions' activity seem to be ambiguous. It may be stated that bargaining power of trade unions depends on several factors, but on membership level above all. Thus, we refer to literature on union density. Factors like individual characteristics of trade unions, leftist ideology among political parties and English legal origins seem to affect union density positively.

The empirical model regarding 30 OECD members reveals that factors statistically significant for trade union density are: the percentage of women in the labour force, the scope of the employment in the industry and services, wages level, unemployment and inflation rates. It is crucial also that legal origins of the particular country have a significant impact on the union density. However, this clue seems to be more sophisticated than usually presented in the literature. Last, but not least, leftist ideology among political parties affects trade union density.

With this paper we aimed to contribute to a better understanding of the nature of union density, with special reference to the significance of legal origins and political parties' ideology. Given the gaps and inconsonance in the existing literature, we believe that applying the proposed approach, in future studies of labour market institutions and their factual execution will lead to more consistency and less confusion in the analyses conducted by theoretical and empirical researchers in the field. As a final step, the more systematic empirical analysis will allow for formulating more reliable policy recommendations.

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# Appendix 1

| VARIABLE | DESCRIPTION | SOURCE |
|---|---|---|
| *trade_density* | trade union density defined as the ratio of wage and salary earners that are trade union members divided by the total number of wage and salary earners | OECD.Stat, Dataset: LFS |
| *female_proc* | percentage of female in the labour force | OECD.Stat, Dataset: LFS |
| *lf_less_24* | percentage of the labour force aged 15-24 | OECD.Stat, Dataset: LFS |
| *gdp_growth* | annual percentage growth rate of GDP at market prices based on constant local currency | World Development Indicators, Wold Bank |
| *pop_growth* | populationgrowth (annual %) | World Development Indicators, Wold Bank |
| *infl* | Inflation as measured by the consumer price index. | World Development Indicators, Wold Bank |
| *unempl* | unemployment, total (% of total labor force) | World Development Indicators, Wold Bank |
| *proc_industry* | employment in the industry (including energy) as a percentage of total employment | OECD.Stat, Dataset: LFS |
| *proc_services* | employment in the services sector as a percentage of total employment | OECD.Stat, Dataset: LFS |
| *parl_left* | percentage of seats in the Parliament occupied by leftist parties | Klaus A, Isler Ch, Weisstanner D and Knöpfel L (2016). *Supplement to the Comparative Political Data Set – Government Composition 1960-2014.* Bern: Institute of Political Science, University of Berne |
| *englo* | a binary variable, for the country of English legal origin it takes the value 1 | La Porta R, Lopez-de-Silanes F, Shleifer A and Vishny R (1999) The Quality of Government. *Journal of Law, Economics, and Organization* 15: 222-279. |
| *soclo* | a binary variable, for the country of socialist legal origin it takes the value 1 | La Porta R, Lopez-de-Silanes F, Shleifer A and Vishny R (1999) The Quality of Government. *Journal of Law, Economics, and Organization* 15: 222-279. |
| *frlo* | a binary variable, for the country of French legal origin it takes the value 1 | La Porta R, Lopez-de-Silanes F, Shleifer A and Vishny R (1999) The Quality of Government. *Journal of* |

| | | |
|---|---|---|
| | | *Law, Economics, and Organization* 15: 222-279. |
| *scanlo* | a binary variable, for the country of Scandinavian legal origin it takes the value 1 | La Porta R, Lopez-de-Silanes F, Shleifer A and Vishny R (1999) The Quality of Government. *Journal of Law, Economics, and Organization* 15: 222-279. |
| *gerlo* | a binary variable, for the country of German legal origin it takes the value 1 | La Porta R, Lopez-de-Silanes F, Shleifer A and Vishny R (1999) The Quality of Government. *Journal of Law, Economics, and Organization* 15: 222-279. |
| *right_ideology* | a binary variable, it takes the value 1 for the ideological orientation of the head of government - RIGHT (i.e. conservative, Christian democratic, market-liberal). Missing data have been imputed by authors. | Brambor T, Lindvall J and Stjernquist A (2014) *The Ideology of Heads of Government (HOG), 1870-2012*. Sweden: Department of Political Science, Lund University. |
| *centr_ideology* | a binary variable, it takes the value 1 for the ideological orientation of the head of government - CENTER (i.e. various centrist ideologies, especially social liberalism). Missing data have been imputed by authors | Brambor T, Lindvall J and Stjernquist A (2014) *The Ideology of Heads of Government (HOG), 1870-2012*. Sweden: Department of Political Science, Lund University. |
| *left_ideology* | a binary variable, it takes the value 1 for the ideological orientation of the head of government - LEFT (i.e. communist, socialist, social democratic, or with an otherwise strongly redistributive platform). Missing data have been imputed by authors | Brambor T, Lindvall J and Stjernquist A (2014) *The Ideology of Heads of Government (HOG), 1870-2012*. Sweden: Department of Political Science, Lund University. |

**Table 5.** Description and sources of variables.

**Appendix 2**

| Variable | | Mean | Standard deviation | Min | Max | Number of observations |
|---|---|---|---|---|---|---|
| *trade_density* | overall | 30.38242 | 18.71126 | 5.654338 | 83.13813 | N = 574 |
| | between | | 18.2851 | 7.901695 | 74.92628 | n = 30 |
| | within | | 4.980289 | 15.89427 | 59.73573 | T = 19.1333 |
| *wage* | overall | 34819.88 | 11853.95 | 8571 | 60196 | N = 588 |
| | between | | 11566.45 | 14748.65 | 54698.5 | n = 30 |
| | within | | 2999.468 | 25537.23 | 44520.23 | T-bar = 19.6 |
| *female_proc* | overall | 44.27582 | 3.214984 | 32.5393 | 50.85168 | N = 600 |
| | between | | 3.020639 | 34.80754 | 49.14098 | n = 30 |
| | within | | 1.225267 | 39.04783 | 48.5274 | T = 20 |
| *lf_less_24* | overall | 12.96765 | 4.081255 | 6.004952 | 29.45849 | N = 595 |
| | between | | 3.622459 | 8.119653 | 23.02181 | n = 30 |
| | within | | 1.982508 | 6.030328 | 19.40433 | T-bar = 19.8333 |
| *gdp_growth* | overall | 2.427623 | 2.889524 | -14.7244 | 11.7986 | N = 598 |
| | between | | 1.073123 | .5949518 | 4.616528 | n = 30 |
| | within | | 2.690209 | -16.71889 | 9.804104 | T-bar = 19.9333 |
| *pop_grow* | overall | .5663027 | .6783836 | -1.7854 | 2.89096 | N = 600 |
| | between | | .5882219 | -.5333314 | 2.099166 | n = 30 |
| | within | | .3538001 | -1.09698 | 2.694526 | T = 20 |
| *proc_industry* | overall | 17.67686 | 5.45781 | 9.164394 | 32.67896 | N = 532 |
| | between | | 5.03766 | 11.21641 | 29.72359 | n = 30 |
| | within | | 1.891681 | 13.17504 | 23.35362 | T-bar = 17.7333 |
| *proc_services* | overall | 76.99985 | 7.978394 | 53.31408 | 89.66506 | N = 512 |
| | between | | 7.456238 | 61.3635 | 86.41893 | n = 29 |
| | within | | 2.927465 | 67.55911 | 83.42856 | T-bar = 17.6552 |
| *parl_left* | overall | 39.48946 | 38.29513 | 0 | 100 | N = 540 |
| | between | | 16.97504 | 0 | 65.233 | n = 27 |
| | within | | 34.47496 | -25.74354 | 114.5575 | T = 20 |
| *unempl* | overall | 7.594167 | 4.08822 | 1.8 | 27.2 | N = 600 |
| | between | | 3.341619 | 3.64 | 16.74 | n = 30 |
| | within | | 2.429262 | -.7458339 | 22.05417 | T = 20 |
| *infl* | overall | 3.112272 | 3.920998 | -4.479938 | 34.99928 | N = 600 |
| | between | | 2.227763 | .080999 | 9.707469 | n = 30 |
| | within | | 3.250956 | -5.68434 | 28.40408 | T = 20 |

**Table 6.** Descriptive statistics of continuous variables.

| | | Overall | | Between | |
|---|---|---|---|---|---|
| Variable | Value | Frequency | Percentage | Frequency | Percentage |
| *soclo* | 0 | 480 | 80 | 24 | 80 |
| | 1 | 120 | 20 | 6 | 20 |
| *scanlo* | 0 | 519 | 86.64 | 26 | 86.64 |
| | 1 | 80 | 13.36 | 4 | 13.36 |
| *frlo* | 0 | 420 | 70 | 21 | 70 |
| | 1 | 180 | 30 | 9 | 30 |
| *englo* | 0 | 480 | 80 | 24 | 80 |
| | 1 | 120 | 20 | 6 | 20 |
| *gerlo* | 0 | 500 | 83.33 | 25 | 83.33 |
| | 1 | 100 | 16.67 | 5 | 16.67 |
| *centr_ideology* | 0 | 502 | 83.67 | | |
| | 1 | 98 | 16.33 | | |
| *left_ideology* | 0 | 392 | 65.33 | | |
| | 1 | 208 | 34.67 | | |
| *right_ideology* | 0 | 306 | 51 | | |
| | 1 | 294 | 49 | | |

**Table 7.** Descriptive statistics of discrete variables.