Different Bargaining Paths in Second-Level Agreements. Evidence from an Italian Study*

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Abstract

We have defined some possible configurations of second level agreements, by analyzing a dataset of 1,403 contracts that were registered at the Territorial Department of Labor in the Province of Brescia from 2008 to 2014. Our study suggests that different reference "paths" can be taken as models of agents' bargaining approaches. An emerging scheme that reproduces concession bargaining (or even integrative-oriented decision making) by enhancing employee's rights on workplace, allows adopting crucial strategies about non-standard contracts and employment status. This first component is also stable and linear during the period under review. On the other hand, a defensive, more unbalanced and "mixed" component (at the border of the distributive stance) characterizes agreements focused on productivity and result bonuses. Other two "residual" and linear independent patterns, typical of negative economic trend, are classified by a sort of fuzzy configuration. They provide detriment solutions, like individual firing, paired with more strengthened checks, while further specific outsourcing measures are taken. With regard to such empirical results, some explanations are proposed with the aim of contributing to the current debate around a possible new role for second-level bargaining in Italy.

Introduction

Since the 1993 confederal agreement, a kind of "frame" model has been characterizing the Italian system of industrial relations [1, 11], which is currently defined as "intermediate" with a "medium level of coordination" by the European Observatory of Working Life. Wide-ranging rules are fixed for workers employed within

*This paper is a preliminary and sketched version of a research that is being carried out by the author and Sergio Albertini on the dataset registered in http://www.osmer.org/

each industrial sector, whereas the national-level (first-level) boundary cannot be amended by decentralized (second-level) agreements[10], which should be able only to integrate the variable amount of the wage, despite many exceptions that turned to increase during last ten years and contributed to spark off the debate [7, 2, 9]. About this core topic: "[...] divergent opinions between (and within) employers and trade unions concerning how to implement decentralisation generated political confusion and prevented the implementation of what had been agreed earlier in the 1993 July Protocol" [8, p. 64].

Simplifying the main issue of such debate, we could sum up that two views countervail each other. A highly influential one suggests that an unavoidable reduction of workers' rights is occurring through a waiving process that has been continuously inserting in pejus clauses for the last twenty years. Some scholars claim that the final and most representative example of this trend is the recent Legislative Decree N. 81/2015, on the "Systematic discipline of employment contracts" and "revision of tasks regulations" (the so–called "Jobs Act"), which provides the opportunity of in pejus exceptions also for downgrading procedures. On this hand, the same label of "second-level" could be revisited, since decentralized agreements turn out to be the crucial sources of collective bargaining.

A second standpoint posits that such a growing role is occurring too late and it is not as comprehensive as it should have been. According to this perspective, national collective contracts are no longer able to adapt to the evolution of the economic system and the work organization, due to a long-standing unsuitableness. The abovementioned positions often result in unsolved topics such as the effective representativeness of unions, the "double loyalty" question, and so on. This matter, often placed at the core of political or theoretical debate, was mainly investigated with exemplifying case studies. Besides this research track, empirical studies have been rarely carried out at territorial level by means of large dataset, primarily because of the lack of information about contracts. Rather than going directly into the content of such a complex debate, we believe it is crucial to provide an empirical study on how decentralized agreements have been arranged over time, since it is by observing the evolution of their structure that we can make a realistic assessment. For that purpose, a deeply industrialized area such as the province of Brescia represents a useful scenario in our research.

In the present work, we process data resulting from a large amount of contracts registered at the Provincial Employment Department. After proposing some descriptive analysis and the most relevant emerging associations, we perform a principal component analysis that also suggests further branches of research to be explored.

Research design

Sample

We analyzed 1,403 contracts signed in the Province of Brescia from 2008 to 2014 that were deposited at the Provincial Employment Department, which is the only source of our dataset, since firms that want to benefit from an exemption from tax are required to deposit at this bureau each second-level agreement concerning productivity or performance bonuses. This is exactly why the major part of the agreements is focused on bonuses, which constitute the variable part of the wage. We can start by considering an estimated population of 2,000 second-level contracts, as the total amount potentially signed in the Province of Brescia. This sum can be inferred from a study published by Italian National Institute for Statistics [12], in which the main results of second-level agreements are included (SICA-"Sistema informativo sulla contrattazione aziendale"). On such basis, in order to evaluate the representativeness of our sample, we executed a Marbach Index, which shows as a whole an acceptable error margin of 0.015% and therefore a probability sample of about 98.5% that is well above the minimum significant threshold.[1]

The dataset is organized in two main sections. The first one deals with information concerned with the 'bureaucratic' set up of the firm, i.e. legal form, company's profile, business sector, but also with the specific features of the contract, such as unions representatives who signed (or not) the agreement, period of applicability, etc. The second section specifically looks at the content of the agreement by covering thirteen areas: "00" (hiring); "01" (employment status, internal mobility and vocational training); "02" (wage and compensation); "03" (workplace and health protection); "04" (working time); "05" (individual firing and other hypotheses); "06" (overstaffing); "07" (non-standard contracts); "08" (outsourcing); "09" (industrial relations); "10" (welfare); "11" (equality / discrimination); "12" (checks and penalties). Each of these first level variables (two digits) is sub-grouped in additional second level ones (three and/or four digits), which specify in a deeper way the research field.

Methods

The basic hypothesis supporting our research is that a certain degree of autocorrelation undoubtedly exists, but it occurs at systemic level. This means that the general socio-economic framework plays a quite similar role in each year of

[1] Marbach Index formula is as follows:

$$\theta = \sqrt{\frac{N-n}{(N-1)\,n}}$$

our time laps. Essentially, we think that observations at time $t_n$and $t_{n-1}$are not correlated, which is conversely a typical problem in case of time series. Hence, two sub-samples could be different according to time (year) as they could be considering any other defining variable, such as geographical site or others. Given this, after performing a year by year general qualitative analysis through descriptive statistics, it seemed more useful to proceed with a principal component analysis. A crucial methodological premise is needed around this procedural choice. Each first and second level variable has a binary structure in the dataset, but such a "0/1" combination has traits that can be connected neither with pure nominal/categorical variables nor with ordinal ones. The binary variables concerned with this part of the dataset are all "asymmetric", i.e. presence or absence of the attribute are not important in the same way as in case of sex or other symmetric attributes. The dichotomy refers here to a characteristic like "being considered/not being considered in the decentralized agreement" for each item so that usually the negative match is treated as irrelevant. This is the main reason why *Russel & Rao Index* (S_{RR}) measure of similarity is always reported in the text for positive associations, as well as $U_{RR} = (1 - S_{RR})$ measure of dissimilarity for negative associations. The criterion supporting this solution is well described [4, p. 339] and used in various research studies [5], even if "[. . .] the question of dichotomous or binary variables in PCA or Factor analysis is eternal. There are polar opinions from "it is illegal" to "it is alright", through something like "you may do it but you'll get too many factors"[2].

Principal component analysis was performed with an exploratory intent rather than a confirmatory one, since we do not have a pre-defined awareness of how many dimensions are in the set of variables, at least at this stage of our research, given also the uncertainty and the volatility of current socio-economics conjuncture, we moved towards a year by year exploratory logic. As the first step, after running a *Kaiser-Meyer-Olkin Test (KMO)*, we performed a tetrachoric correlation in order to check associations amongst the thirteen first level variables, also showing the *maxdiff(corr,adj-corr)*. As a second step, we calculated components loadings and followed a largely accepted "rule of thumb", by retaining eigenvalues greater than or equal to 0.4 for unrotated PC patterns as significant and informative. This analysis was also supported by scoreplot and scatterplot graphics. Then, the emerging question was whether the components of two years could be comparable or not. We could pursue two tracks to make an evaluation. The first one was to match factors (the linear combinations) at time $t_1 = 2008$ and change the weights year by year in order to check variations. The second one consisted of comparing components, even in this case year by year, so as to identify possible continuity

[2]http://stats.stackexchange.com/questions/16331/doing-principal-component-analysis-or-factor-analysis-on-binary-data-using-spss

and discrepancies of eigenvalues along time. The crucial turning point was the need of a method for comparing eigenvalues (which are estimates) in a suitable manner. To this purpose, we adopted the approach proposed by Krzanowski, who developed inside vector a technique space based on the angular width between the two eigenvectors [6]. On the basis of this method, we could make year by year comparisons and draw some conclusions on the dimensions that were reinforced or not.

Findings

Overview and descriptive analysis

Contracts are split along time as follows: 190 were signed in 2008, 126 in 2009, 129 in 2010, 301 in 2011, 179 in 2012, 259 in 2013, and 219 in 2014. The two main upturns occurred in 2011 and 2013, respectively with a +133% and a +45% yearly increase. Amongst the causes of such evidence, we can mention the prompt implementation of previous national agreements. Two of them ratified the need for public administrations to adopt specific decentralized bargaining principles that were already operational in the private sector, such as the specification of the contractual structure, the relationships between the contractual levels and the duration of the national and the integrative collective agreements.

Therefore, many organizations decided to deposit the decentralized agreement at the Provincial Employment Department, although not mandatory, to ensure public disclosure. In fact, we found quite a lot of typical legal forms of the public sector in this gap of +133%, such as associations, foundations, NGOs, cooperatives, government agencies. The second crucial increase occurred in 2013, probably because of the agreement signed in November 2012[3] by the main national unions (except CGIL) for enhancing the integration of variable wage amounts, such as productivity and outcome bonuses. It is not by chance that private firms (and corporations in particular) are leading the increase in the agreements registration for that period (+53%). Limited company is the most frequent legal form (71%), represented by joint-stock company (44%) and limited liability Company (27%), while secondary sector covers the major part of the agreements (52.2%), followed by tertiary sector (47.7%), given a merely residual role of primary sector (0.1%). Unitary workplace union structures play the major role as counterpart of employers with 47%, to which company bargaining units have to be added (10%).[4]

[3] "Linee programmatiche per la crescita della produttività e della competitività in Italia".

[4] Unitary workplace union structures ("RSU") are the sets of representatives elected by all the workers for companies employing more than 15 workers for every production unit, while the company bargaining units are rather elected by the members only belonging to each union. The former ones should have replaced the latter since the inter-union agreement of 1993, but in some cases, it is feasible for RSA to survive if it was not possible to constitute RSU in accordance with law.

It is useful to recall that the signature of unions' delegates is not necessary for the agreement validity, since the signs by RSU or RSA (or by other workplace legitimate bodies, such as workers' assembly) are enough to this purpose. The role played by unions' delegates becomes surely important when RSU or RSA do not appear amongst signatories, an event occurring 477 times (34%). When they are called to represent workers' needs at the negotiating table, the major labor unions at provincial and profession level (and labor categories), i.e. CGIL, CISL and UIL each one or together, cover 85% of the agreements not signed by RSA or RSU. The upper administrative body of labor unions (the regional level) signed a residual part of nine contracts. The majority of agreements (86%) signed by any kind of workplace representative body was concerned with limited company rather than other legal forms (14%), ($\chi^2(1) = 180.4,\ p < .001$)[5]. This relation also shows a significant grade of association, ($\varphi = .36,\ p < .001$) with $S_{RR} = .57$. Considering the whole 7-year period, the most recurrent subject is "wage and compensation", with 1,163 occurrences out of the 1,403 contracts (82.9%), followed by "working time" (61.7%) and "industrial relations" (40.6%). Such a picture of the situation can be assessed by taking into consideration the registration of contracts that were made to benefit from tax exemption associated with productivity and results bonuses. The year-by-year evolution of each topic refletcs quite the same frequencies (figure 1).

The opportunity of taking advantage of this regulation occurred in 2008, but the requirement of registration at the Provincial Employment Department came later on. A previous research carried out by Banca d'Italia [3] clearly showed that the evolution of firms benefiting from tax exemption since 2008 was related to the extent of remuneration components. Indeed, Banca d'Italia estimated 70% firms that took advantage of fiscal benefits concerned with both productivity and results bonuses in 2008, a period marked by a large basis of components. As far as such reference value was decreasing, for example from 2010 to 2012, the % of firms that benefited from this measure tended to decline and then remaining at around 50%. In order to check this trend in our dataset, we split the first level variable 02-"wage and compensation" into several second-level variables, i.e.: 021 (result and productivity bonuses); 022 (allowances and increments); 023 (companies' profit sharing); 024 (others). The percentage of agreements including result and productivity bonuses - the variable that gives evidence of a requested tax exemption - is about 86% (164 agreements out of 190), which is even higher than the 70% estimated by Banca d'Italia. Moreover, as in the study by D'Amuri and

[5]Performed with Fisher-Yates exact Test of continuity correction.

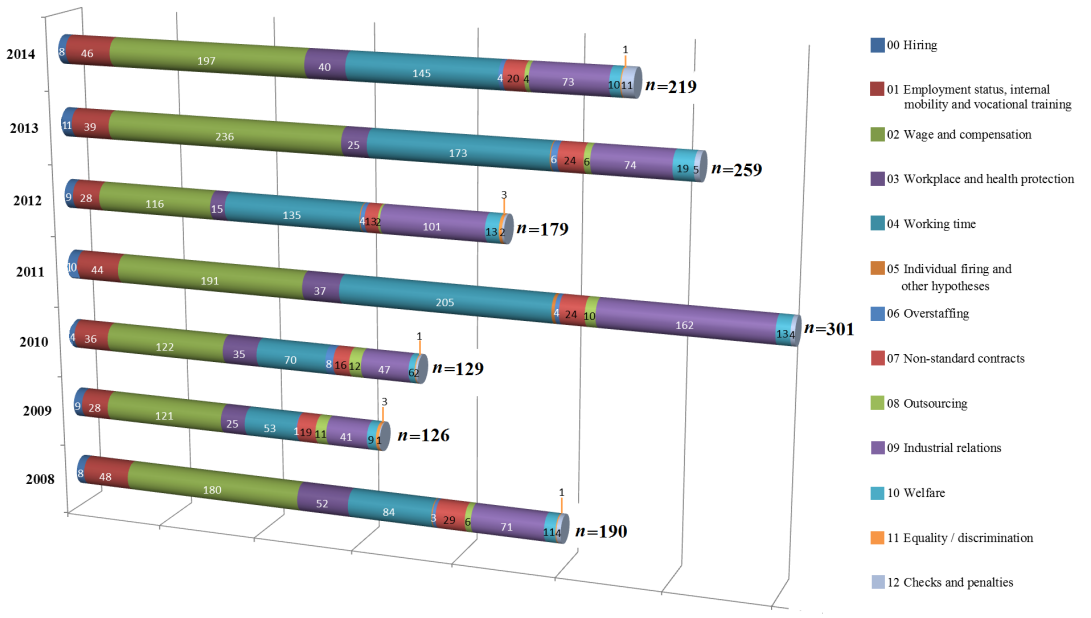

Figure 1: Absolute frequencies of first-level variables year by year

Giorgiantonio, the agreements taking account of result and productivity bonuses decreased in 2011 (54.8%) to remain stable in 2012 (54.7%). Figure 2 below shows the frequencies trend of each single component of "02" (wage and compensation).

As largely expected, the most recurring item in the "wage and compensation" variable was "productivity and result bonuses", also due to the need of registration in order to benefit from tax exemption. Despite this reasonable motivation, the trend of such item shows high values even during periods in which such procedure was still not compulsory, while the decrease of 2012 seems to follow the restriction fixed for the basis of tax exemption. The dummy variables occuring most frequently were: "02" (wage and compensation), with an estimated 83% of total agreements reporting related items, "04" (working time) (62%), "09" (industrial relations) (41%) and "01" (employment status, internal mobility and vocational training) (19%). A more effective understanding can be obtained by observing the trend of these four variables in the time span.

In addition to the regularity of "employment status, internal mobility and vocational training", similar absolute frequencies took place by "02" (wage and compensation) and "09" (industrial relations) in 2011 and 2012 (dashed ellipse in figure 3). This evidence draws the attention on the possible association between the two variables, which showed no significant values outside 2011-2012 ($\varphi = 0.04$, $p = 0.25$), while a different kind of negotiation between employ-

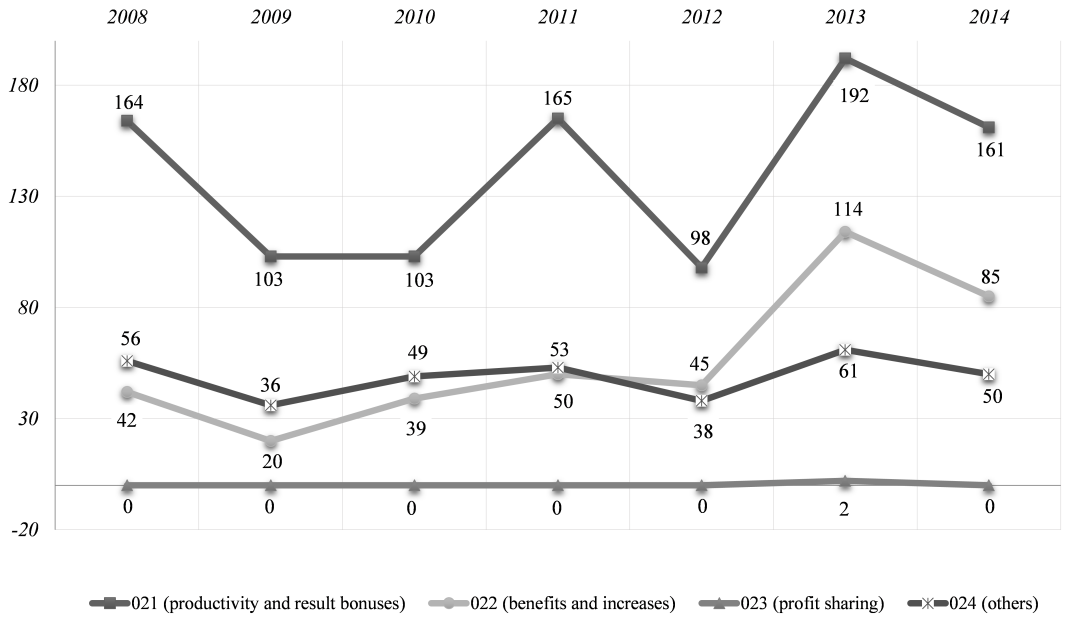

Figure 2: Absolute frequencies of second-level variables constituting "wage and compensation" from 2008 to 2014

ers and workers' delegates seemed to occur within this two-year period. Inside it, we found a strong and significant inversely proportional relationship between "wage and compensation" and "industrial relations" ($\varphi = -0.54,\ p < .001, U_{RR} = .75\ in\ 2011; \varphi = -0.46,\ p < .001, U_{RR} = .74\ in\ 2012$). Thus, an increasing intervention on wages (which were strongly characterized by performance bonuses) was coupled with a significant decreasing one on industrial relations (mainly trade union rights and joint committees). The number of topics provided by first level variables represents a sort of magnitude, although unsophisticated, of the coverage degree. In this regard, it should be highlighted that 6 contracts (equal to 0.43% compared to 1,403) reveal missing values, as well 364 agreements (26% of the total) deal with only one item. When this happens, the content of the contract is "wages and salary" for 322 cases out of 364 (88%) while clauses addressing industrial relations are no longer discussed. In short, it means that issues concerning industrial relations are negotiated at company level only together with other matters, never by themselves. During the whole 7-year period, the highest frequency (566 contracts amounting to 40%) refers to contracts setting up only two areas, the most recurring of which are "time" and "wages and salary" with 270

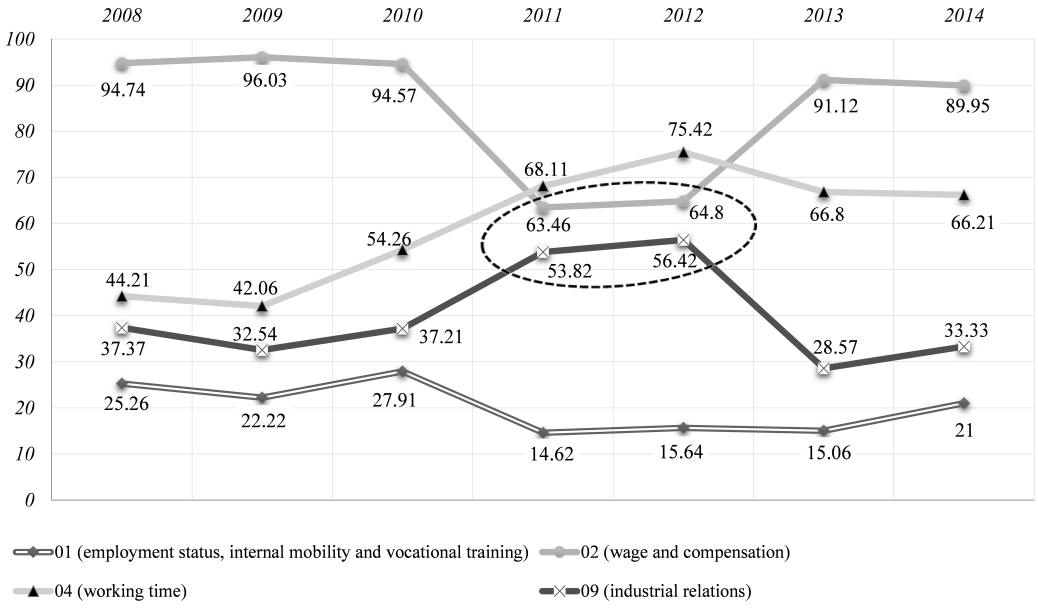

Figure 3: Most recurrent variables along time (% of the total frequency of the year)

occurrences out of 566, accounting for 48% ($\chi^2(1) = 43.0,\ p < .001$), followed by the couple "salary and wages" and "labor relations" with 80 out of 566, equivalent to 14% $\chi^2(1) = 254.0,\ p < .001$. Then we checked 200 contracts dealing with 3 content areas (14.3%), 100 with 4 (7%), 61 of 5 (4.35%), 62 with 6 (4.42%), 30 with 7 (2.14%), 5 with 8 (0.36%), 7 with 9 (0.5%), 1 with 10 (0.07%) and 1 with 11 (0.07%).

A proposal of multivariate approach

As previously explained, a principal component analysis was carried out in order to reach a dynamic standpoint of each variable within recognizable patterns. So, we started by performing a PCA from 2008, and then by looking year by year at the evolution of each component using Krzanowski's technique. Table 1 summarizes the eigenvectors of each principal component, while fig. 4 displays the proportion of variance explained by each component, highlighting the line splitting values above or below 1 and also adding heteroskedastic bootstrap confidence intervals.

The first principal component detects the linear combination explaining the highest amount of variance among variables (eigenvalue=3.425), and is well corre-

First-level variable	Comp1	Comp2	Comp3	Comp4
00 (hiring)	0.158	0.415	**0.159**	**0.380**
01 (employment status, internal mobility and vocational training)	*0.397*	0.414	0.470	0.472
02 (wage and compensation)	-0.003	-0.077	0.045	**0.203**
03 (workplace and health protection)	**0.448**	0.420	0.394	0.433
04 (working time)	0.303	0.262	0.229	0.044
05 (individual firing and other hypotheses)	0.168	0.000	**0.000**	0.229
06 (overstaffing)	0.149	***-0.051***	0.316	0.188
07 (non-standard contracts)	*0.371*	0.400	0.307	0.454
08 (outsourcing)	0.243	***0.247***	0.212	0.208
09 (industrial relations)	*0.380*	0.349	0.350	0.093
10 (welfare)	0.231	***0.171***	0.233	0.101
11 (equality / discrimination)	0.087	0.174	0.251	0.000
12 (checks and penalties)	0.270	0.038	**0.257**	**0.216**
Eigenvalue	3.425	1.921	1.543	1.102
Expl. Var.	0.263	0.148	0.119	0.085

Table 1: Principal components and eigenvectors for 2008 (italics stands for a weak association >.35 and <.40, while bolt types stand for values > .40); $N = 190$

lated (bold cells in the tab) with "03" (workplace and health protection, frequency of 180 cases out of 190) and is also weakly correlated with "01" (employment status, internal mobility and vocational training), "09" (industrial relations) and "07" (non-standard contracts). The second principal component finds a linear combination (orthogonal/uncorrelated) that explains an additional amount of variance (30% cumulative). Despite a low level of singular variance (14%), this component shows a remarkable arrangement of its constituting variables, with "06" (overstaffing), "08" (outsourcing) and "10" (welfare) playing the major role, showing considerable levels of correlation (0.67) with the component. Figure 5 shows the separated scores for each of the first two components (left side) and depicts their component loadings (right side).

The last two components with an eigenvalue greater than one gained a low level of explained variance (11.9% and 8.5% respectively). Component 3 is significantly positively correlated with "00" (hiring), "05" (individual firing and other hypotheses), and "12" (checks and penalties), while the fourth component shows a negative correlation with "00" (hiring), a positive and strong one with "02" (wage and compensation) while a moderate with "12" (checks and penalties). Instead of arguing hypotheses on the meaning of such components, we started from such a sketched 2008 frame to analyzing how components were modified (enhanced or compressed) year by year. Then, on the basis of the sequential configurations of

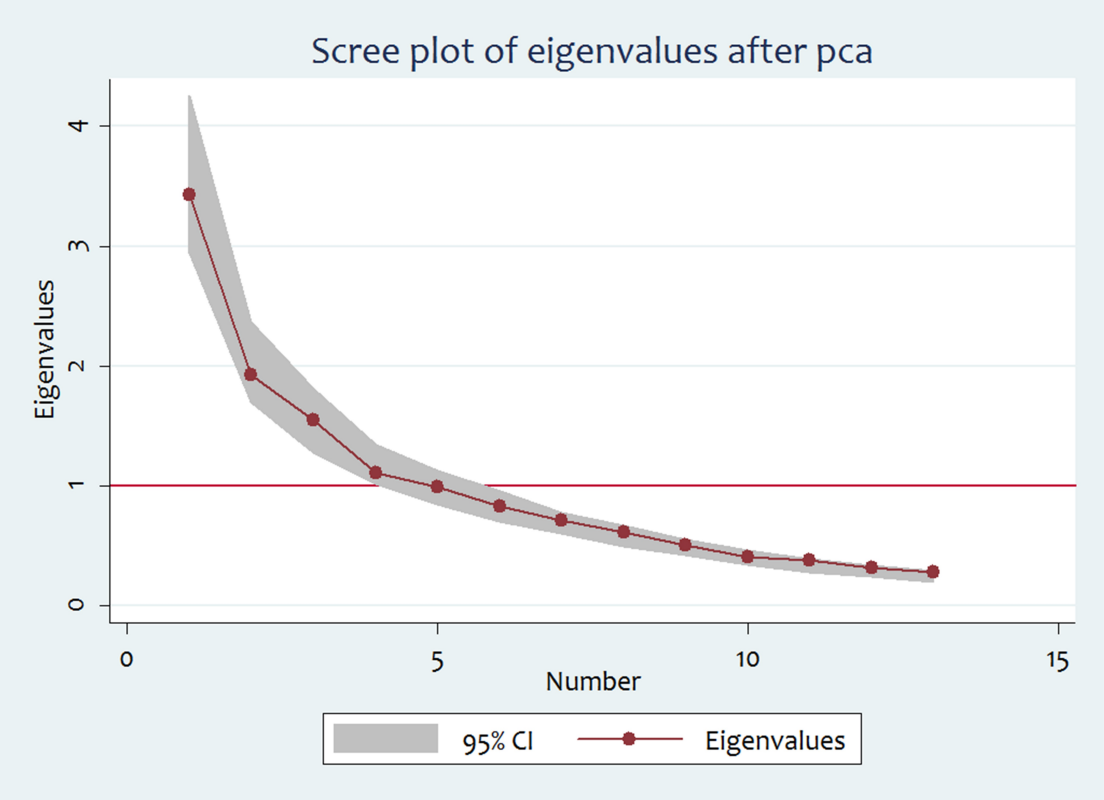

Figure 4: Scree plot of 2008 eigenvalues

eigenvectors, we used the Krzanowski's technique to draw some conclusions both on components meaning and dynamics. The amplitude of the angle between the two vectors (components), which was calculated through the *cosin* of the ratio between scalar and vector products, represents the degree to which vectors are similar or dissimilar:

$$\cos(\theta) = \frac{\overrightarrow{C_{1,t1}} \times \overrightarrow{C_{1,t2}}}{\| \overrightarrow{C_{1,t1}} \| \times \| \overrightarrow{C_{1,t2}} \|}$$

From the above formula we derived the *arccos(ϑ)*, the amplitudes of which close to 0° stand for similar structure of vectors. This means that, if compared with 2008, we can consider the occurrence of additional items (and the lack of others) as functional to component essence along time. On the other hand, when amplitudes are close to 90°, vectors orthogonality posits for a deep changing in the configuration setting of components most significant variable(s). This could bring

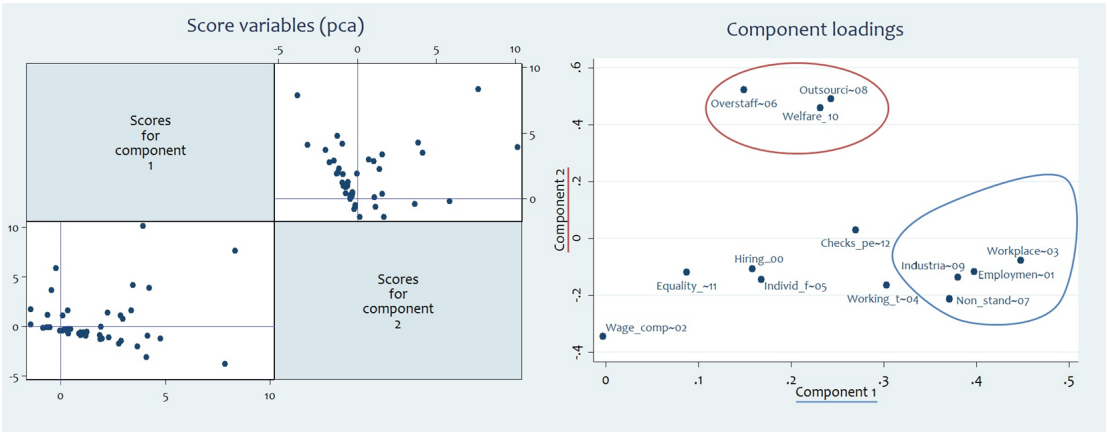

Figure 5: Score variables of the first two components with related components loadings in 2008

the research to identify and analyze the procedural or/and socio-economic factors that are supposed to impact on such modifications and simultaneously gives an idea of the component steadiness.

Component1: stable concession bargaining (rivisited)

Table 2 below highlights the component 1 variables distribution along time. Amplitudes between the components of each two subsequent years, (i.e. 2009/2008, 2010/2009, 2011/2010, 2012/2011, 2013/2012, 2014/2013) show positive and low values, ($M = 33.52°$, $SD = 9.09$), as it is shown in figure 6 (left and right side). The most recurrent items positively correlating with component1 are concerned with "03" (workplace and health protection), "01" (employment status, internal mobility and vocational training" and "07" (non-standard contracts). Two main points can be made. The first one is that, even taking into account all the possibilities related to fiscal benefits, "02" (wage and compensation) does not play any role inside the most important component, i.e. the one explaining as much variance as possible. The second point is that, looking at the structure of this component, we argue it could represent a pattern of concession bargaining (dealing with non-standard contracts in exchange for measures towards safeguarding the safety and health of workers). Yet, an intriguing hypothesis could be considered, namely that actors are able to provide integrative answers, i.e. measures emerging from a deliberative process, aiming at harmonizing actions supposed to have negative effects on workers' rights. The only discontinuity occurring from 2008 in this robust pattern is 2012, in which measures on "11" (equality / discrimination) are taken, together with "12" checks and penalties, even if this event

Variable	2008	2009	2010	2011	2012	2013	2014
00 Hiring	0.158	**0.415**	0.159	*0.380*	0.310	**0.458**	*0.357*
01 Employment status, internal mobility and vocational training	*0.397*	**0.414**	**0.470**	**0.472**	0.278	*0.366*	*0.385*
02 Wage and compensation	-0.003	-0.077	0.045	0.203	0.128	-0.059	0.014
03 Workplace and health protection	**0.448**	**0.420**	*0.394*	**0.433**	0.273	0.332	**0.417**
04 Working time	0.303	0.262	0.229	0.044	0.086	0.179	0.230
05 Individual firing and other hypotheses	0.168	0.000	0.000	0.229	*0.355*	0.117	0.000
06 Overstaffing	0.149	-0.051	0.316	0.188	-0.019	0.314	0.302
07 Non-standard contracts	*0.371*	**0.400**	0.307	**0.454**	*0.378*	**0.429**	0.325
08 Outsourcing	0.243	0.247	0.212	0.208	0.134	0.056	*0.355*
09 Industrial relations	*0.380*	*0.349*	*0.350*	0.093	0.106	**0.413**	*0.377*
10 Welfare	0.231	0.171	0.233	0.101	0.294	0.201	0.124
11 Equality / discrimination	0.087	0.174	0.251	0.000	**0.429**	0.000	0.069
12 Checks and penalties	0.270	0.038	0.257	0.216	**0.399**	0.016	0.112
Eigenvalue	3.425	3.345	2.41	2.78	3.64	2.31	2.42
Expl. Variance	0.264	0.279	0.201	0.231	0.28	0.192	0.2

Table 2: Eigenvectors of principal component1 from 2008 to 2014

could be brought back to the assumed frame. It will be not trivial to develop further analysis in order to catch the meaning of such interventions on workplace health protection. Despite we are perfectly aware that they could originate just from the passing of new regulations designed for workers' safety, we also offer the view that, even in this case, social partners are not necessarily required to deal with such topics in second-level bargaining. Moreover, given the high level of linear dependency between year-by-year vectors (components), in case of need we could summarize with a single representative component the period from 2008 to 2014[6].

Component2: irregular mixed negotiation

The second component finds a linear combination that explains as much of the remaining variance as possible, that is 14.2% in average (more than 40% cumulative, in average too). Despite this low level of singular variance, this component shows a remarkable arrangement of its constituting variables, with "02" (wage and compensation") denoting a trend in which each time it is negatively and significantly correlated with the component (2001, 2012 and 2014), the latter is in

[6] $C1_{(2008\text{-}2014)} = 0.3515(v.00) + 0.4255(v.01) + 0.0323(v.02) + 0.4176(v.03) + 0.2020(v.04) + 0.1812(v.05) + 0.1646(v.06) + 0.407(v.07) + 0.2023(v.08) + 0.3131(v.09) + 0.1906(v.10) + 0.1982(v.11) + 0.1962(v.12)$

	C1(2009)	C1(2011)	C1(2013)
C1(2008)	26.49°	-	-
C1(2010)	31.13°	34.31°	-
C1(2012)	-	36.97°	49.00°
C1(2014)	-	-	23.22°

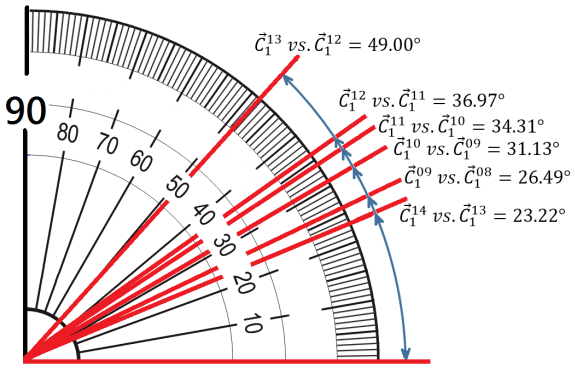

Figure 6: Amplitudes between components1 in two-year comparisons from 2008 to 2014

turn positively correlated with "04" (working time). Hence, while "02" (wage and compensation) has a negative impact on the component, "04" ("working time"), but also "09" (industrial relations) have a positive one. This means (table 3) that the second principal component increases with decreasing values of "02" (wage and compensation") and with increasing values of "04" (working time) and "09" (industrial relations). The only exception to this trend is marked by 2009, in which we have the highest positive impact by "02" (wage and compensation) on the component and a weak non-significant one by "04" ("working time"). Such an occurrence sheds light on the irregularity of this component along time, which is clearly shown in table 4, where the two-year comparison is always marked by independent vectors (given the established relative ratio between the significant variables). The only remarkable deviation from this trend is the 2012/2011 value, which shows a very high level of dependency ($\vartheta = 13.99°$). We argue that this component exemplifies a sort of "mixed" bargaining approach. On the one hand negotiators prefer to manage "04" (working time) dealing contemporarily with "09" (industrial relations), as it happens in 2011 and 2012, with high samples of agreements. On the other hand, in this two-year time slice, the above-mentioned configuration occurs when partners are not concerned with "02" (wage and compensation) measures. Conversely, when actors address the negotiation on wages, they do not consider atypical contracts (2009) or other detrimental measures for workers, like "05" individual firing and "06" overstaffing (2013).

Components 3 and 4: residual fuzzy approaches

The last two components (3 and 4) play less central roles in the analysis, given the low level of remaining explained variance they show, but they both contribute

Variable	2008	2009	2010	2011	2012	2013	2014
00 Hiring	-0.107	-0.024	-0.195	0.023	0.039	0.001	-0.145
01 Employment status, internal mobility and vocational training	-0.116	-0.243	-0.034	0.033	0.035	0.325	0.134
02 Wage and compensation	-0.344	**0.692**	0.001	**-0.567**	**-0.593**	**0.493**	**-0.417**
03 Workplace and health protection	-0.078	0.245	-0.287	0.022	0.035	0.257	-0.117
04 Working time	-0.165	0.280	0.002	**0.526**	**0.500**	-0.039	0.208
05 Individual firing and other hypotheses	-0.144	0.000	0.000	0.069	-0.023	**-0.586**	0.000
06 Overstaffing	**0.521**	-0.028	-0.150	0.031	0.091	**-0.461**	0.003
07 Non-standard contracts	-0.212	**-0.409**	-0.313	0.022	0.031	0.022	-0.215
08 Outsourcing	**0.490**	0.106	-0.018	-0.093	0.102	-0.065	-0.028
09 Industrial relations	-0.136	0.271	-0.163	**0.585**	**0.576**	0.019	0.068
10 Welfare	**0.460**	0.039	*0.395*	-0.201	-0.204	0.153	-0.318
11 Equality / discrimination	-0.119	0.071	**0.556**	0.000	-0.006	0.000	**0.448**
12 Checks and penalties	0.031	0.254	**0.516**	0.055	-0.032	-0.012	**0.614**
Eigenvalue	1.92	1.57	1.95	1.98	1.79	1.51	1.49
Expl. Variance	0.147	0.131	0.163	0.165	0.138	0.126	0.124

Table 3: Eigenvectors of principal component2 from 2008 to 2014

	C2(2009)	C2(2011)	C2(2013)
C2(2008)	99.66°	-	-
C2(2010)	77.56°	99.64°	-
C2(2012)	-	**13.99°**	110.21°
C2(2014)	-	-	105.04°

Table 4: Amplitudes between components2 in two-year comparisons from 2008 to 2014

to define the whole frame of significant eigenvectors. Contrary to the case of component 2, where an interval of linearity can be found, here no continuity in the year-by-year comparison occurs. Hence, a sort of segmented configuration takes place in a stationary perspective (unlike in the first component, which could be linearly represented on the whole timeline). We can highlight two sub-configurations in component 3, both concerned with socio-economics crisis. The first one brings together "05" (individual firing) and "12" (check and penalties) in 2008 and 2011, which are both highly positively correlated with the component, while the second one shows a negative correlation of "06" (overstaffing) together with "08" (outsourcing) in 2010 and 2014. An even more heterogeneous structure defines component 4, which shows the lowest eigenvalue and is concerned with serious procedures, too. On this perspective, we can point out in 2009 a strong posi-

tive correlation between "11" (anti-discrimination measures) and the component, which is in turn negatively correlated with "08" (outsourcing). Moreover, it is interesting to mention that the negotiation subject is unique and highly positively correlated with the component in case of bad downturn, like in 2012.

Variable	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
00 Hiring	**0.459**	0.256	0.354	-0.023	**0.447**	-0.272	0.159
01 Employment status, internal mobility and vocational training	-0.135	-0.174	-0.236	-0.080	0.298	0.214	0.126
02 Wage and compensation	-0.232	0.289	0.219	0.003	0.280	-0.131	0.230
03 Workplace and health protection	-0.178	-0.199	0.110	-0.159	0.336	0.154	0.126
04 Working time	-0.183	-0.289	0.245	-0.009	0.118	**-0.422**	-0.066
05 Individual firing and other hypotheses	**0.587**	0.000	0.000	**0.622**	-0.327	0.125	0.000
06 Overstaffing	0.119	0.129	**-0.406**	-0.265	-0.047	0.035	**-0.558**
07 Non-standard contracts	0.068	0.049	0.253	-0.193	0.277	**-0.409**	0.168
08 Outsourcing	-0.120	0.028	**-0.602**	-0.203	-0.057	0.386	**-0.508**
09 Industrial relations	-0.206	-0.005	0.192	-0.042	0.053	0.255	0.153
10 Welfare	-0.116	**0.603**	-0.121	0.226	-0.079	**0.402**	0.374
11 Equality / discrimination	-0.141	0.258	0.161	0.000	-0.360	0.000	0.268
12 Checks and penalties	**0.446**	**-0.497**	0.172	**0.617**	**-0.422**	0.319	0.232
Eigenvalue	1.54	1.16	1.57	1.54	1.79	1.29	1.35
Expl. Variance	0.118	0.097	0.131	0.128	0.137	0.107	0.113

Table 5: Eigenvectors of principal component3 from 2008 to 2014

	C3(2009)	**C3(2011)**	**C3(2013)**
C3(2008)	98.59°	-	-
C3(2010)	94.15°	75.89°	-
C3(2012)	-	126.9°	115.04°
C3(2014)	-	-	91.16°

Table 6: Amplitudes amongst component3 in two-year comparisons from 2008 to 2014

Variable	2008	2009	2010	2011	2012	2013	2014
00 Hiring	**-0.416**	-0.106	-0.273	**-0.526**	-0.270	-0.305	-0.190
01 Employment status, internal mobility and vocational training	-0.117	0.166	-0.169	0.238	0.022	0.057	0.298
02 Wage and compensation	**0.655**	-0.095	**0.601**	0.077	0.036	0.069	**0.551**
03 Workplace and health protection	-0.014	-0.009	0.269	0.130	0.104	0.374	0.300
04 Working time	-0.135	-0.034	-0.367	-0.126	-0.045	0.330	0.300
05 Individual firing and other hypotheses	0.226	0.000	0.000	0.124	-0.331	0.203	0.000
06 Overstaffing	-0.015	-0.021	0.217	0.662	-0.065	0.158	-0.076
07 Non-standard contracts	-0.117	-0.124	-0.337	-0.243	0.000	-0.173	-0.359
08 Outsourcing	0.187	**-0.587**	-0.137	-0.163	**0.814**	**-0.625**	-0.103
09 Industrial relations	0.074	0.120	**0.387**	0.025	0.003	-0.154	-0.006
10 Welfare	0.063	-0.020	0.000	-0.246	0.211	0.170	**-0.439**
11 Equality / discrimination	-0.310	**0.741**	0.011	0.000	0.198	0.000	0.101
12 Checks and penalties	**0.400**	0.165	0.000	0.164	-0.230	0.334	-0.210
Eigenvalue	1.92	1.57	1.32	1.07	1.17	1.23	1.12
Expl. Variance	0.148	0.13	0.11	0.08	0.09	0.23	0.09

Table 7: Eigenvectors of principal component4 from 2008 to 2014

	C4(2009)	C4(2011)	C4(2013)
C4(2008)	106.48°	-	-
C4(2010)	82.77°	60.79°	-
C4(2012)	-	97.89°	121.1°
C4(2014)	-	-	72.84°

Table 8: Amplitudes amongst component4 in two-year comparisons from 2008 to 2014

Discussion and future research

Our main goal was to present the preliminary results of an empirical analysis on company-level agreements registered at the Territorial Department of Labor in the Province of Brescia from 2008 to 2014. We aimed also at addressing some further lines of research both on the socio-economic and the organizational field. By means of an opening descriptive approach, the study indicated higher occurrences of agreements in 2011, 2013 and 2014, sometimes alongside specific rules on tax exemption from result and productivity bonuses. Yet, contrary to widely held views and conventional expectations, agreements did not apply only to results and productivity bonuses, but were also concerned with many other subjects. Indeed, the resulting descriptive framework showed a large amount of correlated

observations. Given this, we performed a principal component analysis with the exploratory purpose to find out some strong (unrotated) patterns of variables along time. The main argument was that observations could be considered as independent, despite a systemic overall autocorrelation effect. Four significant eigenvectors emerged through a year-by-year PCA, and were interpreted considering their constituting patterns. On the first component, three items values were loaded ("employment status, internal mobility and vocational training", "workplace and health protection" "non-standard contracts"), in a linear and stable structure explaining as much variance as possible. They all related positively with component 1 and reproduced agreements where social partners used a sort of balancing strategy that combined the introduction of atypical work arrangements - including temporary or fixed-term contracts, part-time work, and others - with procedures that strive for redefining the main methods-time schedules. To do this, dealing with new or further rules on workplace was also needed, an impact represented by "03" variable. To get a sort of label defining such component, we sketched it with a strategy lying at the border between concession bargaining (with a compliant profile) and integrative negotiation.

The second component showed just few dependent blocks in a whole independent configuration. Positive correlations with it was found by "wage and compensation", while "working time" and "industrial relations" have a negative one, in the crucial two-year period 2011-2012. In addition, we can point out a deep intervention on "wage and compensation" in 2009, in a component marked by partners' choice to avoid dealing with non-standard contracts. Our interpretation is that this component showed how bonuses (the variable part of the salary) were allocating without taking in any account strategies addressed towards "working time" and "industrial relations". So, we defined this component as "mixed" and unstable.

The third and the fourth components were mainly concerned with actions taken in economic difficulties and they have a residual nature. The third one increased in 2008 and 2011 with increasing "individual firing" as far as "checks and penalties". This could suggest that choices made by the negotiating actors on single layoffs also tend to be matched with additional mechanisms of ensuring rule observations. It is also to be emphasized the 2010 and 2014 decreasing tendencies to deal with overstaffing that went along with decreasing outsourcing intervention. A remarkable one-year scenario of highly positive relationship on fourth component were found by outsourcing measures, while two interesting but sporadic positive correlation took place with wages alone (result benefits) in 2009 and complemented by decreasing welfare measures in 2014. Given the variability of such configurations, often to be framed as a residual answer given by decentralized agreement to deeper failure conditions, we simply labeled the two components as "fuzzy".

Various directions can be taken as an advancement of this preliminary research. A first perspective relies on the study of the second-level variables. At present, the dataset has not been fully arranged yet, but soon we'll be able to provide a more detailed picture of each basic subject of negotiation. As far as that goes, an improved version of the exploratory component analysis could be performed, for example in order to gain higher eigenvectors thresholds or to turn to Dynamic PCA. A second research track (that can be coupled with the first one) is to use year-by-year components for designing a model in which even external variables could be inserted. To this end, we are currently refining the set of observation by adding data (on corporations) taken from Aida platform - Bureau van Dijk, mainly focusing on indicators of annual profitability (EBITDA) and productivity (per capita added value).

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