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Feasibility of creating an EU database on working condition clauses in collective bargaining agreements.

The case of gender

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Deliverable 12.5

FEASIBILITY OF CREATING AN EU DATABASE ON WORKING CONDITION CLAUSES IN CBAS

The case of gender

Kadija Charni, Nathalie Greenan &
Janna Besamusca

July 2021



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Abstract

In this report, we explore the feasibility of a European database of working conditions clauses in collective agreements in EU countries. Our proposal builds on the methodology developed by the University of Amsterdam (UvA) and the WageIndicator Foundation to build an international database of collective agreements and in the BARCOM (VS/2016/0106) and COLBAR Europe (VS/2019/0077) projects to collect and code European collective agreements. It also builds on the CNAM-CEET CAGE project which has developed a research infrastructure in France to study the outcomes of negotiations on gender professional equality and employer behaviour. The idea is to combine structured information from an employer-level survey with coded information from a database of collective agreements and unstructured data from an archive recording the full content of the OCR processed texts of collective agreements. Such an infrastructure would allow better analysis of the bargaining process, bargaining outcomes and employer behaviour. Using the example of gender equality clauses, we demonstrate the feasibility of building such an infrastructure and the added value of using coded information and text mining methods for comparative analysis. Two European surveys, the ECS and ESES, can be combined with the database of collective agreements at individual and/or sectoral level. We explore how collective agreements at sector and company level should be collected to achieve some form of representativity.

This report constitutes Deliverable 12.5, for Work Package 12 of the InGRID-2 project.

July 2021

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1. Introduction

Collective labour agreements form a crucial facet of working conditions in European countries. They play a role in the implementation, and occasionally development, of policies in the field of working conditions. They also fix working condition standards for a large share of European workers and constitute a crucial institution of the social dialogue between employers and workers (Vaughan-Whitehead & Vazquez-Alvarez, 2019). However, the lion's share of our current infrastructure on working conditions focuses on the analysis of country level policies or individual workers' and firms' outcomes. Relatively little is known about the outcomes of collective bargaining. The description of the actual contents of collective bargaining agreements (CBAs) would help to answer the following questions: To what extent do the contents of CBAs include provisions that improve on national legislation? How much do they contribute to policy implementation? Does the use of CBAs by public authorities and social partners differ between and within countries? Overall, the measurement of the outcomes of collective bargaining would allow to better understand their contribution to the improvement of working conditions.

In this report, we explore the feasibility to create an EU database on working conditions clauses in CBAs. We pay particular attention to three specific issues. First, the potential of such a database to measure the contribution of collective agreements in terms of improvements for covered employees. Second the feasibility of an EU area coverage and its use for the creation of country level indicators. Third, the potential to link it to other representative employer or employee level data sources.

We consider two different types of databases. First, an EU database containing CBA clauses on working conditions. A text-based database of collective agreement clauses would provide users with an un-coded, unstructured overview of the text of relevant clauses in a selection of CBAs. Such a database would potentially benefit both individual workers looking for the contents of their CBA, negotiators and policymakers interested to quickly assess the language used in CBAs, as well as academics conducting qualitative studies of the outcomes of collective bargaining. Its value to text mining analyses is currently uncertain. Second, an EU database where CBA clauses on working conditions have been coded. A coded database would contain a harmonised dataset in which users can explore the inclusion of certain types of clauses in CBAs as well as compare bargained outcomes on selected scale variables like working hours or overtime premiums. Such a database would facilitate scholars using quantitative analyses. It has little value to qualitative researchers.

The benefits and shortcomings of these different types of databases will be explored, using the showcase of professional Gender Equality (GE). The EU plays a central role in promoting GE through EU GE law since 1975 (Burri & Prechal, 2008). Article 21 of the Recast directive stipulates:

'Where consistent with national traditions and practice, Member States shall encourage the social partners, without prejudice to their autonomy, to promote equality between men and women, and flexible working arrangements, with the aim of facilitating the reconciliation of work and private life, (...) and to conclude, at the appropriate level, agreements laying down anti-discrimination rules (...).'

Additionally, there is a long lasting presence of this topic in national regulations and in some countries (France for instance) there are bargaining obligations (Pillinger & Wintour, 2019). GE is also an

interesting showcase because of the strong renewal in the topics covered by regulations since the start of the Me Too movement in 2017 (gender stereotypes, sexual harassment, sexual violence, etc.).

This reports rests on the innovative methods and findings of several European projects. First, the University of Amsterdam (UvA) and the WageIndicator Foundation publish the WageIndicator Database of Collective Bargaining Agreements (CBA database). The European collective bargaining agreements of the CBA database were collected in the BARCOM project (VS/2016/0106) and the COLBAR-EUROPE project (VS/2019/0077), which received funding under the European Commission's Social Dialogue programme. For the InGRID project, UvA and Cnam-CEET amended the coding grid to address GE in the COBRA tool, which is the coding environment for the CBA database. Second, Cnam-CEET is coordinating a French project on GE bargaining, the CAGE (Collective Agreements for Gender Equality) project, funded by the National Research Agency (ANR- 16-CE26-0019-03). In France, it is through the negotiation of sector and firm-level agreements that the legislator seeks to engage firms to act for equal employment and equal pay. Hence negotiations targeted on GE issues take place on a regular basis at the sector and at the company level. In the CAGE project, most sector level CBAs dedicated to GE since 2002 have been collected as well as the company level GE agreements bargained by a representative sample of companies that responded to the 2017 REPONSE survey (*Relations Professionnelles et Négociations d'entreprise*) dedicated to the description and analysis of work and employment relations issues. This feasibility study addresses the possible synergies between the COLBAR-EUROPE project and the CAGE project.

The report is composed of three sections. The first one addresses the benefits of a database of coded CBAs and shows the results it could provide on GE issues. The second section seeks to analyse the content of GE clauses in CBAs from three countries: France, Italy and the Netherlands. It provides examples of comparative analyses based on text mining approaches. Finally, the last section investigates what data infrastructure could be built at the EU level based on the example of what has been undertaken in France with the CAGE project.

2. Use case: comparative analysis of coded data on gender equality

Collective agreements can be compared in a summary manner by examining the presence or absence of clauses or comparing a limited number of numeric indicators (Tijdens, 2021a). Researchers use coded information from collective agreements to assess the inclusion of topics on the bargaining agenda. Previous, almost exclusively country-specific studies have done so, for instance in Germany and Australia (Baird & Murray, 2014; Hans Bockler Stiftung, 2019). Coding projects conducted by the WageIndicator Foundation have attempted to annotate collective agreements across countries using a single coding scheme developed for this purpose (Besamusca & Tijdens, 2015; van Klaveren & Gregory, 2019). In the final reports of the European funded BARCOM project (BARCOM VS/2016/0106) investigating collective bargaining in the commerce sectors, Besamusca and co-authors show that up to 90% of collective agreements contained agreements on wages, whereas only 40% included descriptions of job functions (Besamusca, Kahankova, *et al.*, 2018; Besamusca, Tijdens, *et al.*, 2018). In contrast, examining collective agreements in developing countries, Besamusca and Tijdens (2015) show that while almost all collective agreements contain clauses about wages, only a handful effectively *set* wage levels.

Coded collective agreements can also be used to analyse the quality of collectively agreed standards in so far as they are numeric. A database of coded collective agreements can provide information about things like the agreed level of pay during sick leave, the length of maternity leave, the level of severance pay, and so forth. In combination with data on legal minimum standards, such data can also be used to study whether collectively agreed standards merely reproduce or exceed legal requirements (Besamusca, Kahankova, *et al.*, 2018; Besamusca, Tijdens, *et al.*, 2018; Besamusca & Tijdens, 2015).

2.1 The WageIndicator CBA database

In this section we discuss the feasibility of developing an EU database on working conditions clauses using coded data from the WageIndicator Collective Bargaining Agreements Database (CBA database). The CBA database is a data collection effort started by the WageIndicator Foundation and the Amsterdam Institute for Advanced Labour Studies (AIAS) in 2013, with the aim of increasing access to and knowledge of the contents of collective bargaining for both researchers and stakeholders. The CBA database contains a large number of collective bargaining agreements that are made publicly available online in the original language and coded in a comprehensive and uniform way using the custom-made COBRA coding environment.

Sampling of collective agreements remains a challenge for the CBA database because no existing sampling frame is available to apply. The availability of an appropriate sampling frame varies between countries, as described in Tijdens' feasibility study (2021b). Collective agreements are drawn from national registries of collective agreements where those are available and cover the full population of CBAs (Austria, Belgium, Cyprus, Estonia, France, Greece, the Netherlands, Spain, and Sweden). A combination of collective agreements archived in public or private registries and snowball sampling was used in Croatia, the Czech Republic, Denmark, Finland, Hungary, Italy (registry covers only sector CBAs), Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia and the UK. In

Bulgaria, Germany, Ireland, Latvia, and Luxembourg bargaining actors were contacted to gather collective agreements (Cetrulo, 2021; Jansen, 2021; Medas & Ceccon, 2021; Szüdi, 2021; Tijdens, 2021b). The European collective agreements were collected in the BARCOM project (VS/2016/0106) and the COLBAR project (VS/2019/0077), which received funding under the European Commission’s Social Dialogue programme. In the BARCOM project, 120 collective agreements from the wholesale and retail sector were collected. In the COLBAR project, 518 agreements were collected from four sectors (manufacturing, construction, commerce, public sector) and from transnational companies in the EU area.

Table 1. Overview of coded items in the WageIndicator CBA database, by topic

Meta Data	Single/multi-employer agreement, signatories/parties to the agreement, number of employees covered, geographical scope, start and expiration date, ratification process
Working Hours	Clauses on working, schedules, paid and unpaid leave clauses, paid holidays
Social Security and Pensions	Clauses on social security and pensions, employer contributions to pension fund, employer contributions to disability fund, employer contributions to unemployment fund
Employment Contracts	Clauses on individual employment contracts and job security, as well as questions about trial periods and severance pay
Jobs descriptions and job classification systems	Job descriptions including duties, purpose, responsibilities, scope, and/or working conditions, and job classification system
Training	Training and apprenticeships, employer contributions to a training fund
Health and Medical Assistance	Health and safety policies at the workplace, HIV-related policies and health and safety training, health or medical assistance, health insurance of the employees, health insurance coverage of family members
Sickness and Disability	Sickness and disability clauses, pay during periods of sickness, maximum pay during sick leave, maximum days of sick leave, exclusion of some categories of employees for sick leave, pay in case of work related
Gender Equality	Equal pay clauses, discrimination at work, equal opportunities for promotion and training, gender equality trade union officer, sexual harassment and violence at work, special leave victims of violence, support for workers with disabilities
Work-Family Balance	Clauses on work and family arrangements, weeks of paid maternity leave, wage replacement level of paid maternity leave, job protection during maternity leave, care for dependent relatives, employer-provided childcare facilities
Wages	Structure of pay scales, wage-setting processes, minimum wages, wages according to pay scales, premium pay for overtime hours/weekend work/night shift

Source Tijdens 2021

As described extensively in the CBA database Manual, full-text collective agreements are converted to machine-readable formats. A team of coders annotates the collective agreements in the custom-built COBRA system (Tijdens, 2021a). Metadata is added for each of the CBAs and their contents are coded for nine categories of substantive interest: (1) employment contracts, (2) health and medical assistance, (3) training, (4) sickness and disability, (5) social security and pensions, (6) working hours, (7) gender equality, (8) work-family balance and (9) wages. The coding scheme, outlined in Table 1, covers a range of detailed topics, such as wages, working hours, schedules and holidays, workforce numbers, job security, work and family arrangements, health or medical assistance, sickness and disability, social security and pensions, training/employability, internal mobility/job flexibility, work organisation. An exhaustive list of variables is included in the codebook of the dataset (Ceccon & Medas, 2021).

The coding of collective agreements is time-intensive and for most countries between 8 and 20 CBAs are currently included. For this reason, the WageIndicator is developing a keyword coding system that will enable coders to work faster with the aid of natural language processing software. In

three countries (Italy, the Netherlands and Spain), 100 CBAs were sampled for this purpose. In these countries, a mix of single-employer and multi-employer agreements was selected from the four sectors in the project proportional to the distribution of collective bargaining coverage levels in the respective country (Cetrulo, 2021; Jansen, 2021; Medas & Ceccon, 2021).

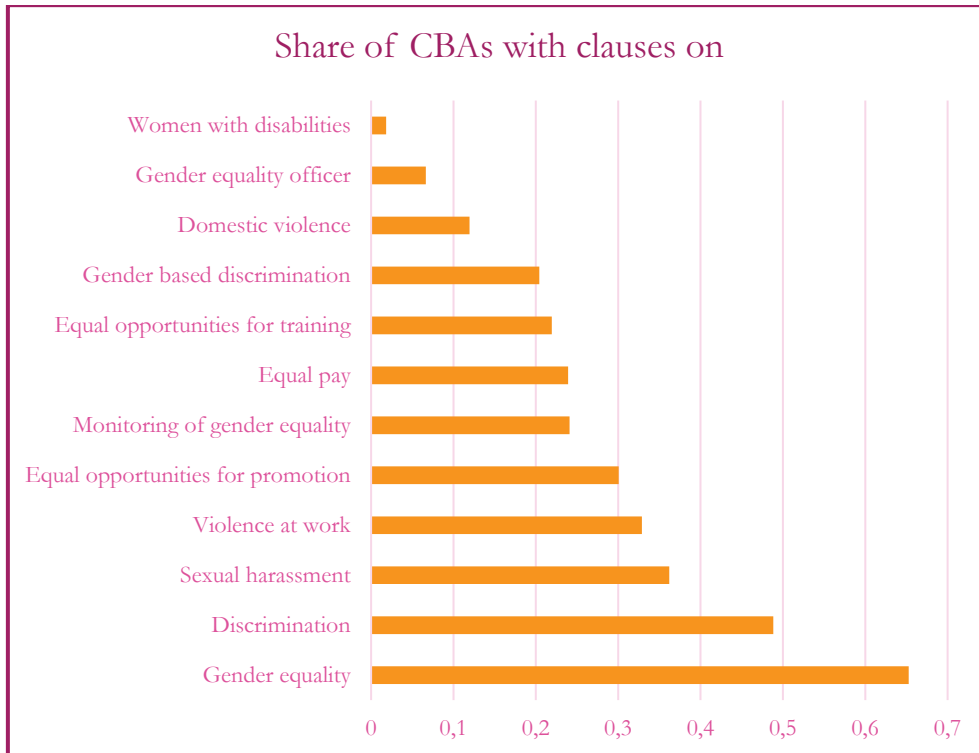
The CBA database currently contains 1,546 single-employer and multi-employer agreements from 61 countries and 40 transnational collective agreements, which are available full-text in the original language and are coded in an English language interface. On 31 January 2021, the WageIndicator CBA database contained 602 agreements from 25 EU member countries, 2 EU candidate countries Serbia and Turkey, and 1 EU partner country Switzerland. This makes it possible to compare collective agreements across countries using quantitative methods. The section will cover the EU member countries. While full-text collective agreements are available online, the academic database contains coded data. Coded collective agreements are published in the CBA database, which can be downloaded from the ZENODO repository (10.5281/zenodo.4475583) (Ceccon & Medas, 2021).

2.2 Using coded data for comparative analyses of gender equality clauses in collective agreements

In the context of the InGRID-2 project, the COBRA tool included a pilot study to code gender equality topics. The coded CBAs contain information on the inclusion of clauses on gender equality (equal pay, discrimination, equal opportunities, etc.) as well as on work-family balance (maternity related clauses, leave arrangements, childcare provisions). In this section, data from this pilot carried out in the WageIndicator CBA database will be used to show how coded information on gender equality in collective agreements can be used for cross-sectional comparisons within and between countries.

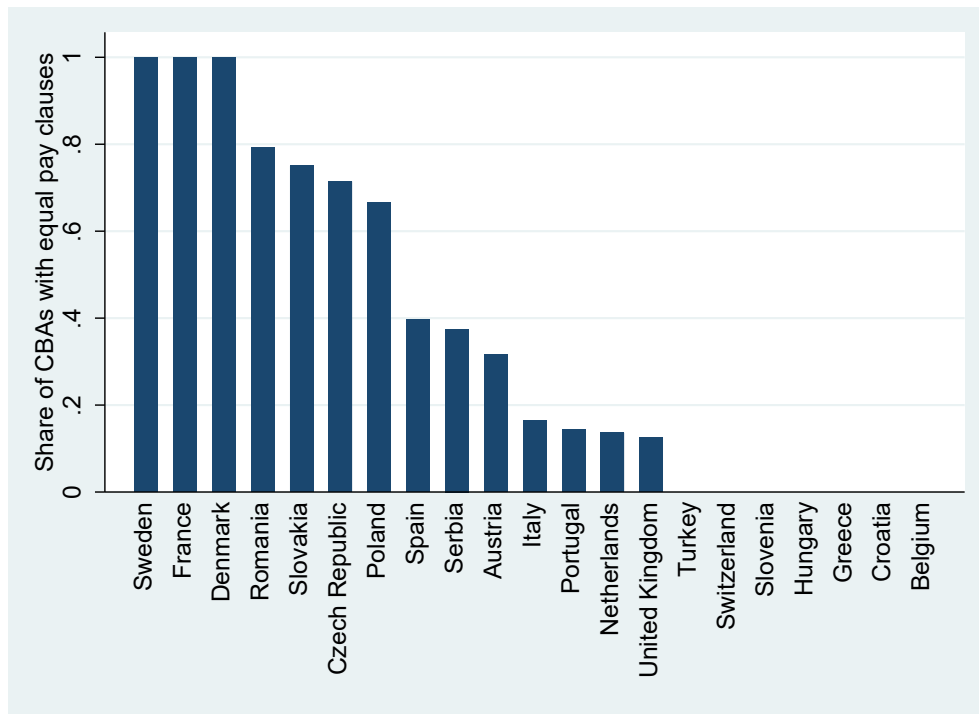
The first type of analyses that can be performed using coded collective agreements concerns the inclusion of specific topics on the bargaining agenda. As Figure 1 shows, 66% of collective bargaining agreements in the European sample of the WageIndicator CBA database contained at least one clause on gender equality. Other commonly included clauses concerned statements against discrimination at work (49%), sexual harassment (36%), violence at work (33%) and equal opportunities for promotion (30%). Clauses on leave arrangements for victims of domestic violence, specific clauses for gender-based discrimination, equal opportunities for training, equal pay and plans for the monitoring of progress on gender equality were found in between 10% and 25% of collective agreements. The appointment of a trade union officer for gender equality and arrangements for women workers with disabilities were rarely found in collective agreements.

Figure 1. Inclusion of various gender equality clauses in collective agreements



Source WageIndicator CBA database

Figure 2. Share of CBAs with an equal pay clause by country



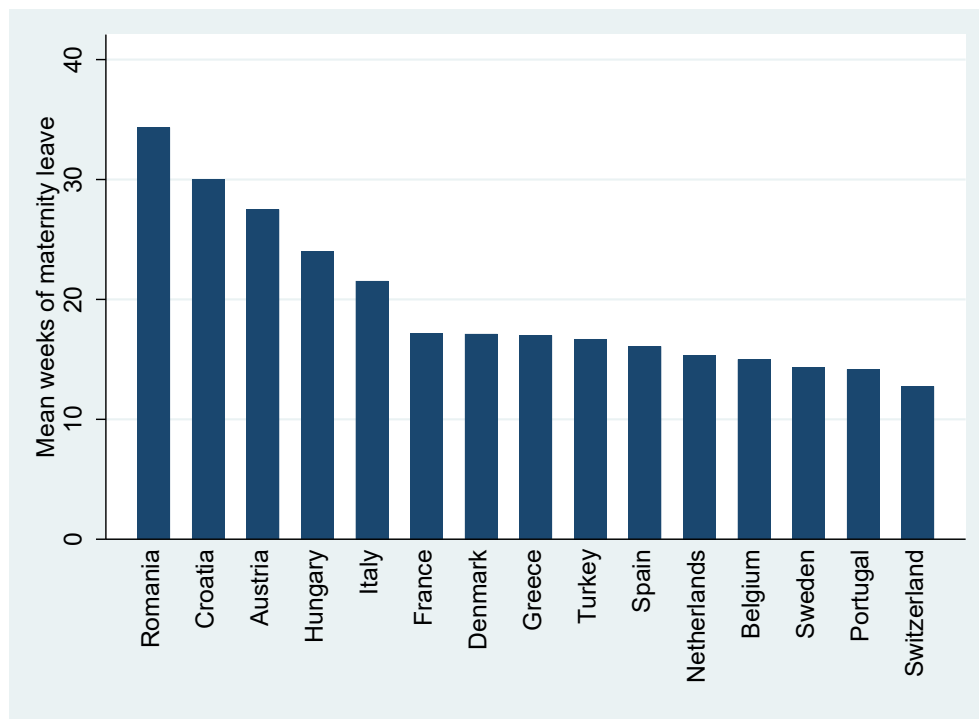
Source WageIndicator CBA database

Analyses can be performed to compare the incidence across different units, like countries or sectors. Figure 2, for example, investigates country differences in the inclusion of equal pay clauses in collec-

tive bargaining agreements, which was an average of 24% across all countries. The figure shows for instance that nearly all Danish, French, and Swedish agreements included a clause on equal pay for work of equal value, whereas none of the agreements in Turkey, Switzerland, Slovenia, Hungary, Greece, Croatia, or Belgium did.

The second type of analysis that can be performed with a database of coded collective agreements uses numeric indicators, which can be coded on issues like standard weekly working hours, days of annual leave, or weeks of maternity leave. In this example, we refer to maternity leave. Figure 3 shows the average number of weeks of paid maternity leave agreed in collective bargaining agreements by country, for all countries where collective agreements contained clauses on this topic. In some countries, these data are absent because collective bargaining agreements did not include clauses on maternity leave. This is not to say that employees covered by collective agreements in those countries are not entitled to maternity, but rather that the arrangement is not mentioned in the agreements. This negative information can also be traced and analysed in a coded CBA database.

Figure 3. Mean number of weeks of maternity leave agreed in CBAs by country



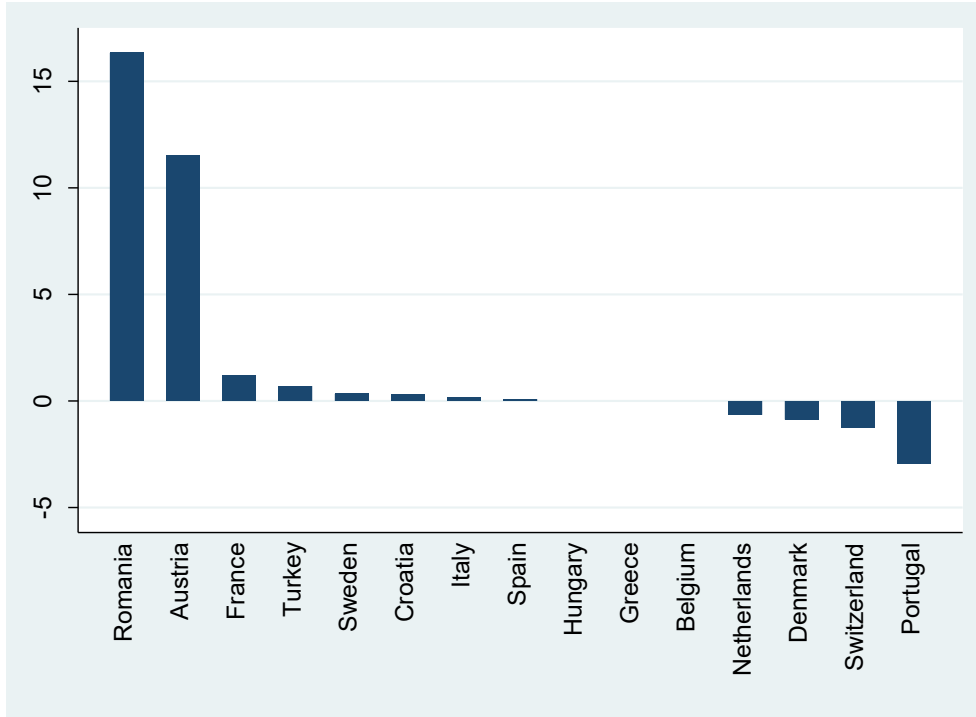
Source WageIndicator CBA database

To aid the interpretation of the negotiated number of weeks of paid maternity leave in collective agreements, we compare the agreed number of weeks to the weeks of paid maternity leave that workers are entitled to under statutory regulations. This allows us to ascertain whether collective bargaining on maternity leave effectively improves on legal regulations or whether such clauses is primarily a copy of legal standards.

Figure 4 shows the average number of weeks of maternity leave in collective bargaining agreements in the European database after subtracting the statutory weeks of maternity leave for all countries where CBAs included clauses on maternity leave. As the figure shows, Romanian and Austrian collective agreements offer maternity leave well above statutory requirements. On average, French, Turkish, Swedish, Croatian, Italian, and Spanish agreements contained only marginal improvements. Collective agreements from Hungary, Greece and Belgium contained the exact same number of weeks of leave on average as the countries’ legislation prescribes, suggesting the clauses on maternity

leave merely copy legal standards. Remarkably, Dutch, Danish, Swiss and Portuguese collective agreements on average offers fewer weeks of maternity leave than the statutory standards provide for.¹

Figure 4. Agreed weeks of maternity leave in collective agreements compared to statutory minimum standards



Source WageIndicator CBA database

2.3 Benefits and feasibility of a database of coded CBAs

A database of coded collective bargaining agreements can facilitate the analysis of the contents of collective agreements. It can do so by measuring the frequency with which clauses on specific themes are included in CBAs, potentially including comparisons across countries, sectors, or topics. Secondly, analyses can be conducted into the level of negotiated standards on a select number of indicators that can be represented numerically, including comparisons across countries, sector, and to legal standards.

Key benefits of a coded collective agreements database include the comparability across time and space and the easy interpretation of the data by non-expert users. This makes this type of database ideal for country and sector comparisons, studies into the inclusion of topics on the bargaining agenda, examinations of standards set in collective agreements and the extent to which CBAs improve on legal standards. The easy interpretation of results furthermore means that data from such a database can be presented well in reports for practitioners and policymakers. Key findings can be shared with the general public, like the WageIndicator does in newsletters and on websites, and end users can browse collective bargaining topics by country, sector, and topic.

The feasibility of creating such a dataset is proven by the existence of the WageIndicator CBA database. Two key challenges have been identified. The first one is the time intensive nature of coding collective agreements. Currently, coders report spending about 1 hour to convert an average CBA to

¹ In most cases, when CBAs contain standards lower than set out in the law, there has been a legal change after the CBA came into force. For instance, a four-year CBA enters into force in 2012 and copies the legal standards for maternity leave, the law changes in 2013, so from 2013 until 2016 the text will be below legal standards.

a machine-readable html format and another 3 hours to code it. The keyword coding system piloted in the Netherlands, Italy and Spain aims to reduce the time spent on each CBA but still requires human coders to make the final coding decisions, which is unlikely to change due to the difficult, legalistic language used in collective agreements. A database of coded collective bargaining agreements will therefore require continued investment to code and collect collective agreements. In addition, new topics included in the coding scheme need to be manually back coded for all agreements already in the database.

The second major challenge is generalisability. This aim is of particular importance to quantitative researchers, and therefore to the approach outlined in this section. No international database of collective agreements exists that contains a representative sample of European collective agreements. To achieve this goal, further investment is need, which we return to in the fourth section of this paper.

3. Comparative analysis of the content of the full texts of collective agreements using text mining techniques.

In this section, we analyse the content of GE clauses in CBAs for three countries: France, Italy and the Netherlands. We use the WageIndicator CBA database for the three case countries and the CAGE database for France. The CBA database includes 243 collective agreements that cover private, public and semi-public sectors from the three countries (Table 1). The sample is composed of 36 agreements for France, 105 for Italy and 102 for the Netherlands. The sample includes agreements negotiated at the sector level (144), at the company level (98), and at inter-professional national level (1).

Table 2. Number of CBAs per country

	France	Italy	The Netherlands	Total
CBA at sector level:	29	37	78	144
including those addressing GE	28	30	29	87
including those addressing other topics	1	7	49	57
CBA at company level:	6	68	24	98
including those addressing GE	6	53	9	68
Inter-professional national	1	0	0	1
Number of CBAs	36	105	102	243

Source CBA database

The French sector level texts included in the CBA database are different from those collected in the CAGE database. They are the *conventions collectives*, that is, for each sector, the integration of all bargained agreements at the sector level up to a given date. For instance, one of the *conventions collectives* in the CBA database rests on a first agreement that was signed in 1966. This text has been subsequently renegotiated and extended through 41 texts (agreements, amendments, decrees) which are integrated in a unique *convention collective*. In the CAGE database all negotiated texts focusing on GE issues and signed between 2002 and 2018 are included (172 in total). Single negotiated texts are also found in the CBA database for the Italian and Dutch collective agreements. For the sake of consistency in our comparative analysis, single texts from each *convention collective* are extracted from the CBA database for France.

The 29 *conventions collectives* in the CBA database for France actually correspond to 1,155 single texts. Among them, 19 focus on GE. In the CBA database, fewer collective agreements are available in France than in Italy or the Netherlands. Hence, in our comparative analysis, we will enrich the French sample in the CBA databases with collective agreements from the CAGE project. Collective agreements in the Italian and Dutch cases are single texts that cover multiple topics. As there is no bargaining obligation on GE in these two countries, GE clauses are not systematically found in all the texts. As the aim of this feasibility report is to build a database of collective agreements on GE, we

have selected the texts focusing on GE in France and including a GE clause in Italy and in the Netherlands. Information on the inclusion of clauses focusing on gender equality is derived from the annotated WageIndicator CBA database. In this database, coders have manually identified clauses relating to a number of gender equality topics, which were described in Section 2 of this paper. Coder annotations are used to generate a corpus of texts that contain clauses on gender equality.

Collective agreements negotiated at the company level correspond to single agreements in the three countries. We apply for company level texts the same selection criteria as sector level ones.

3.1 Comparison between French texts from the CBA and the CAGE databases

From now on, we work on CBAs dealing with GE and we first compare the French texts from the CBA database and from the CAGE database.

3.1.1 Sector level texts

To compare the collective agreements on GE in the CAGE database with those in the CBA database, we first extract single texts focusing on GE from the *conventions collectives* collected for France in the CBA database. Table 2 shows the signature year of the 19 texts extracted from the CBA database with the 172 collective agreements focusing on GE from the CAGE database.

Table 3. Year of signature of single texts at sector level addressing GE in France in the CAGE and CBA databases

Year of signature	CAGE		CBA	
	Freq.	Percent	Freq.	Percent
2002	1	0.58		
2004	2	1.20		
2005	1	0.58	1	5.30
2007	7	4.00	1	5.30
2008	18	10.50	2	10.50
2009	23	13.30	3	15.80
2010	32	18.60	5	26.30
2011	22	12.70		
2012	23	13.70	1	5.30
2013	7	4.00	2	10.50
2014	10	5.80	2	10.50
2015	6	3.50	1	5.30
2016	6	3.50		
2017	13	7.50	1	5.30
2018	1	0.58		
Total	172	100.00	19	100.00

Source CAGE and CBA databases

In France, each *convention collective* is registered under a unique four-digit identifier called IDCC (*Identifiant Des Conventions Collectives*). With this identifier, reported in the text, we are able to reconcile the texts from the two sources (Table 4). There are 28 *conventions collectives* with GE clauses in the CBA database. When we restrict to the texts focusing on GE, we lose 9 IDCC. This is because they are

represented by a text with a clause on GE, not by a text focusing on GE. However, in the CAGE database, we have a text focusing on GE for these industries. We can use them to enrich the CBA database. We find in the CAGE database 18 out of the 19 remaining IDCC. The agreement which is not included in the CAGE database covers distance selling, a small industry for which no establishment has been selected in the REPONSE survey.

Table 4. Comparison of texts at sector level in France in the CAGE and CBA databases

	France	
	Freq.	Percent
Texts in CAGE and in the CBA databases	18	
Agreement on GE	12	42.8
Amendment on GE	2	7.1
Decree on GE	1	3.6
Agreement on equal pay	2	7.1
Amendment on equal pay	1	3.6
Texts not found in CAGE	9	
Clauses on GE	9	32.1
Text with IDCC not covered in CAGE	1	3.6
Number of <i>conventions collectives</i> (IDCC)	28	100.0

Source CAGE and CBA databases

Table 5. NACE one-digit breakdown of sector level GE texts in France in the Cage and CBA databases

NACE classification	CAGE		CBA	
	Freq.	Percent	Freq.	Percent
C - Manufacturing	48	27.91	3	15.79
D - Electricity, gas, steam and air conditioning supply				
E - Water supply; sewerage; waste management and remediation activities				
F - Construction	1	0.58		
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	42	24.42	9	47.37
H - Transporting and storage	8	4.65		
I - Accommodation and food service activities	3	1.74		
J - Information and communication	9	5.23	3	15.79
K - Financial and insurance activities	10	5.81		
M - Professional, scientific and technical activities	14	8.14	1	5.26
N - Administrative and support service activities	10	5.81	1	5.26
O - Public administration and defence; compulsory social security	4	2.33		
P - Education	3	1.74		
Q - Human health and social work activities	7	4.07	1	5.26
R - Arts, entertainment and recreation	5	2.91		
S - Other services activities	8	4.65	1	5.26
Total	172	100.00	19	100.00

Source CAGE and CBA databases

Table 5 shows the sector NACE one-digit breakdown of the samples of texts from the CAGE and CBA databases. The fact that some sectors are not covered in the CAGE database means that no GE equality specific negotiation has taken place, when in the CBA database, it is also due to sample selection.

3.1.2 Company level texts

Tables 6 and 7 display the breakdowns of GE CBAs issued by companies according to the year of signature and NACE one-digit classification in both databases. The collective agreements from the CBA database are few in number and cover only 4 NACE one-digit industries. As at the sector level, collective agreements resulting from company level bargaining can be extracted from the CAGE database to complement the CBA database sample according to the needs of the case comparison with Italy and the Netherlands.

Table 6. Year of signature of collective agreements at company level addressing GE in France in the Cage and CBA databases

Year of signature	CAGE		CBA	
	Freq.	Percent	Freq.	Percent
2005	1	0.02		
2006	24	0.56		
2007	122	2.87		
2008	141	3.32		
2009	180	4.23		
2010	289	6.80		
2011	664	15.62		
2012	733	17.24	1	20
2013	496	11.67	2	40
2014	448	10.54		
2015	584	13.74		
2016	569	13.39		
2017			2	40
Total	4,251	100.00	5	100.00

Source CAGE and CBA databases

Table 7. NACE one-digit breakdown of collective agreements at company level addressing GE in France in the CAGE and CBA databases

NACE classification	CAGE		CBA	
	Freq.	Percent	Freq.	Percent
C - Manufacturing	1,305	30.70	3	50
D - Electricity, gas, steam and air conditioning supply	31	0.73		
E – Water supply; sewerage; waste management and remediation activities	68	1.60		
F - Construction	199	4.68		
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	414	9.74	1	16.67
H - Transporting and storage	448	10.54	1	16.67
I - Accommodation and food service activities	82	1.93	1	16.67
J - Information and communication	144	3.39		
K - Financial and insurance activities	355	8.35		
L - Real estate activities	106	2.49		
M - Professional, scientific and technical activities	212	4.99		
N - Administrative and support service activities	337	7.93		
O - Public administration and defence; compulsory social security	10	0.24		
P - Education	34	0.80		
Q - Human health and social work activities	426	10.02		
R - Arts, entertainment and recreation	36	0.85		
S - Other services activities	44	1.04		
Total	4,251	100.00	6	100.00

Source CAGE and CBA databases

3.2 Search of a common support for a comparison between France, Italy and the Netherlands

3.2.1 Sector level texts

Of the 144 sector level collective agreements from the CBA database, 87 have GE clauses (Table 1). Of those sector level collective agreements, almost all the French texts deal with the issue of GE. 81% of Italian texts address GE, and only 37% of Dutch texts mention this issue. Table 8 displays the signature years for the single collective agreements on GE in the private sector which is covered similarly in the CAGE and CBA databases.

Table 8. Year of signature of collective agreement at sector level addressing GE in the CBA database in France, Italy and the Netherlands

Year of signature	France		Italy		The Netherlands	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
2005	1	5.26				
2007	1	5.26				
2008	2	10.53				
2009	3	15.79				
2010	5	26.32	1	3.85		
2011			1	3.85		
2012	1	5.26				
2013	2	10.53	2	7.69	2	7.69
2014	2	10.53	1	3.85	2	7.69
2015	1	5.26	2	7.69	1	3.85
2016			12	46.15	1	3.85
2017	1	5.26	2	7.69	2	7.69
2018			2	7.69	7	26.92
2019			3	11.54	11	42.31
Total	19	100.00	26	100.00	26	100.00

Source CBA database, private sector

Table 9 shows that among the texts on GE, the most represented sectors in the database are for France: Wholesale and retail trade; Information and communication, Administrative and support service activities, Human health and social work activities; for Italy: Manufacturing (C), Transporting and storage (H) and Education (P); and for The Netherlands: Wholesale and retail trade (G), Construction (F) and Manufacturing (C).

Manufacturing (C), Wholesale and retail trade (G) and Administrative and support service activities (N) are represented by at least one text in each of the three countries. Transporting and storage (H) and Accommodation and food service activities (I) are represented by at least one text in Italy and the Netherlands but there are no texts in the CBA database for France. Texts from the CAGE database for these sectors could be added to extend the common support where a comparison can be undertaken.

Table 9. NACE one-digit breakdown of collective agreements at sector level addressing GE in the CBA database in France, Italy and the Netherlands

NACE classification	France		Italy		The Netherlands	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
A - Agriculture, forestry and fishing			2	7.69	1	3.85
C - Manufacturing	3	15.79	5	19.23	3	11.54
D - Electricity, gas, steam and air conditioning supply			2	7.69		
F - Construction					4	15.38
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	9	47.37	1	3.85	10	34.46
H - Transporting and storage			8	30.77	1	
I - Accommodation and food service activities			3	11.54	2	7.69
J - Information and communication	3	15.79	1	3.85		
K - Financial and insurance activities					1	7.69
M - Professional, scientific and technical activities	1	5.26			1	3.85
N - Administrative and support service activities	1	5.26	2	7.69	2	7.69
P - Education			1	3.85		
Q - Human health and social work activities	1	5.26			1	3.85
R - Arts, entertainment and recreation			1	3.85		
S - Other services activities	1	5.26				
Total	19	100.00	26	100.00	26	100.00

Source CBA database, private sector

3.2.2 Company level texts

The CBA coded database specifies the coverage dates of the text (i.e. start date and end date). The starting years vary from 2006 and 2020, with a large proportion of texts recently negotiated. The length of coverage is around 3 years. All the French texts are in the private sector, whereas the Italian

and Dutch texts include both the private and public sectors, and semi-public for the Netherlands (i.e. associations).

In Table 10, we focus on texts addressing GE bargained by companies in the private sector only. The presence of GE clauses in enterprise level collective agreements varies substantially across countries. All the French texts include GE clauses. 78% of Italian texts address GE and only 25% of Dutch texts do so (Table 1).

Table 10. Year of signature of collective agreement at company level addressing GE in the CBA database in France, Italy and the Netherlands

Year of signature	France		Italy		The Netherlands	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
2010			1	2.78		
2012	1	16.7				
2013	2	33.3	4	11.11		
2014			1	2.78	1	14.29
2015			9	25	1	14.29
2016			4	11.11		
2017	3	50	6	16.67	1	14.29
2018			4	11.11	3	42.86
2019			5	13.89	1	14.29
2020			2	5.56		
Total	6	100.00	36	100.00	7	100.00

Source CBA database, private sector

Table 11. NACE one-digit breakdown of collective agreements at company level addressing GE in the CBA database in France, Italy and the Netherlands

NACE classification	France		Italy		The Netherlands	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
A - Agriculture, forestry and fishing			2	5.56		
C - Manufacturing	3	50	3	8.33	3	42.86
D - Electricity, gas, steam and air conditioning supply			1	2.78		
F - Construction			2	5.56		
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	1	16.67	4	11.11	1	14.29
H - Transporting and storage	1	16.67	5	13.89	1	14.29
I - Accommodation and food service activities	1	16.67	1	2.78		
K - Financial and insurance activities			5	13.89	1	14.29
L - Real estate activities			1	2.78		
M - Professional, scientific and technical activities			1	2.78		
N - Administrative and support service activities			2	5.56		
P - Education			3	8.33		
Q - Human health and social work activities			4	11.11	1	14.29
R - Arts, entertainment and recreation			1	2.78		
S - Other services activities			1	2.78		
Total	6	100.00	36	100.00	7	100.00

Source CBA database, private sector

Among the texts dealing with GE, we note that Manufacturing (C), Wholesale and retail trade(G) and Transporting and storage (H) sectors are common to all three countries (Table 11). Some French texts from the CAGE database could be added for Financial and insurance activities (K) and Human health and social work activities (Q).

3.3 Further comparisons between France, Italy and the Netherlands using the CBA and CAGE databases

3.3.1 Sample selection

We want to compare agreements on GE that cover the same sectors and the same time period for both levels of bargaining. In the previous section, we have identified a common support: we select agreements covering the period from 2010 to 2019, and the Manufacturing (C), Wholesale and retail trade; repair of motor vehicles and motorcycles (G) and Transporting and storage (H) NACE one-digit sectors.

For France, missing collective agreements are extracted from the CAGE database. This selection is done randomly and respects the distribution of agreements for each sector as observed in the CAGE database (see Tables 5 and 7), which is representative. We conduct this random draw for agreements issued by both sectors (Tables 12 and 13) and companies (Tables 14 and 15).

Table 12. Breakdown of common support sector level sample of CBAs in France with/without CAGE supplement, by year of signature

Year of signature	CBA		CBA+CAGE	
	Freq.	Percent	Freq.	Percent
2010	4	66.67	5	35.71
2011			1	7.14
2012	1	16.67	4	28.57
2013	1	16.67	1	7.14
2014			1	7.14
2015			1	7.14
2016			1	7.14
2017				
Total	6	100.00	14	100.00

Source Cage and CBA databases

Table 13. NACE one-digit breakdown of common support sector level sample of CBAs in France with/without CAGE supplement

NACE classification	CBA		CBA+CAGE	
	Freq.	Percent	Freq.	Percent
C - Manufacturing	1	16.67	7	50.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	5	83.33	6	42.86
H - Transporting and storage			1	7.14
Total	6	100.00	14	100.00

Source Cage and CBA databases

Table 14. Breakdown of common support company level sample of CBAs in France with/without CAGE supplement, by year of signature

Year of signature	CBA		CBA+CAGE	
	Freq.	Percent	Freq.	Percent
2010				
2011			4	20
2012	1	20	2	10
2013	2	40	4	20
2014			4	20
2015			3	15
2016			1	5
2017	2	40	2	10
Total	5	100	20	100

Source Cage and CBA databases

Table 15. NACE one-digit breakdown of common support company level sample of CBAs in France with/without CAGE supplement

NACE classification	CBA		CBA+CAGE	
	Freq.	Percent	Freq.	Percent
C - Manufacturing	3	60	12	60
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	1	20	4	20
H - Transporting and storage	1	20	4	20
Total	5	100	20	100

Source Cage and CBA databases

Using agreements from the CAGE database increases the sample size for France, but the sample size remains limited in the Netherlands at the company level. An increase in the number of company level CBAs on GE would improve the comparison. However, the small number of GE company level CBAs seems to reflect the bargaining behaviour on this topic in the Netherlands. In France, the small sample sizes at the sector and company level reflected a structural imbalance in data collection for this country in the CBA database.

Table 16. Breakdown of common support sector level sample of CBAs in France, Italy and the Netherlands, by year of signature

Year of signature	France		Italy		The Netherlands	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
2010	5	35.71				
2011	1	7.14	1	7.14		
2012	4	28.57				
2013	1	7.14	1	7.14	2	14.29
2014	1	7.14			1	7.14
2015	1	7.14	1	7.14	1	7.14
2016	1	7.14	7	50	1	7.14
2017			1	7.14	1	7.14
2018					3	21.43
2019			3	21.43	5	35.71
Total	14	100.00	14	100.00	14	100.00

Source Cage and CBA databases

Table 17. NACE one-digit breakdown of common support sector level sample of CBAs in France, Italy and the Netherlands

NACE classification	France		Italy		The Netherlands	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
C - Manufacturing	7	50.00	5	35.71	3	21.43
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	6	42.86	1	7.14	10	71.43
H - Transporting and storage	1	7.14	8	57.14	1	7.14
Total	14	100.00	14	100.00	14	100.00

Source Cage and CBA databases

Table 18. Breakdown of common support company level sample of CBAs in France, Italy and the Netherlands, by year of signature

Year of signature	France		Italy		The Netherlands	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
2010						
2011	4	20.00				
2012	2	10.00				
2013	4	20.00	2	16.67		
2014	4	20.00	1	8.33	1	14.29
2015	3	15.00	3	25.00	1	14.29
2016	1	5.00	2	16.67		
2017	2	2.00	1	8.33	2	28.57
2018					2	28.57
2019			3	25	1	14.29
Total	20	100.00	12	100.00	7	100.00

Source Cage and CBA databases

Table 19. NACE one-digit breakdown of common support company level sample of CBAs in France, Italy and the Netherlands

NACE classification	France		Italy		The Netherlands	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
C - Manufacturing	12	60.00	3	25.00	3	42.86
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	4	20.00	4	33.33	1	57.14
H - Transporting and storage	4	20.00	5	41.67	3	42.86
Total	20	100.00	12	100.00	7	100.00

Source Cage and CBA databases

Once agreements have been selected in the CBA database and enriched in France with texts from the CAGE database (Tables 16 to 19), we can conduct textual analyses for these three countries. We analyse the whole collective agreement when the bargaining focuses specifically on GE, like in the French case, or GE clauses in multi-topic CBAs, which is the case Italy and in the Netherlands.

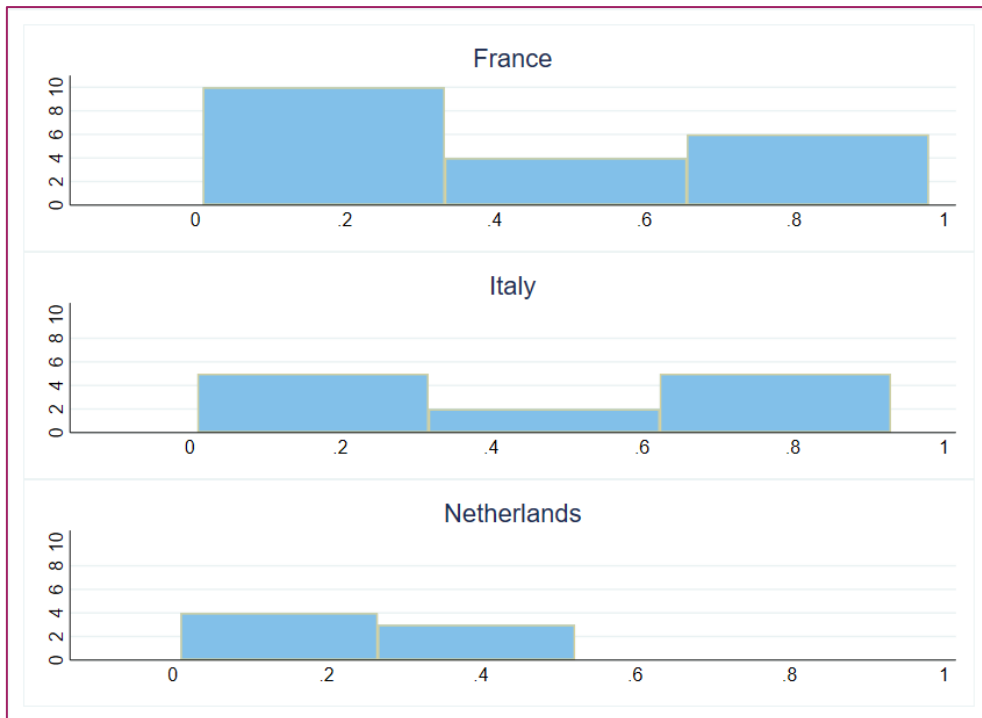
3.3.2 Comparing gender equality clauses in collective agreements with text mining

To conduct a comparison on how GE issues are tackled in CBAs from different countries, we have to note that a first difficulty is related to the fact that in France, GE is a specific topic for negotiation with bargaining obligations both at the sector and company levels. Hence we find whole collective agreements on this topic, while in Italy and in the Netherlands we only find GE clauses, i.e. short portions of texts within multi-purpose collective agreements. In the following, we deal with this issue by using relative indicators, which are expressed in terms of proportion of the text used in the analysis (either a whole text or a portion of text). Then, following the literature on GE (Milner *et al.*, 2019) and taking stock of the methods used to measure the quality of bargaining outcomes in the CAGE

project (Bruno *et al.*, 2021), we use two measures to capture different dimensions of the quality of GE clauses in collective agreements.

The first one relates to the degree of similarity/dissimilarity of a given text with one or several key or reference texts. Here we chose to compare company level texts with its sector level counterparts. This distance measures the originality of the company level text or its degree of adaptation to the local context of the company. It also informs about how the sector level and company level bargaining are articulated to one another.

Figure 5. Distribution of the Qgram distance between company and sector texts



Source Cage and CBA databases

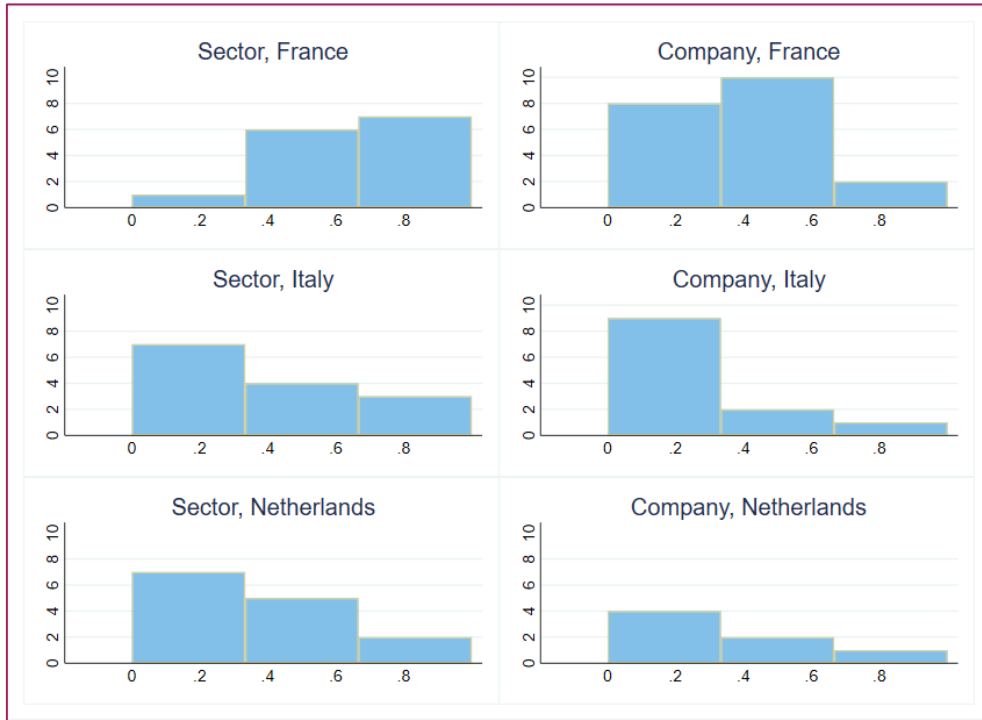
To compute this indicator, we used the Qgram distance with is currently used in plagiarism analyses. It sums the differences between the sequence of words of the two texts/clauses, divided by the total number of character strings (company text/clauses + sector text/clauses). We choose the sector level text that is the closest to the company level text in terms of economic activity. It is the one with the closest coverage period and which is also closest in terms of detailed industry classification.

The profile of the distribution of the Qgram distance is similar in France and Italy (Figure 5). As we only have a small number of company level texts, we report frequencies in the figure rather than percentages and build only two classes in the Netherlands where we only have 7 company level texts. Company level texts/clauses are more often either very close to the sector reference text or clearly distant from it. In the Netherlands, company level texts are closer to their sector counterpart, which supports the prevalence of sector level bargaining in this country compared to France and Italy.

The second measure that we use rests on a list of keywords describing concrete actions to fight gender inequalities, both proposed in the literature on *bargained gender equality* in France (Giordano & Santoro, 2019) and extrapolated in the CAGE project from a sample of 200 French GE focused collective agreements. These keywords seek to identify terms that are markers of these measures to combat gender inequalities and that are discriminatory in the textual analysis, falling under a different lexicon than legal terms related to the GE collective bargaining framework. Three families of terms are distinguished (Table a1 in appendix), associated respectively with tools and bodies for evaluating

and monitoring progress, awareness-raising, information actions and GE adjustment measures. Identified in the French context, these keywords have then been translated in Italian and in Dutch. If we were to deepen this comparative analysis, we would need to develop and collect lists of keywords referring to each national context.

Figure 6. Distribution of the indicator on measures to fight gender inequalities



Source Cage and CBA databases

The quality according to this second quality register is assessed by counting the terms related to measures to combat gender inequality in the company or sector GE text/clause in relation to the total number of terms in the text/clause. Then we normalised this measure so that it varies between 0 and 1, as the Qgram distance.

Figure 6 gives its distribution for France, Italy and the Netherlands, at sector and company level. We observe that distribution are skewed to the right in Italy and the Netherlands indicating a scarce presence of identified keywords. By contrast, in France, the distribution is skewed to the left for sector level agreements, and skewed to the right with a middle mode for the company level agreements, leading to higher average value of this indicator compared in Italy and the Netherlands both in sector and company level GE texts or clauses and, in France, to a higher value in sector level texts than in company level texts.

However, the fact that keywords have been identified in the French context as well as the shorter nature of the Dutch and Italian texts possibly drives these differences between the three countries. Identified words to tackle measures to fight gender inequalities are likely to be less suited to the Italian and Dutch contexts. This raises the issue of building a context neutral list of keywords, which is out of the scope of the current feasibility study. Based on text mining, other dimensions of the quality of texts could be approached like a measure of gender bias in their wording and syntax or measure of an offensive or defensive approach to GE in texts using sentiment analysis.

4. Feasibility of an EU-wide data infrastructure on bargaining behaviours and outcomes based on the methods of COLBAR-Europe and CAGE

The purpose of this section is to explore the feasibility of an EU-wide data infrastructure on bargaining behaviours and outcomes, based on the methods of COLBAR-Europe and CAGE. The idea is to combine structured information from an employer level survey with coded information and unstructured data from collective agreements texts from the CBA database. Such an infrastructure would allow to better understand the bargaining process through the analysis of its outcomes at sector and company level and to relate in with measures of employer and employee outcomes, such as economic performance or wage inequalities. It would also allow to undertake comparisons across countries, and possibly over time. We need to choose a relevant EU-wide survey, identify how it can be related to the CBA database and to explore how collective agreements at sector and company levels should be collected to achieve some form of representativity. Two surveys are potential candidates as they provide harmonised EU-wide information about collective bargaining on wages: The European Company Survey (ECS) developed and carried out by Eurofound and the European Structure or Earnings Survey (ESES) which data is collected at national level by statistical institutes under the coordination of Eurostat. We illustrate this section with the showcase of the comparison between France, Italy and the Netherlands and start by examining the main features of collective bargaining patterns in these three countries based on ECS and ESES data. We then describe the data infrastructure built in the CAGE project and finally explore how it could be reproduced at the EU level.

4.1 Main features of collective bargaining patterns in France, Italy and the Netherlands

Collective bargaining patterns vary across countries as a result of differences in national legal framework for collective bargaining, as well as in the structure of staff representative institutions within organisations (Eurofound, 2020). Workers may be covered by various types of CBAs negotiated at the national, regional, sectoral, occupational or firm level, and these levels can be interlinked (see summary Table a2 in appendix 1). Collective agreements can be characterised by the level of negotiation, or by the degree of co-ordination between bargaining levels. Hence, centralised bargaining implies that agreements negotiated at the national or industry level are the dominant form for regulating terms and conditions of employment; while decentralised bargaining implies that company or establishment-level agreements predominate in the negotiations. The state sets the rules for bargaining, enacts minimum wage legislation and has the ability to extend agreements to non-affiliated parties. Collective agreements cannot be overruled by national law.

4.1.1 Collective bargaining in France, Italy and the Netherlands

In France, collective bargaining takes place mainly at three levels: at the national, sector and company level. On national level, social partners can conclude a *national interprofessional agreement* (Accord national interprofessionnel – ANI) that apply to their affiliates. In general, the content of an ANI is

implemented through a law so that its provisions apply to all employees and all employers within the country, but it does not cover wage setting issues.

The sector level, identified at the most detailed level (*branche*) by a four-digit code called IDCC (*Identifiant Des Conventions Collectives*) sometimes corresponds to a sector in a region or to an occupation in a sector. Furthermore, companies can decide to set bargaining at the establishment level, the group level or at the social and economic unit level that brings together several companies that decide to set their social relations together through bargaining. The French industrial relations system is characterised by a strong commitment of the State in social relations. The State determines one single minimum wage rate and the social partners set wages that are specific to occupations and sectors. Furthermore, the legislator seeks to influence the behaviour of companies through bargaining obligations. This has been described as *bargained public policies* or *administered social dialogue*.

Sectors play an important role in the French social dialogue. Collective agreements negotiated at the sector level have to address particular topics related to the employment relation and working conditions (see Table a2 in appendix 1 for details of topics). Collective agreements are frequently extended by the Ministry of Labour. Therefore, the latest estimate from the OECD puts collective bargaining coverage in France at 98% in 2018. Sector and company levels are complementary, meaning that company level negotiations aim at adapting sector level provisions to the local context of the work environment. They thus negotiate on the same topics. However, the importance of company-level bargaining has increased in recent years with the legal changes introduced with the labour law reform of 2016 and 2017, that give precedence of companies' level agreements over the sector level or the law for some topics like working time (but not on minimum wage or GE).

In Italy, like in France, the industrial relations system is mainly organised at three levels: the national, sector, company-level. Sector level agreements can have a regional scope and sometimes target a specific occupation. The bargaining coverage is estimated at 80% of employees. Collective agreements typically run for three years.

Sector level agreements, have to settle wage levels (minimum salary levels as well as further salary items). Other topics are not compulsory but these agreements can also determine, in relation to the sector, the content of further protection measures (working time, safety regulations, parental leave, etc.). Until 1993, negotiations at the sector level on wages had to take place every two years when negotiations on other issues could take place every four years. Since 2009 following an agreement adopted by two main confederations (i.e. CISL and UIL), sector-level agreements run for three years, covering both pay and employment conditions issues. Since there is no national system for setting the minimum wage, sectors determine minimum pay rates. They also address other issues such as overtime and night rates, hours, holidays, maternity leave, sickness absence, training, health and safety, the use of temporary workers, disciplinary rules, union rights, social benefits (welfare), recruitment and job classification. Unlike in France, collective agreements cannot be extended through legislation.

Company-level CBAs are negotiated by the Works Council, and negotiations should take place once every three years. They should address pay topics and conditions to increase competitiveness and productivity, as well as employment conditions. However, sector collective bargaining takes priority over those at company level. Contrary to the French case, bargaining on GE is not compulsory. The law provides financial incentives for the adoption of positive action measures, with the aim to promote female representation to positions of responsibility within organisations, fostering the creation of firms run by women.

In the Netherlands, collective agreements are regulated under the Dutch Law on collective agreements. Collective agreements almost always cover workers in the relevant sector, branch or enterprise throughout the whole country; region-specific agreements are virtually non-existent, except in case the operations of the enterprise or sector covered by the collective agreement are limited to specific geographical regions. There are two type of collective agreement: at the sector level and at the firm level. Levels are substitutes so that bargaining takes place either at one level or at the

other. The duration of a collective agreement can be up to five years, but typically lasts one or two years.

Sector-level agreements concluded between social partners have to include pay topics and other topics such as duration of working time and employment conditions. Sector-level agreements have precedence over those at company level. Moreover, the government² can extend an agreement at sector level to all employees in the same sector, the so-called mandatory extension. Extension occurs at the request of the signatories of collective agreements, after a representativeness test, and it is very common. Hence, the coverage rate of collective bargaining is estimated to be above 85%. Company-level agreements set between social partners have to deal with pay topics. Other topics are usually regulated within this agreement such as leaves, work organisation (see Table 2 in appendix 1 for details on topics). As in Italy, bargaining on GE is not mandatory. Legislations on GE, in particular on equal pay, the Equal Treatment for Men and Women Act and the General Equal Treatment Act, are observed by employers, and aimed at achieving equality of pay between women and men.

4.1.2 Patterns of collective bargaining observed with the ECS and ESES

Box 1 below reports the questions about collective pay agreements in the ECS and the ESES. If there is more than one agreement covering employees in a given establishment, the ESES focuses on the agreement with the widest within-company coverage, while ECS allows for multiple choices.

In the ECS questionnaire addressed to senior level HR managers, question 48 lists six types of collective agreements according to scope of coverage and asks the respondent to identify all those that contribute to the settlement of wages. This question has been adapted in national questionnaires to the bargaining context. Table a3 in appendix gives the type of collective agreement that has been retained in the reviewed countries and the wording used in each language. The first item, a collective agreement negotiated at the national or cross-sectoral level not been taken up by any of the three countries. We are thus left with five alternatives: sector, region, company, occupation or other. In the questionnaire for the Netherlands, only two items have been included: sector and company. In Italy, the regional level has been added to the sector and company levels and in France all five items have been taken up.

Table a4 gives the distribution of the combination of responses for these three countries. The cases of the Netherlands and of Italy are straightforward with respectively four combinations and eight combinations. The case of France is by far the most complex with 23 alternatives combining the five alternatives. However, in the three countries, the sector and company level agreement play a central role. This is why, we synthesise the information in a variable with four items: no agreement, a core sector level agreement (possibly with other agreements than company level), a core company level agreement (possibly with other agreements than sector level) and both a company and a sector level agreement (possibly with other types of agreements).

² The 1937 Act.

Box 1: Questions on collective bargaining coverage in ECS 2019 and SES 2014

ECS - Question 48. [CA] Are the wages of any employees in this establishment set by any of the following types of collective agreements?

Tick all that apply.

[COUNTRY SPECIFIC LIST]

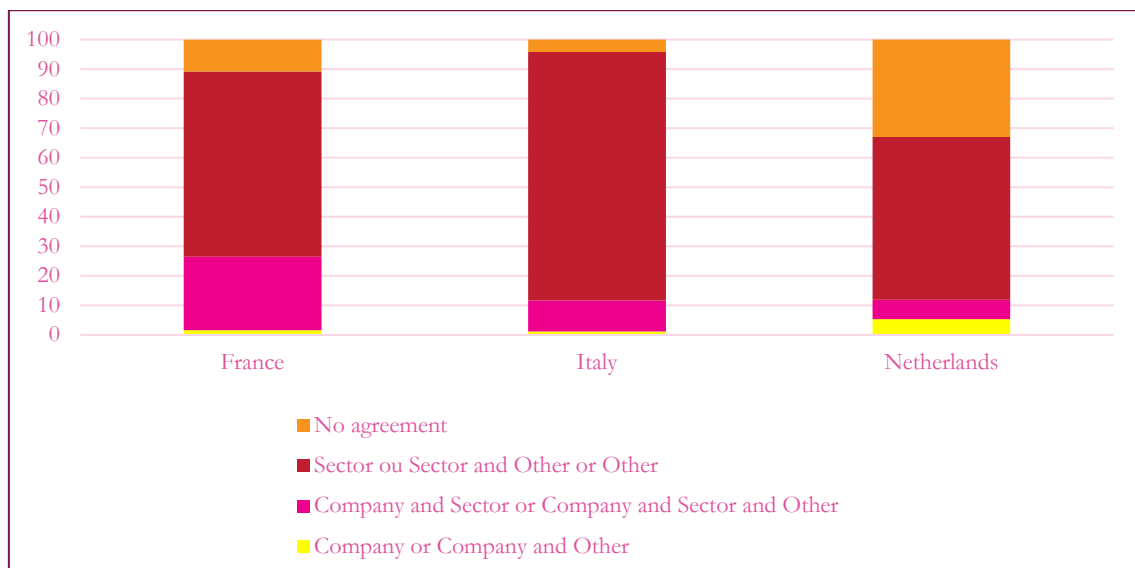
- A collective agreement negotiated at the national or cross-sectoral level
- A collective agreement negotiated at the sectoral level
- A collective agreement at the regional level
- A collective agreement negotiated at the establishment or company level
- A collective agreement negotiated on behalf of employees with a specific occupation
- Another type of collective agreement

ESES variable 1.5 Collective pay agreement

This is to identify the type of pay agreement covering at least 50% of the employees in the local unit. **One of the following should be chosen:**

- an agreement at national level, or an interconfederal agreement, covering employees of more than one industry, and usually signed by one or more trade-union confederations and by one or more national employers' organisations;
- an industry agreement setting the terms and conditions of employment for all or most workers and employees in an individual industry or economic sector;
- an agreement for individual industries in individual regions;
- an enterprise or single-employer agreement covering only those employees with the same employer, regardless of size. The agreement may cover only certain local units or groups of employees within the enterprise;
- an agreement applying only to the employees in one local unit;
- any other type of agreement not covered above;
- no collective pay agreement exists.

Figure 7. Collective bargaining coverage in France, Italy and the Netherlands



Coverage: Establishments in the private sectors with 10 or more employees.

Note: % of establishments in each collective bargaining configuration for wage settlement weighted statistics.

Source ECS 2019 management questionnaire

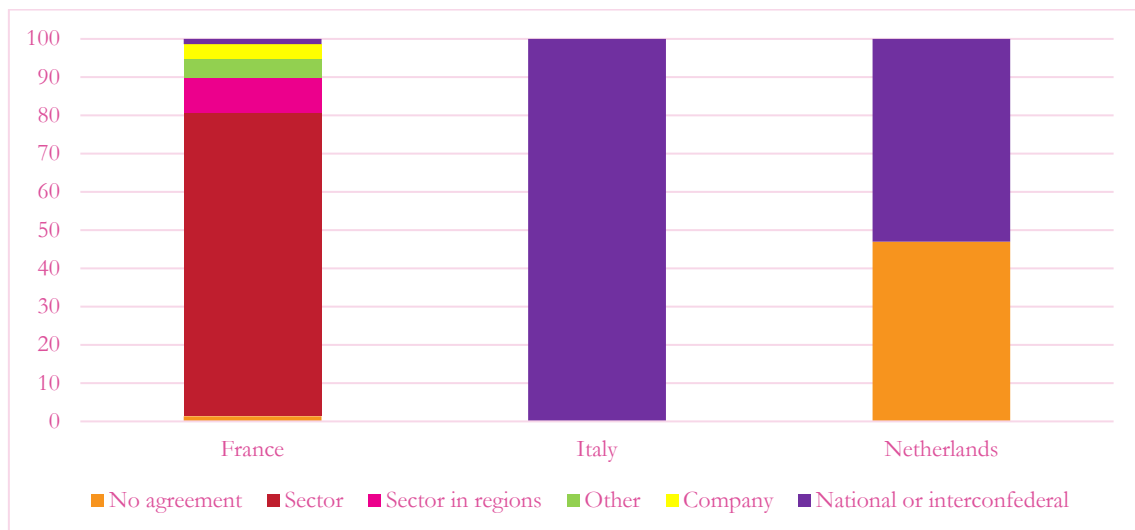
Figure 7 gives the distribution of this variable in the three countries. Employees are mainly covered for wage settlement by sector agreements only: 55% of establishment are concerned in the Netherlands, 63% in France and 84% in Italy. France stands out in terms of share of establishment covered by combined sector and company level agreements (25% versus 10% in Italy and 7% in the Netherlands) and the Netherlands stands out in terms of the share of companies that are not covered by any

type of agreement (33% versus 11% in France and 4% in Italy) or that are covered by a company level agreement only (5% versus 2% in France and 1% in Italy).

The information from ESES is of a different nature (Box 1). Variable 1.5 identifies the main type of pay agreement at the company level, defined as the one that covers at least 50 % of employees. A list of seven alternatives is proposed, six of which being identified in the three countries under review: no agreement, national or interconfederal, sector, sector in regions, company and other.

Figure 8 gives the distribution of this variable. We find again the higher complexity in the types of collective agreements in French establishments. If a dominant sector level coverage is the main situation (almost 80% of establishments), all other situations are observed, 10% of establishments being covered mainly by an agreement for individual industries in individual regions (sector in region). Data available in the ESES for Italy and the Netherlands are problematic. In Italy, all establishments are mainly covered by a national or interconfederal pay agreement, when in the Netherlands, there are either no agreement (almost 50% of companies) or a main national or interconfederal one (more than 50%). The higher share of companies that are not covered by a CBA in the Netherlands overlaps with what we observe with the ECS. If the ECS ruled out the role of national collective pay agreements, their inclusion the ESES with a simple choice question masks the role of sector and company level agreements in Italy and in the Netherlands.

Figure 8. Main collective bargaining coverage on wages



Coverage: Companies in the private sectors with 10 or more employees.

Notes: % of establishment covered by a main collective agreement of each type for wage settlement.

Weighted statistics: companies in the private sectors with 10 or more employees.

Source ESES 2014

4.2 The data infrastructure in the Cage project

The aim of the CAGE project is to provide a framework to enrich the information on GE by applying big data techniques to collective agreements' texts originated from bargaining processes. The procedure used in this work can be extended to other domains for which unstructured data need to be processed to extrapolate valuable information. We create an innovative protocol that merges administrative and survey data with information extrapolated from the agreements' corpus. The database created is representative of a sample of firms, and can be used to assess the effectiveness of such agreements in mitigating professional gender inequalities.

4.2.1 The French Institutional Context

GE at work has become a priority for governments in recent years. In France, equality bargaining at work has been compulsory since 2001. It is through collective bargaining that public authorities seek to reach this goal. The labour code compels firms with 50 employees and more to publish an annual review on gender inequalities in six distinct areas: recruitment, training, promotion, classifications, working conditions and pay. Firms with more than 300 employees must produce a GE report (i.e. rapport de situation comparée), developing an analysis of several indicators, and a GE plan, including measures to remove the gender gap and an estimate of the related costs. Firms with 50 employees and more have to bargain every three years over professional gender equality. Sector and company level bargaining are complementary on this topic. The sector level has an obligation to bargain on GE in a similar way as the firm level. Whatever the bargaining conditions, a text has to be produced. In the absence of an agreement, employers must file an action plan. Despite this obligation and even though non-compliance is sanctioned since 2012,³ not all firms negotiate on GE: between 2014 and 2016 about one third of them did not comply with their bargaining obligation.

4.2.2 The databases

The CAGE data infrastructure combines a representative employer level survey, the REPNONSE survey, an administrative file on coded information about CBAs, the D@coord database, from the ministry of labour company level CBA archive and the official archive of sector level agreements.

The 2017 edition of the REPNONSE survey is the fifth in a series of surveys that aims at mapping the nature and state of employment relations within French workplaces. The survey, conducted every six years, is sponsored by the department for research and statistical studies (DARES) within the French ministry of labour. It is a triple voice survey that interviews managers, employee representatives and employees in samples of workplaces drawn from the official registers of businesses. The collection of data from various actors within the same workplace aims to provide a comprehensive and coherent account of work and employment relations. The REPNONSE survey follows the methods and procedures of official statistics. The answers of each person interviewed are kept strictly confidential and are only used for the compilation of national statistics and studies. Since 2017, it became mandatory to respond to the survey for all the selected firms. All private sector workplaces with 11 or more employees located in Metropolitan France, and operating in activities within Nace Rev. 2 Sections B (extractive industries) to S (other service activities) are covered, with the exception of Section O (public administration). The survey was conducted among 4,364 representative private sector establishments.

The legal obligations to bargain produce annually a stream of texts that are filed to the regional unit of labour inspection, i.e. the Direccte (regional directorate of firms, competition, consumption, labour and employment) together with a structured pre-printed summary recording some key features of the agreement such as the nature of the document (agreement, amendment, agreement termination, disagreement, etc.), the topic, the signature date, the signatories, the company identification number, its location etc. Nowadays an online procedure has replaced the old process, in which no specific document format was requested to firms to deposit the bargaining documentation. The wide variety of document format are identified via a unique identification number (file administrative number) and sent each trimester by the Direcctes to the Dares, where the content of the pre-printed summary is hand-operated to feed the D@ccord administrative database. D@ccord contains information on collective agreements signed from 1 January 2005 on 37 distinct topic, hence GE related data represents only a portion of more than 1 million entries. It is comparable to the CBA coded database generated by the WageIndicator project in that it gives coded information about the archived CBAs. However, it results from an administrative process rather than from an academic initiative and

³ The financial penalty may amount up to 1% of payroll.

for that reason it traces all formal texts produced by companies in bargaining contexts. It is only recently that firms have started to fill in the relevant information via an online tool. Until 2019, information was communicated in paper format and hand-operated by Direcctes' employees, thus exposing the data to human errors such as miss-categorisations and typos. Furthermore, D@ccord provides information only on those firms that did file an agreement. The unit of observation in D@ccord is the text signed on a given year, with its unique identifier (administrative file number). The identification number of the establishment that filed the text, the Siret number is reported in the database, together with its IDCC branch identifier.

In the CAGE project, the D@ccord database is used to select a sample of coded GE CBAs. Thanks to their unique identification number, these texts can subsequently be retrieved from the ministry of labour company level CBA archive. In order to study the GE bargaining behaviour of a representative sample of companies, we selected the 4,364 establishment that responded to the 2017 REPONSE survey and, using coded information from the D@ccord database, we retrieved from the CBA archive the 4,251 GE texts that they had negotiated since 2005.

Information on sector level collective agreements on GE has also been gathered. These CBAs are extracted from the LégiFrance⁴ platform, which lists all public administrative texts (i.e. laws; decrees; industry and company collective agreements). The resulting database comprises 172 GE collective agreements that are organised according to the year in which the text was signed and to the IDCC branch identifier.

4.2.3 Matching the databases at the firm and sector level

Access to databases with company level identifier is only possible through a highly secure access structure called the Centre d'Accès Sécurisé aux Données (CASD). The aim of the CASD is to implement secure access services for confidential data for non-profit researches, studies or evaluations. The CASD provides a terminal that allows statistical processing of the data, but does not allow data downloads: the data remains on a CASD server. The terminal only works through a double individual identification: by a smart card and fingerprints. A VPN (Virtual Private Network) allows access to the server. Once the statistical analyses have been completed, the tables or graphs are evaluated by a CASD officer to ensure that they do not contain any data that could identify a specific person or company.

In the CAGE project, we first match the 2017 REPONSE database with the set of company level CBAs associated with the GE topic in the D@ccord database. The signatory unit of a text can be an establishment, a company or an inter-company level. Inter-company level includes group and economic and social unit. The matching of the two databases relies on the unique identifier, assigned to the company (Siren) or to the establishment (Siret). It is easy to carry out and reliable. When the text is bargained at establishment level, matching is done by the Siret number, while data matching is carried out on the Siren when the text is bargained at the company or inter-company level. Thus, if several establishments of the same company (Siren) are present in the 2017 REPONSE database, they will be associated with the same GE collective agreement. In the matched REPONSE-D@ccord database, each establishment is associated with a set of GE CBAs signed between 2005 and 2016 and identified by their unique administrative file number.

The second step is to assemble the company level text database with the matched REPONSE-D@ccord database. The matching of the two databases relies on the unique identifier of the text, the administrative file number. The resulting database is then matched with the database of GE sector level collective agreements, using the IDCC code, the year of signature and the duration of text coverage. The sector and company level CBAs are then coded using text mining techniques, with the aim to approach various dimensions of the quality of bargaining outcomes.

⁴ www.legifrance.gouv.fr.

4.3 Feasibility of an EU-wide data infrastructure on bargaining behaviours and outcomes

In this section, we explore the possibilities for creating at the EU-wide level a data infrastructure on bargaining behaviours and outcomes building on the solutions developed in the COLBAR-Europe and in the CAGE projects. First, we present the European datasets that could be used to create this data infrastructure. Then, we present different options for linking the datasets. Finally, we explore different scenarios for selecting CBAs.

At the EU-wide level, the CBA database is the relevant source as far as outcomes of collective bargaining are concerned, with the shortcoming that CBAs are collected on a voluntary basis and in relation with project based funding leading to target certain countries and sectors. Two employer level surveys are also relevant to approach bargaining behaviours on a European scale: the ECS and the ESES. Table 20 below reports the reference periods for these three data sources. Both surveys cover fairly similar time periods, however, only the ECS survey is available for the most recent year, i.e. 2019. This is important because it allows for a better fit with the CBA database. In fact, a large proportion of the texts extracted from the WageIndicator website⁵ are signed after 2014. However, the reference period of the employer database could be prior to the reference period of the Collective Bargaining database according to the objectives of the research.

Table 20. Reference periods for the CBA and employer data sources

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
CBA database	x	x	x	x	x	x	x	x	x	x	x
ECS	x				x						x
ESES		x				x				x	

4.3.1 Data sources at European level

The WageIndicator website disseminates national and international comparative information on wages and employment related issues. As far as bargaining outcomes are concerned, it gives access to the texts of CBAs collected across nations and industries as well as to a coded data source generated from them. As described in Section 1, the BARCOM and the COLBAR-Europe projects, which received funding under the European Commission’s social dialogue program, allowed to collect more than 600 sector and company level CBAs from specific sectors across the EU.

The ECS is conducted every four-yearly by the European Foundation for the Improvement of Living and Working Conditions (Eurofound). The fourth wave of European Company Survey, carried out in 2019, is a questionnaire-based representative sample survey carried out by telephone in the language(s) of the country (Eurofound & Cedefop, 2020). The survey gathers data from human resources managers and, where available, employee representatives in all 27 EU Member States and the United Kingdom. It covers establishments with at least 10 employees in NACE Rev. 2. Sectors B to S excluding A (except agriculture, forestry and fishing) and O (public administration and defence; compulsory social security), P (Education) and Q (Human health and social work activities), T (Activities of households as employers) and U (Activities of extraterritorial organisations and bodies).

The survey provides information on more than 20,000 establishments on workplace practices with regard to work organisation, human resource management, skills use, skills strategies, digitalisation, direct employee participation and social dialogue. For this feasibility report, we use the manager representative part of the survey. The total sample size for the three countries studied in this report is

⁵ <https://wageindicator.org/labour-laws/collective-bargaining-agreements/collective-agreement-database-per-country-1>.

3,888 management interviews, for country the total sample ranged from 1,030 to 1,360 depending on the country size.

The ECS gives information on collective agreement coverage for wage settlement. The corresponding question, reported in Box 1 allows multiple choices when establishments/companies are covered by different form of agreements. However, the survey does not provide information on topics of collective negotiations other than wages. The survey collects information on the economic activity the establishment/company which is fully compliant with the European classification NACE Rev. 2 at 2 digit-level.

The ESES is conducted four-yearly in the Member States of the European Union. The ESES provides comparable information across European States on earning levels. The survey offers detailed information on the relationships between wages, employees' personal and job characteristics and characteristics of their company. The 2014 survey has been implemented in 35 countries: all Member States of the European Union and the candidate countries (Montenegro, North Macedonia and Serbia) and EFTA country (Iceland, Norway and Switzerland). However, some countries do not provide the individual data to Eurostat.

ESES covers enterprises with at least 10 employees in industries defined by NACE Rev. 2, Sections B to S excluding A (except agriculture, forestry and fishing) and O (public administration and defence; compulsory social security). The inclusion of NACE Section O is optional, as well as the inclusion of enterprises with less than 10 employees. The last ESES available was conducted in 2018 but it was published after the finalisation of analyses for this paper. For this study, we use the 2014 ESES survey which includes 39,995 company level observations for France; 28,134 for Italy and 47,101 for the Netherlands. The number of employee level observations is 267,383 for France; 189,221 for Italy and 155,625 for the Netherlands.

Table 21. Structural characteristics of data collection in ECS and ESES

Variables	ECS	ESES
Number of countries covered	28: 27 EU Member States and the United Kingdom	35: EU-Member States, Turkey, Iceland, Norway, Switzerland, Serbia, the former Yugoslav Republic of Macedonia, and Montenegro
Availability of countries in dataset	28: 27 EU Member States and the United Kingdom	Eurostat, Scientific Use File: 26 countries: BE-BG-CY-CZ-DE-EE-EL-ES-FI-FR-HR-HU-IT-LT-LV-LU-MT-NL-PL-PT-RO-SE-SI-SK-NO-UK Eurostat, safe centre: same list except BE-DE-UK
Coverage	10 and more employees	10 and more employees
Units of observation	Establishments	Establishment or companies, depending on the country
Last survey	2019	2014
Frequency of edition	Four-yearly	Four-yearly
Establishment/company size	Divided into 3 classes: 10-49 (small), 50-249 (medium-sized), 250 and more (large)	Divided into 3 classes: 10-49 (small), 50-249 (medium-sized), 250 and more (large)
Establishment type	Single-establishment companies, multi-establishment companies	Affiliation of the local unit to a group of enterprises
Economic activity covered	B, C, D, E, F, G, H, I, J, K, L, M, N, R, S	B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S
Average sample size	800	1300*
Levels of questioning	Dual voice survey: random sampling approach of local units and interview of management and employee representative	Two-stage random sampling approach of local units (first stage) and employees (second stage)
Geographical location of the statistical unit, number of region for each country		Territorial statistical units (NUTS, level 1) France: 9 (Ile De France, Bassin Parisien, Nord - Pas-De-Calais, Est, Ouest, Sud-Ouest, Centre-Est, Méditerranée, Départements D'outre-Mer) Italy: 5 (Nord-Ovest, Sud, Isole, Nord-Est, Centro (It)) The Netherlands: 4 (Noord-Nederland, Oost-Nederland, West-Nederland, Zuid-Nederland)
Information on earnings		Gross annual earnings in the reference year Annual bonuses and allowances not paid at each pay period Gross earnings for the reference month Earnings related to overtime Average gross hourly earnings in the reference month
Number of employees		Total number of employees in the local unit in the reference month
Response rate	From 30% to 64%	From 54% to 98.30%

* Average calculated for the 3 countries.

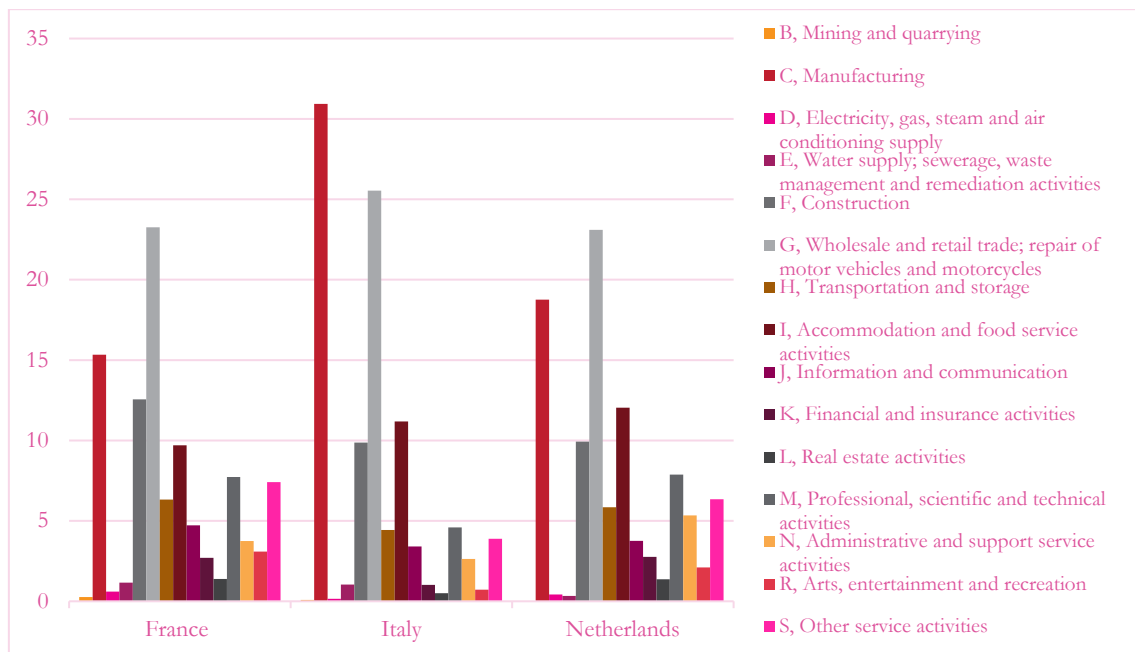
The ESES includes information on collective agreement coverage for wage settlement that is reported in Box 1. The shortcoming of this variable compared with the ECS variable on collective bargaining coverage is that it identifies only the collective agreements that covers at least 50% of employees in the local unit. Hence, the information about simultaneous coverage by several types of agreements is lost, and in particular when a company level agreement coexists with a sector level agreement. The survey also provides information on economic activity. The variables are fully compliant with the European classification NACE Rev. 2. at 1 digit-level, the most aggregated level of economic activity (15 sectors identified). The other variable indicating the economic activity (i.e. A13) is less detailed than the NACE Rev. 2. 2 digit-levels classification (Table a5 in appendix 1).

Table 18 summarises the structural characteristics of data collection in the two surveys. In the following descriptive analysis, we exclude sectors O, P and Q from the ESES survey for sake of consistency with the ECS survey. Also, data are weighted throughout this report to ensure that the distribution of the sample reflects the distribution of the population of companies.

4.3.2 Exploring the possibilities for combined EU database: the case of France, Italy and the Netherlands

We explore the feasibility of combining the CBA database (coded CBAs), the WageIndicator archive of CBA texts (unstructured dataset) and the ESES or ECS surveys (structured datasets) following the method used in the CAGE project. The idea is to bring structure to the CBA database and archive using an EU-wide harmonised survey that complements the data on bargaining outcomes with information on company performance and employee outcomes. This linkage can be carried out at the sector and company levels.

Figure 9. Sector breakdown of establishments in the ECS according to the NACE classification for France, Italy and the Netherlands

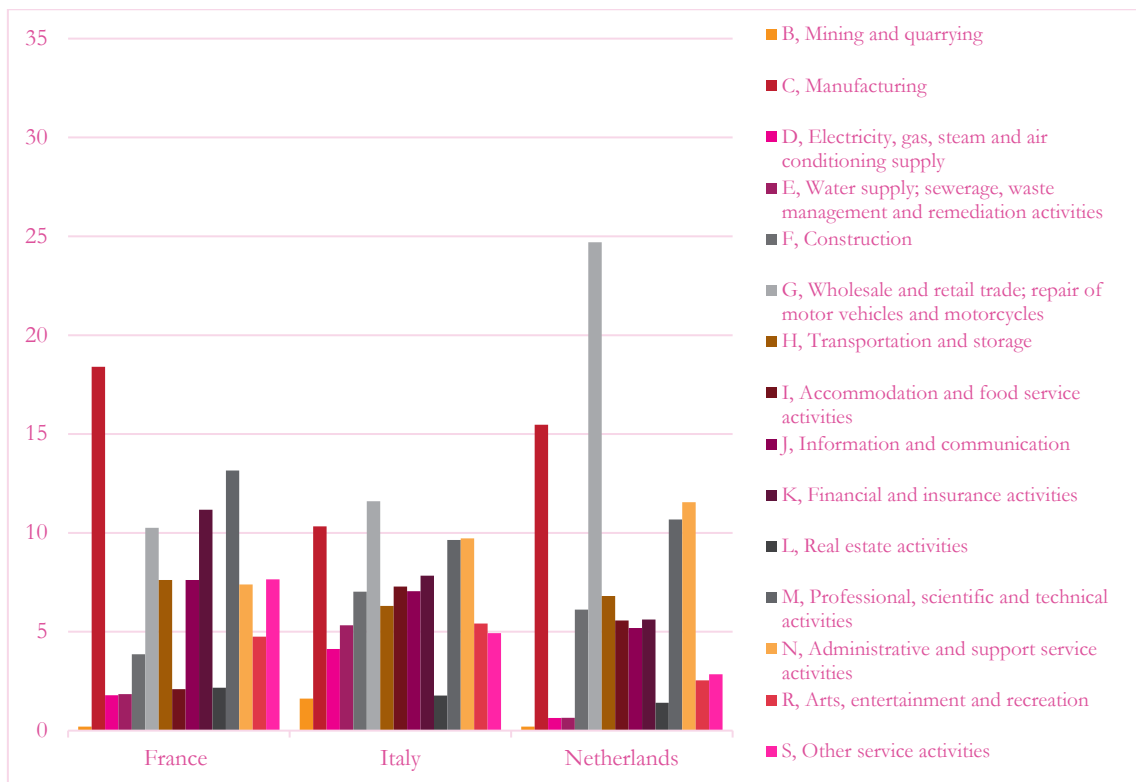
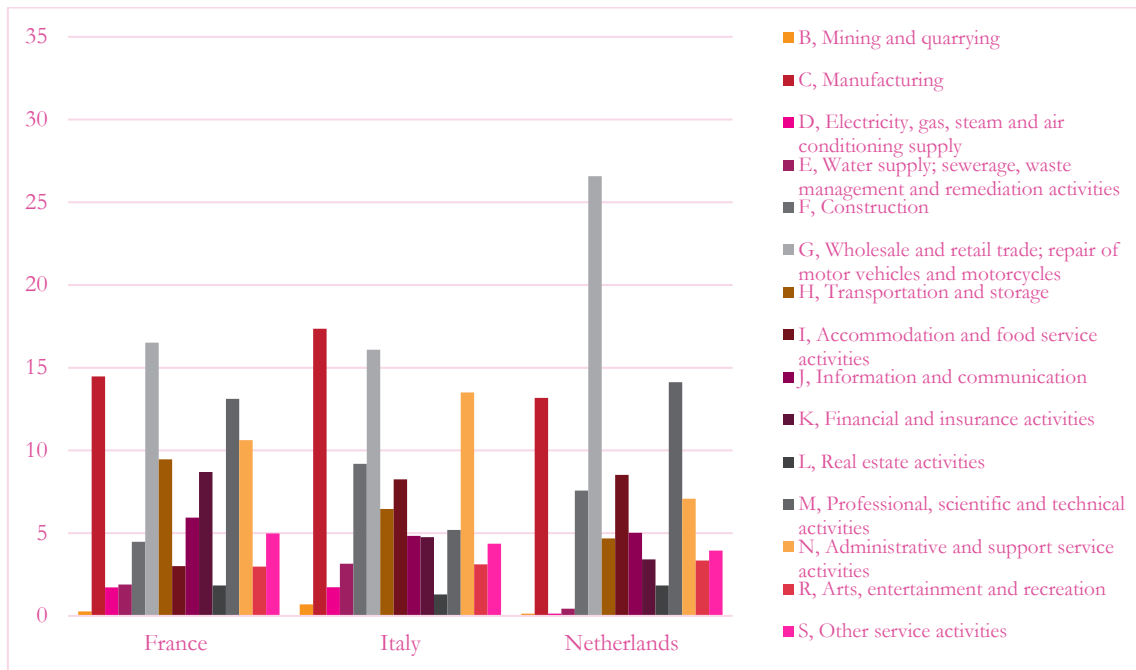


Coverage: establishments in the private sectors with 10 or more employees, excluding sectors O, P and Q.

Note: % of establishments. Weighted statistics.

Source ECS 2019 management questionnaire

Figure 10. Sector breakdowns of establishments and employment in the ESES according to the NACE classification for France, Italy and the Netherlands

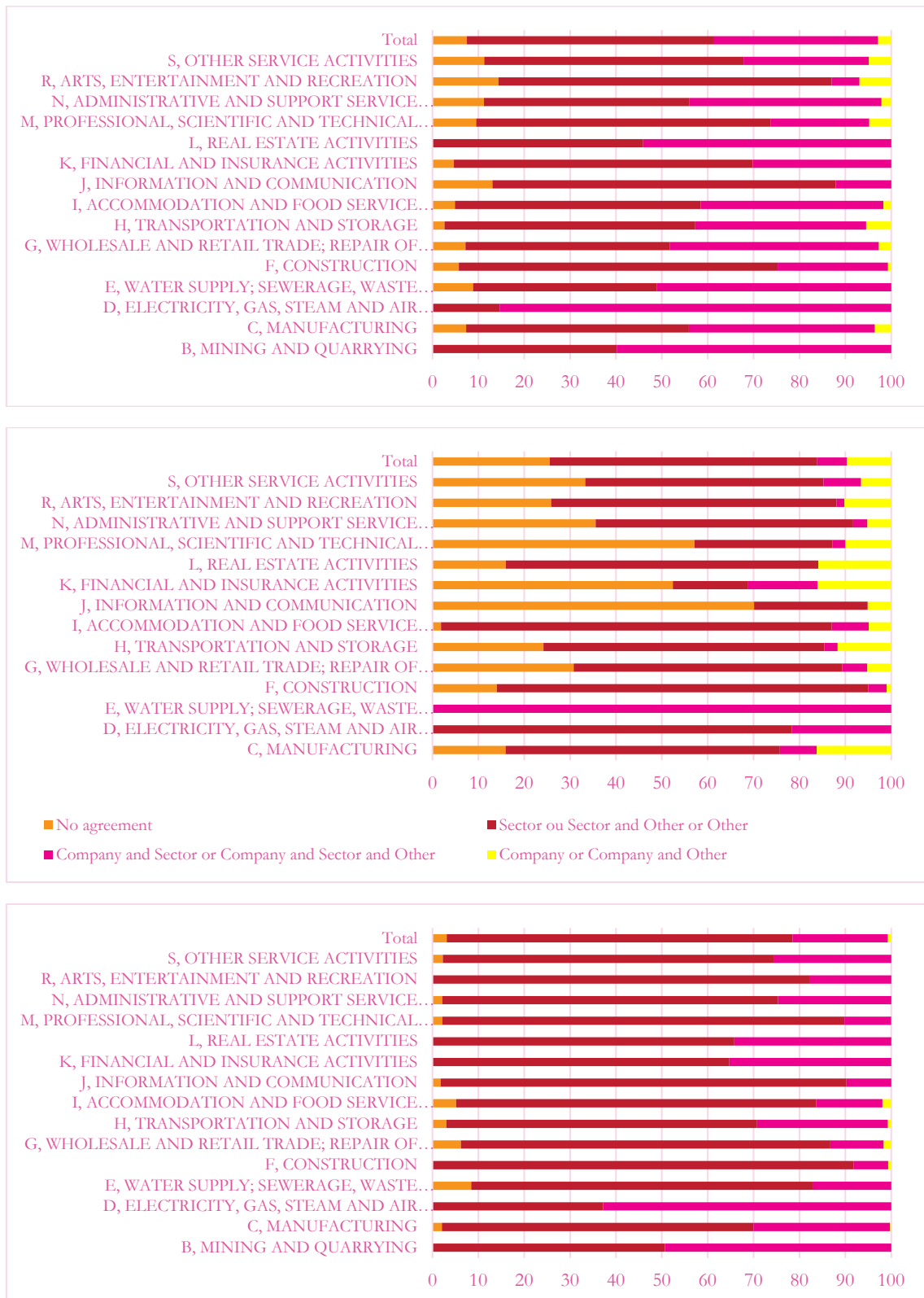


Coverage: companies in the private sectors with 10 or more employees, excluding sectors O, P and Q.

Note: Top panel % of establishments, bottom panel % of employment. Weighted statistics.

Source ESES 2014

Figure 11. Collective bargaining coverage by sector using the ECS 2019 survey, France, Italy and the Netherlands



Coverage: establishments in the private sectors with 10 or more employees.

Note: % of establishments, weighted statistics.

Source ECS 2019 management questionnaire

We use the showcases of France, Italy and the Netherlands to illustrate implications in a cross country context. In the three countries, bargaining takes place at the sector and company levels. It could be possible to link the CBA database with the employer level survey either at the company level (with a company or establishment identifier) or at the sector level (with the NACE classification). On one hand, we need to determine whether firms from the employer level survey that bargained a CBA can be identified in order to link them with the text and coded information of their CBA. If not the linkage can be undertaken at the sector level. If there are several company level CBAs for a given sector, information needs to be first aggregated at the sector level. On the other hand, when firms are covered by a sector level agreement, the linkage between the company level information and the sector level CBAs can also be performed using the NACE classification. Finally, we need to estimate how many collective agreements have to be collected and coded for each country to build a representative sample of sector and company level CBAs.

We first breakdown the population of establishment from ECS and the population of companies⁶ and their employment in ESES according to the NACE one-digit sector classification using the sampling weights of each survey (Figures 9 and 10). We observe that there are variations in the dominance of sectors within the countries. Wholesale and retail trade (G), followed by manufacturing (C) are the largest sectors in France and the Netherlands. Manufacturing (C) is the largest in Italy, followed by wholesale and retail trade (G). If proportions vary according to the survey used, and to whether the population of companies or employment are broken down (Figure 10), the most prevalent sectors are about the same in the two surveys. The gathering of texts should be done taking into account this distribution according to the sector of economic activity.

ECS and ESES include question on collective bargaining coverage. However, the best information is given by the ECS because we need to know about the simultaneous coverage of a company by a sector level and company level CBA. Figure 11 shows collective bargaining coverage patterns by sector using the ECS for France, Italy and the Netherlands, respectively. Sectors and companies are the main levels used in the three countries. Concerning sectoral differences, we can see substantial variations in the prevalence of bargaining coverage pattern across countries, but also between sector within a country. For instance, in France and Italy, electricity, gas, steam and air conditioning supply (Sector D) is dominated by simultaneous sector and company level bargaining and in the Netherlands, even though this negotiation pattern is rare, it covers 100% of companies in water supply, sewerage; waste management and remediation activities (Sector E).

4.3.3 Different scenarios for combined EU database - Matching employer surveys with CBAs

Two strategies will be explored for combining a CBA database with employer level surveys. The first strategy targets the employer as the unit of analysis, the second one the sector. A third matching strategy, where collective agreements texts are collected by the enterprise survey data providers during the field work, is disregarded because it lies outside the possibilities for individual researchers.

As a first step, we need to determine what would be a representative database of collective bargaining agreements. It implies collecting a sufficient number of texts, that cover all sectors where some bargaining takes place at the sector and/or company level. The number of collective agreements in the CBA database is still limited and does not cover all sectors. This means that further investment in the collection and coding of collective agreements will be required for any matched database.

⁶ Depending on the country, ESES is performed at the establishment or company level. Hereafter, we will use 'company' to describe the respondent in ESES.

Table 22. CBA registration, existence of an archive and availability in EU Member States

Country	Registration required	Registration by	Archive	Full text online
Austria	Yes	Chamber of Labour	Yes	Yes
Belgium	Yes	Directorate-General for Collective Labour Relations	Yes	No
Bulgaria	Yes	Ministry of Labour and Social Policy	Yes	No
Croatia	No	No evidence	No	No
Cyprus	Yes	Department of Labour Relations of the Government	Yes	Yes
Czech Republic	No	Web page with the list of extended CBAs is not accessible	DK	DK
Denmark	No	Confederation of Danish Employers DA	Yes	No
Estonia	Yes	Ministry of Labour	Yes	Yes
Finland	Yes	Ministry of Justice/Trade Unions	Yes	Yes
France	Yes	National Collective Bargaining Commission of the Ministry of Labour	Yes	Yes
Germany	Yes	BMAS-Tarifregister of WSI-Hans Boeckler Foundation	Yes (only members)	No (only members)
Greece	Yes	Ministry of Labour and Social Security	Yes	Yes
Hungary	Yes	Ministry of Innovation and Technology	Yes	DK
Ireland	Yes	Labour Court	Yes	DK
Italy	Yes	National Council of Economy and Labour (CNEL), a governmental agency	Yes	Yes
Latvia	No	No evidence	DK	DK
Lithuania	Yes	Ministry of Social Security and Labour	Yes	Yes
Luxembourg	Yes	Ministry of Labour	Yes	DK
Malta	Yes	Department for Industrial and Employment Relations	No	No
The Netherlands	Yes	Ministry of Social Affairs and Employment	Yes	Yes
Poland	Yes	No evidence	No	No
Portugal	Yes	Ministry of Labour	Yes	DK
Romania	Yes	Appropriate authorities	DK	DK

Source COLBAR-EUROPE Report 10 Feasibility study, DK=Do not know

To address this issue, we have to identify targets for additional data collection in each country. The CAGE project has identified data availability on collective bargaining in France. Since 2018 registries of CBAs have become available on line. What about other countries? Table 22, reproduced from Tijdens (2021b) shows that CBAs are either registered by the government or by appropriate authorities. The majority of European countries maintain an archive, and most of them post it online. But not all EU countries can be included in the database because they do not have an online repository or because they are only accessible to their members. From Table 23 (Tijdens, 2021b), we see that all texts, negotiated at the sector and company levels, can be included in this database for nine countries and only sectoral agreements can be added for Italy. A scattered number of texts can be considered for 11 countries since there are collected from several websites.⁷ For the others, only a part of texts can be included because they are not easily available: they are only accessible for members, while there is no repository for some countries or few texts have been concluded for other.

⁷ According to COLBAR-EUROPE Report 10.

Table 23. Feasibility of including the country's CBAs in a EU-wide CBA database

Country	CBAs included	Country	CBAs included
Austria	all	Italy	all sector CBAs
Belgium	all	Latvia	none
Bulgaria	none	Lithuania	scattered
Croatia	scattered	Luxembourg	none
Cyprus	all	Malta	scattered
Czech Republic	scattered	The Netherlands	all
Denmark	scattered	Poland	scattered
Estonia	all	Portugal	scattered
Finland	partial	Romania	scattered
France	all	Slovakia	scattered
Germany	none	Slovenia	scattered
Greece	all	Spain	all
Hungary	partial	Sweden	all
Ireland	none	United Kingdom	scattered

Source COLBAR-EUROPE Report 10 Feasibility study

The question is to know how many CBA need to be integrated in the CBA database. To tackle this issue, we estimate the number of CBAs negotiated at the sector and company level using information from the ECS in France, Italy and the Netherlands. Respectively 38.6%, 21.5% and 16.1% of establishments in France, Italy and the Netherland are covered by a company level CBA on wages (weighted statistics).

Table 24. Estimated number of collective bargaining agreements

Establishment's main activity (1-digit) category	France			Italy			The Netherlands		
	Sector	Company		Sector	Company		Sector	Company	
		W	NW		W	NW		W	NW
B. Mining and quarrying	1	2	2	1	1	1	2	14	14
C. Manufacturing	22	122	130	23	132	141	20	36	54
D. Electricity, gas, steam and air conditioning supply	1	9	9	1	1	1	1	2	1
E. Water supply; sewerage, waste management and remediation activities	3	4	5	3	3	3	2	2	2
F. Construction	3	18	23	3	5	8	3	3	5
G. Wholesale and retail trade; repair of motor vehicles and motorcycles	3	155	169	3	25	35	3	15	20
H. Transportation and storage	5	40	38	4	18	20	3	10	12
I. Accommodation and food service activities	2	51	53	2	15	16	2	9	9
J. Information and communication	4	9	8	4	2	5	4	3	1
K. Financial and insurance activities	3	5	6	3	8	9	2	5	8
L. Real estate activities	1	10	10	1	1	1	1	1	1
M. Professional, scientific and technical activities	5	21	22	6	6	9	5	11	11
N. Administrative and support service activities	5	9	24	6	3	8	5	5	10
R. Arts, entertainment and recreation	4	5	4	2	1	1	3	4	5
S. Other service activities	2	19	25	2	14	12	3	11	10
Total	64	479	528	64	235	270	59	131	163

Note: W weighted statistics for sector level matching, UW unweighted statistics for company level matching.
Source Own calculations, based on ECS 2019 management questionnaire

Tables a6, a7 and a8 in the appendix give the within sector breakdown of bargaining coverage patterns for the two-digit NACE Rev. 2 classification in the three countries. With this information, we are able to estimate the number of firm level agreements covering the ECS sample of companies within each detailed industry (Table A9). We cannot infer from the survey the number of CBAs issued in each sector, but we are able to check whether some establishment in each two-digit Nace Rev. 2 sector have declared being covered by a sector level agreement. If it is the case, we can decide to select randomly one sector level CBA.⁸

Following these rules, we would need to gather 64 agreements at sector level in France and Italy and 59 in the Netherlands. For the number of company level agreements, we produce two estimates. A first one is based on weighted information on the within sector configuration of collective bargaining, while the second one is unweighted. The latter is the estimate of the number of company level CBAs in the sample of establishments from the ECS. It is the number of CBA that we would have to match at the individual level. The former is the number of CBAS in a sample that has the structure of the population. It would be the number of CBAs to gather for an option where they are matched at the sector level. The weighted and unweighted estimates are respectively 479 and 528 for France, 235 and 270 for Italy and 131 and 163 for the Netherlands. Table 24 gives the number of estimated texts within sector breakdown levels for the one-digit NACE Rev. 2 classification based

⁸ We assume here that one sector-level CBA per two-digit Rev. 2 code is sufficient. In order to refine this selection, we would need more precise information on how many sector level collective agreements are bargained within two-digit Rev. 2 sectors.

on the sectoral distribution companies in the ECS. Manufacturing (C) and wholesale and retail trade (G) are the largest sectors in terms of company level CBAs and manufacturing is by far the largest in terms of sector level CBAs. The distribution of the two firm level estimates is very close.

Alternatively, we can use the sectoral breakdown most detailed from the ESES survey to estimate the number of collective agreements to collect (see appendix Table a10). To do so, we apply to the sectoral distribution of ESES the within sector bargaining coverage computed with information from the ECS. We standardise the results to obtain the same total number of company level agreements as in the first strategy (Table 24). We select two sectoral agreements if at least one company is covered by a sectoral agreement.

For building the data infrastructure, a first scenario performs the linkage between the CBA database and the employer surveys at the individual level, represented by companies in ESES, establishments in ECS. First, we would need to have identifying information for the list of establishment or companies in the employer level survey. Then we would need to search for their company level CBA in the CBA national level registries. This is the method that has been followed in the CAGE project where the GE CBAs of the establishments in REPOSE survey have been identified in the D@ccord database. This implies that the company identifier is also available in the CBA registry. As for sector level CBAs, they can be matched with the employer survey data using the most detailed sector classification available in the data, two-digits NACE Rev. 2 classification for ECS (77 groupings) and a less detailed classification for ESES using the Scientific Use Files provided by Eurostat (28 groupings). We will consider with the second scenario described below the use of more detailed sector classification with ESES.

Linking the CBA database with the ECS or the ESES at the individual and sector level requires that:

- the establishment/company identifiers in the European surveys are known;
- the identifiers of the establishment/company filing the text in the CBA database are known;
- the NACE classification is coded in the CBA database at a detailed level;
- the coding of texts ensures the anonymity of the companies.

The collaboration with national or EU institutes can be envisaged to match the databases at the company level. The simplest case is when the institute maintains the employer level survey and the CBA registry. The institute could match the two datasets at the individual level. If the two databases are not maintained by the same institution, a special authorisation would be needed to use temporarily the list of establishment or company level identifiers in employer level survey in order to search for their company level CBA. The matched data would then be anonymised by removing identifiable information on companies and full texts of CBAs would be coded to comply with this anonymity requirement.

Linking the ECS survey with the CBA database at the company level seems difficult since Eurofound has only retained company identifying information when the respondent allowed it. The number of identifiable companies is thus likely to be very small and failing to achieve the goal of a representative sample of establishments to match with the CBA database.

Linking the ESES survey with the collective agreements database at the company level could be possible at the Eurostat safe centre in Luxembourg, as the secure use file is not anonymised. ESES is not available through Eurostat for Ireland and Denmark and in the safe centre for Belgium, Germany and the United Kingdom. Furthermore, ESES results from a data collection effort performed by Member States and it is likely that in some countries company identifiers would be available under specific circumstance. In appendix 3, we have investigated the information available in the French ECMOSS survey that provides the data needed for ESES. Such an option would call for the collaboration we mentioned earlier with Eurostat or with national statistical institutes.

In the second scenario, the linkage between the CBA database and the employer surveys is performed at the sector level.

In this scenario, sectors are the units of analysis. Sectors are well-defined units because the European countries use the NACE Rev. 2 classification of economic activities, which is required by Eurostat. The use of the NACE Rev. 2 allows the comparability of economic statistics across countries. Hence, the universe in the scenario 2 is the NACE sectors. The NACE Rev. 2 classification is a hierarchical system, where the one-digit level is divided into 21 categories; and 88 categories for the two-digit level. In the ECS, the two digits-level NACE classification is available and the ESES data provided by Eurostat in the Scientific Use Files includes a classification in between the one- and two-digits classification to secure data confidentiality. But NACE Rev. 2 classification at the two-digits or even a finer level is available in the safe centre in Luxembourg and likely to be available in the national surveys conducted by Member States with the objective deliver the information required by Eurostat for the ESES survey.

If the ECS and/or ESES surveys are merged to the CBA database using data aggregated at the one-digit NACE sectors, because of differing coverage issues in the two surveys, the resulting dataset would be made out of number of countries * 15 cells for ECS and number of countries * 18 cells for ESES.

Linking the ECS survey at the two-digit level is possible for the scenario, except for Poland and the Baltic states, the structure of the sector level integrated database would be number of countries * 77 cells. For the ESES, an intermediate level between the NACE one-digit and two-digits is provided in the Eurostat's Scientific Use Files, leading to a dataset with number of countries * 28 cells. Through the Eurostat's safe centre in Luxembourg or using national surveys conducted in Member States to provide Eurostat with data fulfilling the ESES requirement, some finer level of the NACE could be available. Because the country level size of the datasets is large, building a dataset at a detailed NACE level could also be a fruitful approach, but further enquiries would need to identify the most detailed NACE information common to chosen Member States to be included in the integrated CBA – employer survey database and the conditions for disclosing the sector base information while preserving confidentiality.

Linking the CBA database with the ECS or the ESES at the sector level requires that:

- the sectoral classification, i.e. NACE Rev. 2 classification in both databases. This variable is available in the two surveys at the one-digit NACE level, at the two-digit NACE level in the ECS survey and at an intermediate level between one and two-digits in the ESES Scientific Use files provided by Eurostat. More detailed NACE classifications are available in Eurostat's safe centre in Luxembourg and in the surveys conducted by Member States to provide Eurostat with the data required for ESES;
- the identifiers of the NACE Rev. 2 classification in the CBA database should be known. Matching at 1-digit NACE is possible since this information is available in the database, however, a linkage at a more detailed sector level implies further enquiries as it is likely that the most detailed NACE level in CBA databases varies from one country to the other;
- the coding of texts ensures the anonymity of companies in small sectors.

Two matching strategies can be undertaken: Keeping the employer level survey at the individual level and enriching it with coded information from the randomly selected sector level CBA representing sector level bargaining and with the sector level aggregation of coded information from establishment or company level CBAs; Building a sector level database aggregating at the chosen sector level both coded information from CBAs and employer level information from ECS and/or ESES.

5. Conclusion

In this report, we have explored the feasibility of a European database on working conditions clauses in collective agreements by matching a CBA database with employer level surveys. Our proposition is based on the methodology developed by UvA and WageIndicator to build an international CBA database and in the BARCOM and COLBAR Europe projects to collect and code European CBAs. It also relies on the CNAM-CEET CAGE project that has developed in France a research infrastructure to study GE bargaining outcomes and employer behaviours.

Taking the showcase of GE bargaining and using the WageIndicator CBA database we have exposed in Section 1 the benefits and feasibility of an international database of coded CBAs. In Section 2, focusing on France, Italy and the Netherlands, we have demonstrated the feasibility and added value of the use of text mining methods to compare GE clauses in collective agreements. Thus the combination of a coded database registering the main characteristics of CBAs with an archive registering the full content of OCR processed texts is certainly of great value both for bargaining actors and researchers.

Gathering collective agreements necessitates efforts and not all EU countries can be included because some of them do not have an online repository, or are not willing or able to share it. Section 3 proposes to orient the efforts for collecting CBAs in countries where it is feasible taking into account available information in EU-wide surveys on bargaining coverage. Two European surveys can be used to estimate collective bargaining coverage in a harmonised way: The ECS and the ESES. We have used the ECS question on bargaining coverage to estimate the number of establishment/company level and sector level CBAs to be collected. Indeed, the ECS asks whether employees are covered by any form of collective agreement, and allows multiple answers when the ESES targets the type of agreement that covers the largest part of employees.

Furthermore, the ECS and the ESES are two interesting surveys to capture different areas of collective bargaining impacts in terms of employer behaviours. The ECS describes workplace practices with regard to work organisation, human resource management, skills use, skills strategies and digitisation when the ESES targets the structure of earnings and is thus a good data source to study wage formation and inequalities. Besides, they both provide additional information on social dialogue and collective bargaining that could be used to study determinants of bargaining outcomes. There are also differences between the ECS and the ESES in terms of edition year, sector and country coverage, availability of employer level identifier, sample sizes and ease of access to the most detailed NACE rev 2. classification level.

We argue that it is feasible to develop an integrated data infrastructure on bargaining processes, bargaining outcomes and employer behaviours by combining the WageIndicator coded CBA database and archive extended in terms of CBA gathering with the ECS and/or the ESES at the individual and/or the sector level. The CBA collecting effort should follow the sector level mapping based on the information on bargaining coverage from the ECS and the precise data combination protocol should be decided upon main priorities discussed between stakeholders of such an infrastructure, taking into account the specificities of the ECS and ESES.

Appendices

appendix 1 Additional tables

Table a1. Dictionary of words used to construct the indicator on mechanisms for fighting gender inequalities (in English, French, Italian and Dutch)

English	French	Italian	Dutch
Bodies and tools for evaluation and monitoring of GE progress	Organismes et outils d'évaluation et de suivi des progrès des	Organi e strumenti per la valutazione e il monitoraggio di parità di genere progresso	Organen en instrumenten voor de evaluatie en het toezicht op gendergelijkheid vooruitgang
analys*	analys*	analista*	analist*
as many	autant de	così tanti	zovelen
economic and social database	base de données économiques et sociales	banca dati economica e sociale	economische en sociale databank
report	bilan	bilancio	balans
budget	budget	budget	begroting
cartography	cartographie	cartografia	cartografie
figure	chiffre	figura	cijfer
follow-up commission	commission de suivi	commissione di controllo	vervolgcommissie
equality commission	commission égalité	commissione per l'uguaglianza	gelijkheidscommissie
concrete	concret	calcestruzzo	beton
knowledge	connaissance	conoscenza	kennis
cost	coût	costo	kosten
detection	détection	rilevamento	detectie
diagnos*	diagnosti*	diagnostico*	gediagnosticeerd*
differential of	différentiel de	differenziale di	verschil in
gap	écart	gap	leemte
Identifi*	identifi*	Identifi*	Identificati*
indicator	indicateur	indicatore	indicator
list of jobs	liste des emplois	elenco dei posti	lijst met berichten
number of	nombre de	numero di	aantal
percent*	pourcent*	percentuale*	procent*
planned	prévu	previsto	gepland
proportion	proportion	proporzione	verhouding
comparative situation report	rapport de situation comparée	rapporto sullo stato comparativo	vergelijkend statusrapport
ratio	ratio	rapporto	verhouding
distribution	répartition	distribuzione	verspreiding
rsc	rsc	rsc	rsc
threshold	seuil	soglia	drempelwaarde
under-represent*	sousrepresent*	sottorappresente*	ondervertegenwoordiger*

English	French	Italian	Dutch
sub-representative*	sous-represent*	sottorappresentante*	subvertegenwoordiger*
follow-up	suivi	seguito	opvolging
surrepresent*	surrepresent*	surrepresentarsi*	surrepresent*
over-represented*	sur-represent*	sovrarappresentato*	oververtegenwoordigd*
rates	taux	tariffa	tarief
survey	enquête	sondaggio	onderzoek
evaluation	évaluation	valutazione	evaluatie
attainment of this	atteinte de cet	il raggiungimento di questo	verwezenlijking van deze doelstelling
objective	objectif	obiettivo	objectief
commitments	engagements	impegni	toezeggingen
realisation	réalisation	realizzazione	realisering
level of achievement	niveau de réalisation	grado di realizzazione	graad van verdienste
trend curve	courbe de tendance	curva di tendenza	dalende trend
calculation	calcul	calcolo	berekening
reporting	signalement	rapporto	verslag
Awareness-raising and information actions	Actions de sensibilisation et d'information	Azioni di sensibilizzazione e di informazione	Bewustmakings- en voorlichtingsacties
displays*	affich*	display*	vertoning*
communi*	communi*	comunicati*	gecommuniceerd*
consultation	consultation	consultazione	raadpleging
diffuse*	diffus*	diffuso*	diffuus*
guide	guide	guida	gids
inform*	inform*	informale*	informeel*
booklet	livret	libretto	boekje
supports	supports	supporta	ondersteunt
sensibilis*	sensibilis*	sensibilità*	gevoeligheden*
brochure	plquette	opuscolo	folder
memo	note de service	memorandum	memorandum
notifi*	notifi*	notificante*	kennisgever*
campaign	campagne	campagna	campagne
advertising	publicité	pubblicità	reclame
intranet	intranet	intranet	intranet
kit	kit	kit	kit
charter	charte	statuto	charter
measures of GE adjustment, proportionality, correction, GE shock measures	mesures d'ajustement pour l'égalité des sexes, proportionnalité, correction, mesures de choc pour l'égalité des sexes	misura di adeguamento della parità tra i sessi, proporzionalità, correzione, misure d'urto per la parità tra i sessi	maatregelen voor de aanpassing van de gendergelijkheid, evenredigheid, correctie, schokmaatregelen voor de gelijkheid van mannen en vrouwen
financial aid	aide financière	aiuto finanziario	financiële bijstand
assimilated	assimilé	assimilato	opgenomen
at least one*	au moins un*	almeno uno*	ten minste één*
leave of absence	autorisation d'absence	congedo	verlof
cradle	berceau	culla	wieg
additional remuneration	complément de rémunération	remunerazione aggiuntiva	bijkomende vergoeding
corrective	correctif	correttivo	correctieve
corrective	correctrice	correttiva	correctieve
inter-firm day nursery	crèche inter-entreprises	asilo nido aziendale	bedrijfskwekerij
intra-firm day nursery	crèche intra-entreprise	asilo nido aziendale	bedrijfskwekerij
anonymous CV	cv anonyme	curriculum vitae anonimo	anonieme cv
envelope	enveloppe	busta	enveloppe
moving expenses	frais de déménagement	costi di trasloco	verhuiskosten

English	French	Italian	Dutch
childcare costs	frais de garde	spese per l'assistenza all'infanzia	kosten voor kinderopvang
in full	intégralement	per intero	volledig
parental day	journée parentale	giornata dei genitori	ouderdag
half of the	la moitié de la	metà del	de helft van de
preservation of the salary	maintien du salaire	continuazione dello stipendio	loondoorbetaling
provision of IT tools	mise à disposition des outils informatiques	fornitura di strumenti informatici	terbeschikkingstelling van IT-hulpmiddelen
half of their salary	moitié de leur rémunération	metà del loro stipendio	de helft van hun salaris
average increase	moyenne des augmentations	aumento medio	gemiddelde toename
individual	individuelles	individuale	individueel
neutralised*	neutralis*	neutralizzato*	geneutraliseerd*
neutral	neutre	neutro	neutraal
not after	pas après	successivamente	daarna
not before	pas avant	non prima	niet eerder
paid nursery allowances	prime de crèche	assegno per la custodia dei bambini	kinderopvangtoeslag
catch-up	rattrapage	recupero	inhaalbeweging
readjustment	réajustement	riadattamento	heraanpassing
rebalancing	rééquilibrage	riequilibrio	herbalancering
evening	soirée	festa	partij
extra pay	sursalaire	paga extra	extra loon
teleworking	télétravail	telelavoro	telewerken
working distance	travail à distance	distanza di lavoro	werkafstand
too early*	trop matina*	troppo matina*	te matina*
too late*	trop tardi*	troppo tardi*	te laat*
indemni*	indemni*	illeso*	ongedeerd*
time slot	plage horaire	fascia oraria	tijdspanne
label	label	etichetta	label

Table a2. Gender pay equity and collective agreements, France, Italy and the Netherlands*

	France		Italy		The Netherlands	
	Sector	Company	Sector	Company	Sector	Company
Mapping of different types of collective agreements	3 levels: national, sector and company sector and company levels are complementary		3 levels: national, sector and company cases where the two levels are articulated and cases where the sector level is predominant		2 levels: sector and company the two levels are substitutes: negotiation takes place at one level only, the sector level is predominant	
Compulsory topics	Wage; GE; working conditions; disabled workers; occupational training; job classification; employee saving schemes; organisation of working time	Wage, working time, GE and other issues, for companies with 50 and + employees	Wage	Wage	Wage	Wage
Non-compulsory topics	Everything related to employment relation and working conditions such as unemployment insurance or pension schemes	Everything related to employment relation and working conditions if the company-level agreement offers guarantees at least equivalent to those regulated in sector-level agreement	Overtime and night rates, hours, holidays, maternity leave, sickness absence, training, health and safety, use of temporary workers, disciplinary rules, union rights, social benefits (welfare), recruitment and job classification	Productivity, competitiveness, employment conditions	Working time; flexibility of working time; entitlements, including family leaves, other days of leave beyond the statutory; pensions; sickness benefits; work organisation, disability benefits and unemployment benefits beyond the statutory, payment during training time, anti-discrimination, employability (in particular for older workers), employment conditions	Working time; flexibility of working time; entitlements, including family leaves, other days of leave beyond the statutory; pensions; sickness benefits; work organisation, disability benefits and unemployment benefits beyond the statutory, payment during training time, anti-discrimination, employability (in particular for older workers), employment conditions

	France		Italy		The Netherlands	
	Sector	Company	Sector	Company	Sector	Company
GE	Obligation of a specific negotiation on GE measures to eliminate the gender pay differentials	8 areas of negotiations in the companies with 50-300 employees: GE in recruitment, training, professional promotion, qualification, classification, working conditions, work/family responsibility, effective remuneration	existence of legislation on GE and equal opportunities: Art. 28 of Legislative Decree 198/2006 ('Prohibition on wage discrimination'), entitled the Code of equal opportunities between men and women; Act 125/1991: law provides financial incentives for the adoption of positive action measures in firms, promoting female representation to positions of responsibility within organisations, fostering the creation of firms run by women		collective bargaining does not deal with the subject because of the existence of legislation on GE (pay), which is observed by employers, the Equal Treatment for Men and Women Act and the General Equal Treatment Act aimed at achieving equality of pay between men and women	
Frequency of negotiations	3 years for GE; 1 year for wage	3 years for GE; 1 year for wage	3 years	3 years	up to 5 years, but typically 1 or 2 years	up to 5 years, but typically 1 or 2 years
Hierarchy of social norms	labour law reform of 2016 gives company-level agreements precedence over those at sectoral level or the law, labour law reform of 2017 gives companies' agreements a central place in the system of collective bargaining.	extension of the primacy of the branch agreement over the company agreement to the field of GE (El Khomri Act 2016)	prioritising sector-level collective agreements, followed by company-level agreements		prioritising sector-level collective agreements, followed by company-level agreements	
Collective bargaining coverage**	98,5%		80%		85.9%	

* More details to be found in Eurofound (2020).

** For the 2014 year, available at <https://www.oecd.org/employment/collective-bargaining.htm>.

Table a3. Collective bargaining by country, ECS

	A collective agreement negotiated at the sector level	A collective agreement at the regional level	A collective agreement negotiated at the establishment or company level	A collective agreement negotiated on behalf of employees with a specific occupation	Another type of collective agreement
France	Convention collective nationale ou accord de branche ou interbranche	Convention collective territoriale	Accord de groupe, accord d'entreprise, accord interentreprises ou accord d'établissement	Accord professionnel	Accord atypique
Italy	Contratto collettivo nazionale	Contratto collettivo territoriale	Contratto collettivo - aziendale o per l'unità produttiva		
The Netherlands	Een bedrijfstak-CAO		Een ondernemings-CAO		

Source Eurofound (2020)

Table a4. Configurations of collective bargaining observed in France, Italy and the Netherlands

Region-occupation-other-sector-company	France	Italy	The Netherlands
0-0-0-0-0	10.81	4.19	32.97
0-0-0-0-1	1.25	1.10	5.33
0-0-0-1-0	42.82	73.91	55.15
0-0-0-1-1	13.69	6.48	6.55
0-0-1-0-0	1.69		
0-0-1-1-0	0.56		
0-0-1-1-1	0.64		
0-1-0-0-0	0.69		
0-1-0-0-1	0.32		
0-1-0-1-0	7.31		
0-1-0-1-1	5.91		
0-1-1-0-0	0.09		
0-1-1-1-0	0.26		
0-1-1-1-1	0.35		
1-0-0-0-0	1.29	0.77	
1-0-0-0-1	0.05	0.09	
1-0-0-1-0	5.26	9.54	
1-0-0-1-1	1.31	3.93	
1-0-1-1-1	0.13		
1-1-0-0-0	0.21		
1-1-0-1-0	2.54		
1-1-0-1-1	1.94		
1-1-1-1-1	0.88		
Total	100.00	100.00	100.00

Notes: Weighted statistics: companies in the private sectors with 10 or more employees.

Reading: The table summarises the different possible configurations of collective bargaining observed in France, Italy and the Netherlands. There are 5 levels of negotiations, and the possible configurations appear in this order: regional, occupational, other, sector, company. A 0 means that there is no negotiation and a 1 means that there is a negotiation. For instance, 0-0-0-1-1 means that there are no negotiations at regional, occupational, or other but negotiations take place at sectorial and company level.

Source ECS 2019 management questionnaire

Table a5. Distribution according to the principal economic activity based on groupings of the 2-digit Nace classification (in %)

Principal economic activity	France	Italy	The Netherlands
Manufacture of food products, beverages and tobacco products	3.02	1.71	2.51
Manufacture of textiles	0.28	0.19	0.25
Manufacture of wearing apparel, leather and related products	0.36	1.31	0.06
Manufacture of wood and paper	0.60	0.61	0.59
Printing and reproduction of recorded media; publishing activities; Motion picture, video and television programme production, sound recording and music publishing activities; programming and broadcasting activities	2.37	1.99	1.42
Manufacture of coke and refined petroleum products , chemicals and chemical products, rubber and plastic products	2.49	1.05	1.78
Manufacture of pharmaceutical products	0.83	0.40	0.30
Manufacture of other non-metallic mineral products	0.79	0.46	0.45
Manufacture of metals	1.88	0.93	2.03
Manufacture of computer, electronic and optical products , electrical equipment, repair and installation of machinery and equipment	3.08	1.20	1.95
Manufacture of machinery and equipment	1.34	1.22	1.89
Manufacture of motor vehicles, trailers, semi-trailers and other transport equipment	2.89	0.74	0.81
Manufacture of furniture and other manufacture	0.52	0.37	2.41
Electricity, gas, steam and air conditioning, water collection, treatment	2.15	5.80	0.78
Sewerage , waste collection, treatment and disposal activities; materials recovery; remediation activities and other waste management services	1.50	3.66	0.51
Wholesale and retail trade and repair of motor vehicles and motorcycles; wholesale trade, except of motor vehicles and motorcycles	4.94	6.99	11.29
Retail trade, except of motor vehicles and motorcycles	5.33	4.61	13.41
Land transport and transport via pipelines, Water transport, air transport, Warehousing and support activities for transportation	6.09	5.93	5.26
Postal and courier activities; Telecommunications; Computer programming, consultancy and related activities; information service activities; Travel agency, tour operator and other reservation service and related activities	7.51	5.97	6.08
Financial and insurance activities; legal and accounting activities; security and investigation activities	13.89	9.13	8.94
Real estate activities; Scientific research and development; advertising and market research; other professional, scientific and technical activities; rental and leasing activities; repair of computers and personal and household goods	7.24	5.92	4.10
Activities of head offices; management consultancy activities; architectural and engineering activities; technical testing and analysis; employment activities; services to buildings and landscape activities; office administrative, office support and other business support activities	12.95	13.89	15.80
Veterinary activities; human health and social work activities	0.02	0.01	0.17
Arts, entertainment and recreation; Other personal service activities	5.99	8.75	3.59
Activities of membership organisations	5.82	1.23	1.71
Mining and quarrying	0.20	1.62	0.20
Construction	3.86	7.03	6.12
Accommodation and Food Service Activities	2.10	7.29	5.57
Total	100.00	100.00	100.00

Notes: Weighted statistics: % of companies in the private sectors (excluding sections O, P and Q).
Source ESES 2014

Table a6. Distribution according to the 2-digit NACE section for France (in % employment)

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Other mining and quarrying	0.00	40.17	59.83	0.00	100.00
Manufacture of food products	3.48	40.52	53.25	2.75	100.00
Manufacture of beverages	19.20	42.49	38.32	0.00	100.00
Manufacture of textiles	9.41	31.46	59.13	0.00	100.00
Manufacture of wearing apparel	0.00	62.10	37.90	0.00	100.00
Manufacture of leather and related products	0.00	49.23	50.77	0.00	100.00
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting material	0.00	72.72	27.28	0.00	100.00
Manufacture of paper and paper products	4.55	29.95	43.66	21.84	100.00
Printing and reproduction of recorded media	0.00	74.84	25.16	0.00	100.00
Manufacture of chemicals and chemical products	7.87	53.41	38.72	0.00	100.00
Manufacture of basic pharmaceutical products and pharmaceutical preparations	0.00	18.33	81.67	0.00	100.00
Manufacture of rubber and plastic products	1.85	61.74	36.40	0.00	100.00
Manufacture of other non-metallic mineral products	0.00	26.98	73.02	0.00	100.00
Manufacture of basic metals	11.93	48.11	35.57	4.39	100.00
Manufacture of fabricated metal products, except machinery and equipment	6.55	71.73	21.73	0.00	100.00
Manufacture of computer, electronic and optical products	0.00	100.00	0.00	0.00	100.00
Manufacture of electrical equipment	0.00	45.37	25.26	29.38	100.00
Manufacture of machinery and equipment	36.85	63.15	0.00	0.00	100.00
Manufacture of motor vehicles, trailers and semi-trailers	0.00	24.35	75.65	0.00	100.00
Manufacture of other transport equipment	54.09	23.17	22.74	0.00	100.00
Manufacture of furniture	15.69	18.27	66.04	0.00	100.00
Other manufacturing	6.55	59.11	28.44	5.90	100.00
Repair and installation of machinery and equipment	0.00	55.45	44.55	0.00	100.00
Electricity, gas, steam and air conditioning supply	0.00	14.62	85.38	0.00	100.00
Water collection, treatment and supply	15.98	14.40	69.62	0.00	100.00
Sewerage	0.00	100.00	0.00	0.00	100.00
Waste collection, treatment and disposal activities; materials recovery	5.15	60.53	34.32	0.00	100.00
Construction of buildings	5.06	75.01	19.93	0.00	100.00

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Civil engineering	0.00	78.82	21.18	0.00	100.00
Specialised construction activities	4.80	57.73	34.30	3.17	100.00
Wholesale and retail trade and repair of motor vehicles and motorcycles	7.85	71.72	20.43	0.00	100.00
Wholesale trade, except of motor vehicles and motorcycles	12.74	46.31	37.65	3.29	100.00
Retail trade, except of motor vehicles and motorcycles	2.94	39.73	54.74	2.59	100.00
Land transport and transport via pipelines	0.00	56.53	40.06	3.41	100.00
Water transport	9.43	79.80	10.78	0.00	100.00
Air transport	0.00	39.53	60.47	0.00	100.00
Warehousing and support activities for transportation	6.46	38.18	39.62	15.74	100.00
Postal and courier activities	19.67	60.66	19.67	0.00	100.00
Accommodation	3.23	53.76	38.14	4.87	100.00
Food and beverage service activities	5.89	56.20	37.92	0.00	100.00
Publishing activities	9.85	61.06	29.10	0.00	100.00
Telecommunications	12.02	87.98	0.00	0.00	100.00
Computer programming, consultancy and related activities	11.30	79.42	9.28	0.00	100.00
Information service activities	0.00	59.51	40.49	0.00	100.00
Financial service activities, except insurance and pension funding	0.00	92.53	7.47	0.00	100.00
Insurance, reinsurance and pension funding, except compulsory social security	0.00	24.69	75.31	0.00	100.00
Activities auxiliary to financial services and insurance activities	0.00	64.79	35.21	0.00	100.00
Real estate activities	0.00	44.29	55.71	0.00	100.00
Legal and accounting activities	9.72	26.32	54.63	9.33	100.00
Activities of head offices; management consultancy activities	0.00	0.00	0.00	100.00	100.00
Architectural and engineering activities; technical testing and analysis	14.32	69.38	16.29	0.00	100.00
Scientific research and development	4.52	62.43	25.10	7.95	100.00
Advertising and market research	0.00	59.31	40.69	0.00	100.00
Other professional, scientific and technical activities	11.36	77.33	8.72	2.59	100.00
Rental and leasing activities	0.00	100.00	0.00	0.00	100.00
Employment activities	76.26	0.00	11.19	12.54	100.00
Security and investigation activities	0.00	20.68	79.32	0.00	100.00
Services to buildings and landscape activities	0.00	56.71	43.29	0.00	100.00
Office administrative, office support and other business support activities	9.52	55.63	34.85	0.00	100.00
Creative, arts and entertainment activities	17.07	82.93	0.00	0.00	100.00

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Libraries, archives, museums and other cultural activities	40.18	21.58	8.27	29.97	100.00
Gambling and betting activities	0.00	16.22	83.78	0.00	100.00
Sports activities and amusement and recreation activities	0.00	91.09	4.55	4.36	100.00
Activities of membership organisations	34.58	49.80	9.46	6.15	100.00
Other personal service activities	2.37	60.08	36.02	1.52	100.00
Total	7.50	53.89	35.76	2.86	100.00

Notes: Weighted statistics: establishments/companies in the private sectors with 10 or more employees, excluding O, P and Q NACE sections. Other refers to atypical agreements.
Source ECS 2019 management questionnaire

Table a7. Distribution according to the 2-digit NACE section for Italy (in % employment)

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Other mining and quarrying	0.00	67.86	32.14	0.00	100.00
Manufacture of food products	1.45	61.97	36.57	0.00	100.00
Manufacture of beverages	0.00	83.89	16.11	0.00	100.00
Manufacture of textiles	0.00	76.57	23.43	0.00	100.00
Manufacture of wearing apparel	25.06	58.81	16.13	0.00	100.00
Manufacture of leather and related products	0.00	63.48	36.52	0.00	100.00
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting	0.00	66.21	33.79	0.00	100.00
Manufacture of paper and paper products	0.00	29.28	70.72	0.00	100.00
Printing and reproduction of recorded media	0.00	100.00	0.00	0.00	100.00
Manufacture of coke and refined petroleum products	0.00	100.00	0.00	0.00	100.00
Manufacture of chemicals and chemical products	0.00	68.40	31.60	0.00	100.00
Manufacture of basic pharmaceutical products and pharmaceutical preparations	0.00	33.01	66.99	0.00	100.00
Manufacture of rubber and plastic products	0.00	67.52	32.48	0.00	100.00
Manufacture of other non-metallic mineral products	0.00	38.12	61.88	0.00	100.00
Manufacture of basic metals	2.23	68.45	29.32	0.00	100.00
Manufacture of fabricated metal products, except machinery and equipment	4.02	62.81	33.17	0.00	100.00

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Manufacture of computer, electronic and optical products	0.00	86.41	13.59	0.00	100.00
Manufacture of electrical equipment	0.00	68.68	31.32	0.00	100.00
Manufacture of machinery and equipment	2.44	67.72	28.82	1.02	100.00
Manufacture of motor vehicles, trailers and semi-trailers	0.00	100.00	0.00	0.00	100.00
Manufacture of other transport equipment	0.00	22.74	77.26	0.00	100.00
Manufacture of furniture	9.93	64.46	25.60	0.00	100.00
Other manufacturing	2.83	75.45	20.91	0.81	100.00
Repair and installation of machinery and equipment	0.00	85.49	14.51	0.00	100.00
Electricity, gas, steam and air conditioning supply	0.00	68.59	31.41	0.00	100.00
Water collection, treatment and supply	0.00	100.00	0.00	0.00	100.00
Sewerage	0.00	100.00	0.00	0.00	100.00
Waste collection, treatment and disposal activities; materials recovery	0.00	81.64	18.36	0.00	100.00
Construction of buildings	0.00	91.58	8.42	0.00	100.00
Civil engineering	0.00	66.05	33.95	0.00	100.00
Specialised construction activities	0.00	96.14	3.86	0.00	100.00
Wholesale and retail trade and repair of motor vehicles and motorcycles	1.20	81.11	17.69	0.00	100.00
Wholesale trade, except of motor vehicles and motorcycles	6.87	82.46	10.04	0.63	100.00
Retail trade, except of motor vehicles and motorcycles	10.43	78.50	6.21	4.87	100.00
Land transport and transport via pipelines	4.31	69.76	23.80	2.12	100.00
Water transport	0.00	61.54	38.46	0.00	100.00
Air transport	41.63	31.98	26.39	0.00	100.00
Warehousing and support activities for transportation	0.00	61.07	38.93	0.00	100.00
Accommodation	7.91	70.45	18.12	3.52	100.00
Food and beverage service activities	1.76	90.42	7.82	0.00	100.00
Publishing activities	0.00	65.30	34.70	0.00	100.00
Motion picture, video and television programme production, sound recording and music publishing activities	100.00	0.00	0.00	0.00	100.00
Telecommunications	0.00	100.00	0.00	0.00	100.00
Computer programming, consultancy and related activities	2.30	95.96	1.74	0.00	100.00
Information service activities	0.00	100.00	0.00	0.00	100.00
Financial service activities, except insurance and pension funding	0.00	57.51	42.49	0.00	100.00

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Insurance, reinsurance and pension funding, except compulsory social security	0.00	100.00	0.00	0.00	100.00
Activities auxiliary to financial services and insurance activities	0.00	100.00	0.00	0.00	100.00
Real estate activities	0.00	59.71	40.29	0.00	100.00
Legal and accounting activities	0.00	76.37	23.63	0.00	100.00
Activities of head offices; management consultancy activities	0.00	100.00	0.00	0.00	100.00
Architectural and engineering activities; technical testing and analysis	7.07	79.33	13.60	0.00	100.00
Scientific research and development	0.00	79.98	20.02	0.00	100.00
Advertising and market research	0.00	100.00	0.00	0.00	100.00
Other professional, scientific and technical activities	0.00	95.34	4.66	0.00	100.00
Rental and leasing activities	0.00	100.00	0.00	0.00	100.00
Employment activities	0.00	100.00	0.00	0.00	100.00
Travel agency, tour operator and other reservation service and related activities	0.00	100.00	0.00	0.00	100.00
Security and investigation activities	0.00	100.00	0.00	0.00	100.00
Services to buildings and landscape activities	0.00	100.00	0.00	0.00	100.00
Office administrative, office support and other business support activities	0.00	51.67	48.33	0.00	100.00
Creative, arts and entertainment activities	0.00	100.00	0.00	0.00	100.00
Sports activities and amusement and recreation activities	0.00	0.00	100.00	0.00	100.00
Activities of membership organisations	0.00	61.43	38.57	0.00	100.00
Other personal service activities	9.04	70.30	19.24	1.43	100.00
Total	3.12	75.36	20.81	0.71	100.00

Notes: Weighted statistics: establishments/companies in the private sectors with 10 or more employees, excluding O, P and Q NACE sections. Other refers to atypical agreements.
Source ECS 2019 management questionnaire

Table a8. Distribution according to the 2-digit NACE section for the Netherlands (in % employment)

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Extraction of crude petroleum and natural gas	0.00	100.00	0.00	0.00	100.00
Other mining and quarrying	0.00	100.00	0.00	0.00	100.00
Manufacture of food products	17.76	36.88	5.14	40.22	100.00
Manufacture of beverages	0.00	100.00	0.00	0.00	100.00
Manufacture of textiles	0.00	30.41	69.59	0.00	100.00
Manufacture of wearing apparel	0.00	100.00	0.00	0.00	100.00
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting	0.00	100.00	0.00	0.00	100.00
Manufacture of paper and paper products	8.89	21.18	26.49	43.44	100.00
Printing and reproduction of recorded media	0.00	100.00	0.00	0.00	100.00
Manufacture of chemicals and chemical products	28.22	4.49	6.38	60.91	100.00
Manufacture of basic pharmaceutical products and pharmaceutical preparations	0.00	0.00	0.00	100.00	100.00
Manufacture of rubber and plastic products	26.21	40.43	16.64	16.72	100.00
Manufacture of other non-metallic mineral products	0.00	100.00	0.00	0.00	100.00
Manufacture of basic metals	0.00	51.24	48.76	0.00	100.00
Manufacture of fabricated metal products, except machinery and equipment	0.00	97.97	2.03	0.00	100.00
Manufacture of computer, electronic and optical products	0.00	62.49	0.00	37.51	100.00
Manufacture of electrical equipment	0.00	100.00	0.00	0.00	100.00
Manufacture of machinery and equipment	10.64	79.71	7.46	2.19	100.00
Manufacture of motor vehicles, trailers and semi-trailers	0.00	100.00	0.00	0.00	100.00
Manufacture of other transport equipment	0.00	100.00	0.00	0.00	100.00
Manufacture of furniture	0.00	71.36	28.64	0.00	100.00
Other manufacturing	26.18	58.77	5.56	9.50	100.00
Repair and installation of machinery and equipment	0.00	100.00	0.00	0.00	100.00
Electricity, gas, steam and air conditioning supply	0.00	17.71	26.13	56.17	100.00
Waste collection, treatment and disposal activities; materials recovery	0.00	0.00	100.00	0.00	100.00
Remediation activities and other waste management services	0.00	0.00	100.00	0.00	100.00
Construction of buildings	9.98	86.27	3.75	0.00	100.00
Civil engineering	25.37	74.63	0.00	0.00	100.00

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Specialised construction activities	11.77	82.29	3.21	2.73	100.00
Wholesale and retail trade and repair of motor vehicles and motorcycles	9.31	85.60	5.09	0.00	100.00
Wholesale trade, except of motor vehicles and motorcycles	48.44	40.67	2.73	8.15	100.00
Retail trade, except of motor vehicles and motorcycles	10.85	78.31	10.84	0.00	100.00
Land transport and transport via pipelines	0.00	93.81	3.09	3.10	100.00
Water transport	57.99	0.00	0.00	42.01	100.00
Air transport	0.00	0.00	0.00	100.00	100.00
Warehousing and support activities for transportation	37.31	47.52	2.33	12.84	100.00
Postal and courier activities	0.00	100.00	0.00	0.00	100.00
Accommodation	0.00	81.09	2.31	16.60	100.00
Food and beverage service activities	2.81	85.99	11.20	0.00	100.00
Publishing activities	25.45	74.55	0.00	0.00	100.00
Motion picture, video and television programme production, sound recording and music publishing activities	50.00	50.00	0.00	0.00	100.00
Programming and broadcasting activities	0.00	100.00	0.00	0.00	100.00
Telecommunications	21.84	0.00	0.00	78.16	100.00
Computer programming, consultancy and related activities	100.00	0.00	0.00	0.00	100.00
Information service activities	61.24	7.87	0.00	30.89	100.00
Financial service activities, except insurance and pension funding	58.62	9.63	0.00	31.75	100.00
Insurance, reinsurance and pension funding, except compulsory social security	56.61	28.78	14.61	0.00	100.00
Activities auxiliary to financial services and insurance activities	45.04	0.00	0.00	54.96	100.00
Real estate activities	21.24	78.76	0.00	0.00	100.00
Legal and accounting activities	50.06	0.00	0.00	49.94	100.00
Activities of head offices; management consultancy activities	59.24	0.00	40.76	0.00	100.00
Architectural and engineering activities; technical testing and analysis	38.45	37.22	0.00	24.33	100.00
Scientific research and development	100.00	0.00	0.00	0.00	100.00
Advertising and market research	85.36	14.64	0.00	0.00	100.00
Other professional, scientific and technical activities	37.33	53.26	4.38	5.03	100.00
Veterinary activities	28.23	29.55	0.00	42.23	100.00
Employment activities	25.75	52.11	11.25	10.89	100.00
Travel agency, tour operator and other reservation service and related activities	0.00	0.00	100.00	0.00	100.00

Establishment's main activity (2-digit) category	Configurations of collective bargaining				Total
	No agreement	Sector or sector & other or other	Company & sector or Company & sector & other	Company or Company & other	
Security and investigation activities	0.00	100.00	0.00	0.00	100.00
Services to buildings and landscape activities	0.00	100.00	0.00	0.00	100.00
Office administrative, office support and other business support activities	92.05	7.95	0.00	0.00	100.00
Creative, arts and entertainment activities	23.61	76.39	0.00	0.00	100.00
Libraries, archives, museums and other cultural activities	0.00	100.00	0.00	0.00	100.00
Gambling and betting activities	12.49	0.00	0.00	87.51	100.00
Sports activities and amusement and recreation activities	39.04	57.17	3.78	0.00	100.00
Activities of membership organisations	12.36	68.93	0.00	18.71	100.00
Repair of computers and personal and household goods	0.00	100.00	0.00	0.00	100.00
Other personal service activities	36.45	43.46	5.02	15.07	100.00
Total	25.58	58.28	6.46	9.67	100.00

Notes: Weighted statistics: establishments/companies in the private sectors with 10 or more employees, excluding O, P and Q NACE sections. Other refers to atypical agreements.
Source ECS 2019 management questionnaire

Table a9. Estimated number of collective bargaining agreements using ECS

Establishment's main activity (2-digit) category	France		Italy		The Netherlands	
	Sector	Company	Sector	Company	Sector	Company
Manufacture of food products, beverages and tobacco products	3	26	3	12	3	14
Manufacture of textiles	1	4	2	7	2	1
Manufacture of wearing apparel, leather and related products	2	3	2	2	2	0
Manufacture of wood and paper	2	9	2	8	2	3
Printing and reproduction of recorded media; publishing activities; Motion picture, video and television programme production, sound recording and music publishing activities; programming and broadcasting activities	4	5	4	1	2	0
Manufacture of coke and refined petroleum products, chemicals and chemical products, rubber and plastic products	3	13	3	19	2	12
Manufacture of pharmaceutical products	1	4	2	3	2	1
Manufacture of other non-metallic mineral products	1	2	2	2	2	0
Manufacture of metals	2	26	2	31	2	2
Manufacture of computer, electronic and optical products, electrical equipment, repair and installation of machinery and equipment	3	6	3	9	2	1
Manufacture of machinery and equipment	1		2	14	1	3
Manufacture of motor vehicles, trailers, semi-trailers and other transport equipment	2	11	2	3	2	0
Manufacture of furniture and other manufacture	2	16	2	22	2	13

Establishment's main activity (2-digit) category	France		Italy		The Netherlands	
	Sector	Company	Sector	Company	Sector	Company
Electricity, gas, steam and air conditioning, water collection, treatment	2	11	2	1	2	2
Sewerage, waste collection, treatment and disposal activities; materials recovery; remediation activities and other waste management services	3	2	2	3	2	2
Wholesale and retail trade and repair of motor vehicles and motorcycles; wholesale trade, except of motor vehicles and motorcycles	2	50	2	16	2	10
Retail trade, except of motor vehicles and motorcycles	2	105	2	9	1	5
Land transport and transport via pipelines, Water transport, air transport, Warehousing and support activities for transportation	4	39	2	18	2	10
Postal and courier activities; Telecommunications; Computer programming, consultancy and related activities; information service activities; Travel agency, tour operator and other reservation service and related activities	3	7	5	1	3	4
Financial and insurance activities; legal and accounting activities; security and investigation activities	3	13	3	9	2	7
Real estate activities; Scientific research and development; advertising and market research; other professional, scientific and technical activities; rental and leasing activities; repair of computers and personal and household goods	3	20	3	4	3	4
Activities of head offices; management consultancy activities; architectural and engineering activities; technical testing and analysis; employment activities; services to buildings and landscape activities; office administrative, office support and other business support activities	3	12	2	5	3	8
Veterinary activities; human health and social work activities					2	1
Arts, entertainment and recreation; Other personal service activities	5	20	2	12	2	14
Activities of membership organisations	1	4	2	3	2	1
Mining and quarrying	1	2	1	1	2	0
Construction	3	18	3	5	3	4
Accommodation and Food Service Activities	2	51	2	15	2	9
Total	64	479	64	235	59	131

Source Own calculations using weighted statistics based on ECS 2019 management questionnaire

Table a10. Estimated number of collective bargaining agreements using ESES

Establishment's main activity (2-digit) category	France		Italy		The Netherlands	
	Sector	Company	Sector	Company	Sector	Company
Manufacture of food products, beverages and tobacco products	2	12	2	11	2	11
Manufacture of textiles	2	1	2	1	2	1
Manufacture of wearing apparel, leather and related products	2	1	2	1	2	1
Manufacture of wood and paper	2	1	2	3	0	1
Printing and reproduction of recorded media; publishing activities; Motion picture, video and television programme production, sound recording and music publishing activities; programming and broadcasting activities	2	2	2	1	0	0
Manufacture of coke and refined petroleum products , chemicals and chemical products, rubber and plastic products	2	5	2	5	2	4
Manufacture of pharmaceutical products	2	1	2	1	2	1
Manufacture of other non-metallic mineral products	2	1	2	1	0	0
Manufacture of metals	2	8	2	12	2	1
Manufacture of computer, electronic and optical products , electrical equipment, repair and installation of machinery and equipment	2	2	2	4	2	1
Manufacture of machinery and equipment	0	0	2	6	2	1
Manufacture of motor vehicles, trailers, semi-trailers and other transport equipment	2	1	2	1	0	0
Manufacture of furniture and other manufacture	2	3	2	3	2	3
Electricity, gas, steam and air conditioning, water collection, treatment	2	2	2	1	2	1
Sewerage , waste collection, treatment and disposal activities; materials recovery; remediation activities and other waste management services	2	1	2	1	2	1
Wholesale and retail trade and repair of motor vehicles and motorcycles; wholesale trade, except of motor vehicles and motorcycles	2	14	2	49	2	25
Retail trade, except of motor vehicles and motorcycles	2	150	2	8	2	14
Land transport and transport via pipelines, Water transport, air transport, Warehousing and support activities for transportation	2	86	2	26	2	5
Postal and courier activities; Telecommunications; Computer programming, consultancy and related activities; information service activities; Travel agency, tour operator and other reservation service and related activities	2	9	2	1	2	3
Financial and insurance activities; legal and accounting activities; security and investigation activities	2	36	2	11	2	11
Real estate activities; Scientific research and development; advertising and market research; other professional, scientific and technical activities; rental and leasing activities; repair of computers and personal and household goods	2	76	2	4	2	3

Establishment's main activity (2-digit) category	France		Italy		The Netherlands	
	Sector	Company	Sector	Company	Sector	Company
Activities of head offices; management consultancy activities; architectural and engineering activities; technical testing and analysis; employment activities; services to buildings and landscape activities; office administrative, office support and other business support activities	2	21	2	17	2	15
Veterinary activities; human health and social work activities	0	0	0	0	2	1
Arts, entertainment and recreation; Other personal service activities	2	1	2	18	2	8
Activities of membership organisations	2	2	2	1	2	1
Mining and quarrying	2	1	2	1	0	0
Construction	2	1	2	8	2	1
Accommodation and Food Service Activities	2	36	2	37	2	17
Total	54	479	54	235	46	131

Source Own calculations using survey weights, based on ECS 2019 management questionnaire and ESES 2014

appendix 2 Questions related with collective bargaining from the ECS and SES surveys

a2.1 The ECS survey

1. [WPSIZE_MM_N] Approximately how many people work in this establishment?

Please include all people that are employed by the establishment, regardless of the type of contract and regardless of whether they are physically present or carry out their work outside of the premises. Each employee is counted as one person, regardless whether they are working full-time or part-time. Your best estimate is good enough.

When the term 'establishment' is used in this survey, it refers the local site at which you work.

Indicate a number or tick the 'Don't know' box.

47. [COMEMPORG] Is the company to which this establishment belongs a member of any employers' organisation which participates in the negotiation of collective agreements?

Tick one box only.

- Yes
- No

48. [CA] Are the wages of any employees in this establishment set by any of the following types of collective agreements?

Tick all that apply.

[COUNTRY SPECIFIC LIST]

- A collective agreement negotiated at the national or cross-sectoral level
- A collective agreement negotiated at the sectoral level
- A collective agreement at the regional level
- A collective agreement negotiated at the establishment or company level
- A collective agreement negotiated on behalf of employees with a specific occupation
- Another type of collective agreement

49. [MMERCONFIRM] Which of the following forms of official employee representation currently exist in this establishment?

Tick all that apply.

[COUNTRY SPECIFIC LIST]

- Trade union representation
- Trade union representative/shop steward
- Works council
- Public sector equivalent of works council
- Non-union staff representation
- Non-union staff representative
- Other country-specific bodies
- Other country-specific individuals
- There is no official employee representation

50. [ERATT] How would you describe the general attitude of the employee representation at this establishment? The term 'establishment' refers to the local site at which you work.

Tick one box only.

- Not at all constructive
- Not very constructive
- Fairly constructive
- Very constructive

51. [INDIR] Would you say the management at this establishment prefers to consult with the employee representation or would management rather consult directly with employees?

Tick one box only.

- Management prefers to consult with the employee representation
- Management prefers to consult with employees directly
- Management prefers to consult with the employee representation and with employees directly
- Management prefers not to consult with employees or their representatives

52. [ERTRUS] In your opinion, to what extent does management at this establishment trust the employee representation?

Tick one box only.

- To a great extent
- To a moderate extent
- To a small extent
- Not at all

53. Which of the following practices are used to involve employees in this establishment in how work is organised? For each statement, Tick one box only.

[REGMEE] Meetings between employees and their immediate manager

- Yes, on a regular basis
- Yes, on an irregular basis
- No

[STAFFME] Meetings open to all employees at the establishment

- Yes, on a regular basis
- Yes, on an irregular basis
- No

[DISSINF] Dissemination of information through newsletters, website, notice boards, email etc.

- Yes, on a regular basis
- Yes, on an irregular basis
- No

[SOMEDI] Discussions with employees through social media or in online discussion boards

- Yes, on a regular basis
- Yes, on an irregular basis
- No

54. [SUGGS] Does this establishment make use of suggestion schemes?

Suggestion scheme: The collection of ideas and suggestions from the employees, voluntary and at any time, often by means of a physical or virtual 'suggestion box'.

Tick one box only.

- Yes
- No

The following questions are about your experiences with the direct involvement of employees in decision-making in this establishment.

55. [EIDELAY] In your opinion, to what extent does involving employees cause delays in the implementation of changes?

Tick one box only.

- To a great extent
- To a moderate extent
- To a small extent
- Not at all

56. [EICOMP] In your opinion, to what extent does involving employees in work organisation changes give the establishment a competitive advantage?

Tick one box only.

- To a great extent
- To a moderate extent
- To a small extent
- Not at all

57. [MMEPIN] Please think of the period since the beginning of 2016. In your opinion, to what extent have employees directly influenced management decisions in the following areas? For each statement, Tick one box only.

[MMEPINORG] The organisation and efficiency of work processes

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

[MMEPINDISM] Dismissals

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

[MMEPINTRAIN] Training and skill development

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

[MMEPINTIME] Working time arrangements

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

[MMEPINPAY] Payment schemes

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

58. [MMERIN] Please think of the period since the beginning of 2016. In your opinion, to what extent has the employee representation influenced management decisions in the following areas?

[MMEPINORG] The organisation and efficiency of work processes

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

[MMEPINDISM] Dismissals

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

[MMEPINTRAIN] Training and skill development

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

[MMEPINTIME] Working time arrangements

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

[MMEPINPAY] Payment schemes

- To a great extent
- To a moderate extent
- To a small extent
- Not at all
- No decisions were made in this area

63. [QWPREL] How would you describe the relations between management and employees in this establishment in general?

Tick one box only.

- Very bad
- Bad
- Neither good nor bad
- Good
- Very good

64. [INDACT] Since the beginning of 2016, did any industrial action (such as a strike, work-to-rule, or manifestation) take place that was directly related to an issue specific to this establishment?

Tick one box only.

- Yes
- No

a2.2 The SES survey

[VARIABLE 1.2] Size of enterprise to which the local unit belongs

E1_9 under 10 employees
E10_49 10-49 employees
E50_249 50-249 employees
E250_499 250-499 employees
E500_999 500-999 employees
E1000 1000 or more employees

[VARIABLE 1.3] Principal economic activity of the local unit (Nace rev.2)

[VARIABLE 1.5] Collective pay agreement

This is to identify the type of pay agreement covering at least 50% of the employees in the local unit. One of the following should be chosen:

- an agreement at national level, or an interconfederal agreement, covering employees of more than one industry, and usually signed by one or more trade-union confederations and by one or more national employers' organisations,
- an industry agreement setting the terms and conditions of employment for all or most workers and employees in an individual industry or economic sector,
- an agreement for individual industries in individual regions,
- an enterprise or single-employer agreement covering only those employees with the same employer, regardless of size. The agreement may cover only certain local units or groups of employees within the enterprise,
- an agreement applying only to the employees in one local unit,
- any other type of agreement not covered above,
- no collective pay agreement exists.

Even if several categories may apply simultaneously, only one of the above categories must be chosen ('yes' answer), namely the one covering more than 50 % of the employees in the local unit.

[VARIABLE 1.5] COLLECTIVE PAY AGREEMENT

A national level or interconfederal agreement
B industry agreement
C agreement for individual industries in individual regions
D enterprise or single employer agreement
E agreement applying only to workers in the local unit
F any other type of agreement
N no collective agreement exists

[VARIABLE 1.6] Optional: Number of employees in the local unit: If data is available, the following plausibility checks will be carried out: continuous

[VARIABLE 1.7] Optional: affiliation of the local unit to a group of enterprises

Y Yes
N No

appendix 3 Investigation about information available in the ECMOSS survey, used to provide Eurostat with part of the ESES data

Another possibility is to use the French part of the ESES Survey: *l'Enquête sur le Coût de la Main d'Oeuvre et la Structure des Salaires*, the ECMOSS survey thereafter. The survey is conducted annually by The National Institute for Statistics and Economic Studies (Institut national de la statistique et des études économiques) – Insee. The database provides rich information on socio economic characteristics of workers (gender, age, education, experience, etc.) and characteristics of establishment (size of the establishment, principal activity, geographic location, wage structures, composition of wages, etc.). The survey meets the demand for harmonisation across all countries of the European Union, so that comparative analyses and structural statistics can be drawn up.

The data refers to enterprises with at least 10 employees, in the areas of economic activities defined by NACE Rev. 2, Sections B to S excluding A (except agriculture, forestry and fishing) and O (out of scope public administration). The sample includes 15,568 companies (for the employers' representative component) and 134,373 employees (for the employees' representative sample). This survey provides more detailed information on economic activity. Economic activity of the company or establishment are coded at the 2 digit (Table A11). This survey offers a better choice in terms of economic activity information. Also, the survey provides information on the establishment CRIS code, a classification that groups together branches (identified by the IDCC number) that have common bargaining habits (Table a12).

Beyond the economic activity information, ECMOSS provides information on wage policies, social environment and employee representative.

Detailed information on collective agreement focus on wage setting. The survey asks questions about collective bargaining on wages at sectoral and company level. For instance, 52% interviewed companies had negotiated on wages at the sector level (Table a13), and 25% at the company level (Table 14). However, the survey provides additional information on other negotiation topics such as wage premiums, complementary pensions, health insurance but not on GE issues. It could be interesting to investigate the availability of similar national surveys in other EU countries as they provide more detailed information on economic activity and negotiations.

Table a11. Distribution of local unit according to the economic activity at 2-digit level (NAF rév. 2, 2008, Level 2)

Economic activity, label in French		Freq.	Percent
01	Crop and animal production, hunting and related service activities	4	0.03
02	Forestry and logging	1	0.01
06	Extraction of crude petroleum and natural gas	1	0.01
08	Other mining and quarrying	27	0.17
10	Manufacture of food products	319	2.05
11	Manufacture of beverages	34	0.22
12	Manufacture of tobacco products	2	0.01
13	Manufacture of textiles	27	0.17
14	Manufacture of wearing apparel	30	0.19
15	Manufacture of leather and related products	15	0.10
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	37	0.24
17	Manufacture of paper and paper products	45	0.29
18	Printing and reproduction of recorded media	36	0.23
19	Manufacture of coke and refined petroleum products	9	0.06
20	Manufacture of chemicals and chemical products	140	0.90
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	66	0.42
22	Manufacture of rubber and plastic products	113	0.73
23	Manufacture of other non-metallic mineral products	98	0.63
24	Manufacture of basic metals	49	0.31
25	Manufacture of fabricated metal products, except machinery and equipment	181	1.16
26	Manufacture of computer, electronic and optical products	101	0.65
27	Manufacture of electrical equipment	88	0.57
28	Manufacture of machinery and equipment n.e.c.	140	0.90
29	Manufacture of motor vehicles, trailers and semi-trailers	134	0.86
30	Manufacture of other transport equipment	89	0.57
31	Manufacture of furniture	27	0.17
32	Other manufacturing	41	0.26
33	Repair and installation of machinery and equipment	94	0.60
35	Electricity, gas, steam and air conditioning supply	202	1.30
36	Water collection, treatment and supply	50	0.32
37	Sewerage	12	0.08
38	Waste collection, treatment and disposal activities; materials recovery	124	0.80
39	Remediation activities and other waste management services	6	0.04
41	Construction of buildings	70	0.45
42	Civil engineering	107	0.69
43	Specialised construction activities	384	2.47
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	207	1.33
46	Wholesale trade, except of motor vehicles and motorcycles	779	5.00
47	Retail trade, except of motor vehicles and motorcycles	1,051	6.75
49	Land transport and transport via pipelines	537	3.45
50	Water transport	8	0.05
51	Air transport	36	0.23
52	Warehousing and support activities for transportation	292	1.88
53	Postal and courier activities	354	2.27
55	Accommodation	103	0.66
56	Food and beverage service activities	258	1.66
58	Publishing activities	149	0.96
59	Motion picture, video and television programme production, sound recording and music publishing activities	41	0.26

Economic activity, label in French		Freq.	Percent
60	Programming and broadcasting activities	43	0.28
61	Telecommunications	184	1.18
62	Computer programming, consultancy and related activities	284	1.82
63	Information service activities	74	0.48
64	Financial service activities, except insurance and pension funding	694	4.46
65	Insurance, reinsurance and pension funding, except compulsory social security	277	1.78
66	Activities auxiliary to financial services and insurance activities	251	1.61
68	Real estate activities	199	1.28
69	Legal and accounting activities	284	1.82
70	Activities of head offices; management consultancy activities	338	2.17
71	Architectural and engineering activities; technical testing and analysis	486	3.12
72	Scientific research and development	106	0.68
73	Advertising and market research	223	1.43
74	Other professional, scientific and technical activities	29	0.19
75	Veterinary activities	4	0.03
77	Rental and leasing activities	163	1.05
78	Employment activities	201	1.29
79	Travel agency, tour operator and other reservation service and related activities	70	0.45
80	Security and investigation activities	125	0.80
81	Services to buildings and landscape activities	356	2.29
82	Office administrative, office support and other business support activities	222	1.43
84	Public administration and defence; compulsory social security	1,378	8.85
85	Education	315	2.02
86	Human health activities	614	3.94
87	Residential care activities	393	2.52
88	Social work activities without accommodation	650	4.18
90	Creative, arts and entertainment activities	84	0.54
91	Libraries, archives, museums and other cultural activities	33	0.21
92	Gambling and betting activities	63	0.40
93	Sports activities and amusement and recreation activities	150	0.96
94	Activities of membership organisations	403	2.59
95	Repair of computers and personal and household goods	29	0.19
96	Other personal service activities	125	0.80
Total		15,568	100.00

Source ECMOSS survey, 2014

Table a12. Distribution of the local unit according to the CRIS code

CRIS CODE	Freq.	Percent
A: Metallurgy and Steel	1,316	8.45
B: Construction and public works	582	3.74
C: Chemicals and Pharmaceuticals	432	2.77
D: Plastics, rubber and combustible	166	1.07
E: Glass and construction materials	191	1.23
F: wood and derivatives	167	1.07
G: Textile, clothing and leather	366	2.35
H: Culture and communication	692	4.45
I: Food industry	451	2.90
J: Wholesale trade	272	1.75
K: Food retail	491	3.15
L: Non-food retail	313	2.01
M: automobile services	358	2.30
N: Hotel, catering and tourism	497	3.19
O: Transport	705	4.53
P: Health and social services	1,914	12.29
Q: Banks, Financial institutions and insurances	974	6.26
R: Real estate and tertiary activity related to building	254	1.63
S: Consultants and enterprise services	1,035	6.65
T: legal and accounting professions	282	1.81
U: Cleaning, handling and security services	577	3.71
V: Various non-agricultural branches	689	4.43
W: Agricultural branches	235	1.51
X: Sectors under status (public, railway, ...)	1,829	11.75
Y: Without conventions or status	580	3.73
Missing	200	1.28
Total	15,568	100.00

Source ECMOSS survey, 2014

Table a13. A collective agreement negotiated at the sectoral level - wages set by

	Freq.	Percent
No	5,516	35.43
Yes	8,164	52.44
Missing	1,888	12.13
Total	15,568	100.00

Source ECMOSS survey, 2014

Table a14. A collective agreement negotiated at the company level - wages set by

	Freq.	Percent
No	9,799	62.94
Yes	3,881	24.93
Missing	1,888	12.13
Total	15,568	100.00

Source ECMOSS survey, 2014

a3.1.1 Variables on economic activity (translated from French)

APEN60: Main economic activity of the company on 31/12/(year surveyed) according to NAF rev.2 - 2008 in 88 divisions

APET60: Main economic activity of the establishment on 31/12/(year surveyed) according to NAF rev.2 - 2008 in 88 divisions

CRIS1: Code of the collective agreement grouped at the most aggregated level (25 items)

TEFEN_R: Company size

Number of employees of the company to which the establishment belongs on 31/12/2013 (year preceding the survey year) in size classes.

Variable from: CLAP

Modalities of the variable:

11: 10 to 19 employees

12: 20 to 49 employees

21: 50 to 99 employees

22: 100 to 199 employees

31: 200 to 249 employees

32: 250 to 499 employees

41: 500 to 999 employees

42: 1000 to 1999 employees

51: 2000 to 4999 employees

52: 5000 to 9999 employees

53: 10000 employees and more

a3.1.2 Variables on wage policies

QE1_1_1_1: Wage scale: Branch agreement

To establish or modify the salary scale, the job hierarchy: application of collective agreements negotiated at the sector level.

Modalities of the variable:

0 No

1 Yes

QE1_1_1_2: Wage scale: Company agreement

To establish or modify the salary scale, the job hierarchy: application of collective agreements negotiated at company level.

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

QE1_1_1_3: Wage scale: Establishment agreement

To establish or modify the salary scale, the job hierarchy: application of collective agreements negotiated at establishment level.

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

QE1_1_1_4: Wage scale: Group agreement

To establish or modify the salary scale, the job hierarchy: application of collective agreements negotiated at the group level.

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

Same questions for collective negotiations on wage premiums, complementary pensions, health insurance.

Information on social environment

QE1_6_2_1: Social climate in the institution - managers

Criteria for the revaluation of managers' salaries: Social climate in the establishment

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

QE1_6_3_1: Individual performance - managers

Criteria for the revaluation of managers' salaries: Individual employees' performance.

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

QE1_6_4_1: Salary levels of competitors - managers

Criteria for the revaluation of managers' salaries: Salary levels of competitors.

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

QE1_6_5_1: Company guidelines/group - managers

Criteria for the revaluation of managers' salaries: Company or group level guidelines

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

QE1_6_6_1: Sector level recommendations - managers

Criteria for the revaluation of managers' salaries: Sector level recommendations

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

QE1_6_7_1: Labour market conditions - managers

Criteria for the revaluation of managers' salaries: Labour market conditions

Variable from: ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 No

1 Yes

Same questions (QE1_6_2_1 to QE1_6_7_1) for non-managers.

a3.1.3 Variables on employee representatives

QE2_1_1: Trade union delegates – Establishment

Presence of trade union delegates (or representatives) in the establishment.

Variable from ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 Missing value

1 Yes

2 No

3 Do not know

E Several answers checked

QE2_1_2: Staff delegates – Establishment

Presence of staff delegates (or representatives) in the establishment.

Variable from ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 Missing value

1 Yes

2 No

3 Do not know

E Several answers checked

QE2_1_3: WC - Establishment

Presence of a works council in the establishment (establishment or company level WC).

Variable from ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 Missing value

1 Yes

2 No

3 Do not know

E Several answers checked

QE2_2_2: Staff delegates - Company or ESU

Presence of staff delegates (or a single delegation) in the company or the Economic and Social Unit. Variable from ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 Missing value

1 Yes

2 No

3 Do not know

E Several answers checked

Note: Answer expected only if the establishment is part of a company with several establishments or of an Economic and Social Unit (ESU).

QE2_2_3: Works council - Company or ESU

Presence of a (central) works council in the company or the Economic and Social Unit.

Modalities of the variable:

0 Missing value

1 Yes

2 No

3 Do not know

E Several answers checked

Note: Answer expected only if the establishment is part of a company with several establishments or an Economic and Social Unit (ESU).

QE2_3: Annual wage negotiation

Obligation to negotiate annually on wages.

Variable from ECMOSS – Establishment Questionnaire

Modalities of the variable:

0 Missing value

1 Yes

2 No

3 Do not know

E Several answers checked

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InGRID-2

Integrating Research Infrastructure for European expertise on Inclusive Growth from data to policy

Referring to the increasingly challenging EU2020-ambitions of Inclusive Growth, the objectives of the InGRID-2 project are to advance the integration and innovation of distributed social sciences research infrastructures (RI) on ‘poverty, living conditions and social policies’ as well as on ‘working conditions, vulnerability and labour policies’. InGRID-2 will extend transnational on-site and virtual access, organise mutual learning and discussions of innovations, and improve data services and facilities of comparative research. The focus areas are (a) integrated and harmonised data, (b) links between policy and practice, and (c) indicator-building tools.

Lead users are social scientist involved in comparative research to provide new evidence for European policy innovations. Key science actors and their stakeholders are coupled in the consortium to provide expert services to users of comparative research infrastructures by investing in collaborative efforts to better integrate microdata, identify new ways of collecting data, establish and improve harmonised classification tools, extend available policy databases, optimise statistical quality, and set-up micro-simulation environments and indicator-building tools as important means of valorisation. Helping scientists to enhance their expertise from data to policy is the advanced mission of InGRID-2. A new research portal will be the gateway to this European science infrastructure.

This project is supported by the European Union’s Horizon 2020 research and innovation programme under Grant Agreement No 730998.

More detailed information is available on the website: www.inclusivegrowth.eu

Co-ordinator
Monique Ramioul



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InGRID-2

Integrating Research Infrastructure for
European expertise on Inclusive Growth from
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