

## **Appendix A**

### **Compiling the database**

This Appendix discusses how the survey was designed and implemented, the response to the survey and how the respondents differed from the target population. Appendix A demonstrates that, while it is not possible to be entirely confident of the capacity to generalise from the results, this survey provides the largest source of information available and offers unparalleled knowledge about existing biases. The results of the survey therefore present a wealth of examples of 'best practice'. To review the issues identified, Appendix A includes sections on the populations of institutions and representatives with which the survey is concerned, the construction of the sample, and the character of responses by reference to institutions and representatives. A weighting procedure designed to correct some of the biases was applied and is explained in greater detail in the final section.

Throughout, Appendix A refers to the population of both EWC representatives operating under the Directive or Recast and SE works council (SEWC) representatives operating under Directive 2001/86/EC. By adhering to this procedure, the researchers were able to generate structured samples for both groups of representatives. While this volume focuses exclusively on EWC representatives, future publications will examine the position of SEWC representatives. Underpinning this approach is the recognition that there are key differences in the existing legislation. Directive 2001/86/EC, for example, makes no reference to in-depth assessments, nor does it require representatives to report back. With regard to the country of origin of the MNCs opting for the two regulatory regimes, companies of German origin form a disproportionately large percentage of those opting for Directive 2001/86/EC. It is acknowledged, however, that many of the arguments advanced here for EWCs are likely to apply to SEWCs.

#### **Study populations: EWCs, SEWCs and representatives**

The aim of the survey was to collect information on the views of employee representatives in two types of institutions of worker representation in MNCs: EWCs and SEWCs. When the research commenced in July 2017, 975 EWCs and 140 SEWCs were known to be active (EWCdb). Both EWCs and SEWCs bring together employee representatives from different countries. Accordingly, two study populations can be distinguished: the combined EWC and SEWC population, and the population of representatives serving in these bodies. The aim of the survey was to collect data from the population of representatives. However, there is no exhaustive or reliable source of information available for this population: in other words, there is no centralised list of employee

representatives who sit on EWCs and SEWCs. For this reason, the survey sampled the first population: EWCs and SEWCs, in order to gain access to the second: employee representatives.

To identify the population of EWCs and SEWCs, the EWCdb was used. This database collates information on all existing EWCs and SEWCs, their founding agreements and the MNCs where they operate. The EWCdb is by no means an exhaustive database, but it is by far the most exhaustive source of information on such institutions currently available. In an effort to minimise the coverage error arising from the omission of some EWCs and SEWCs, several preventative strategies were implemented to collect the most complete information possible (De Spiegelaere 2017). When sampling was undertaken in July 2017, the 1,115 EWCs and SEWCs registered as active in the EWCdb were used as a sampling frame.

Information from the EWCdb was also used to estimate the size and basic characteristics of the population of representatives. The EWCdb includes the founding agreements of EWCs and SEWCs, which often contain information on their composition, in particular the number of representatives from each country. Given that the approach adopted relied on the assumption that this information is representative for the population, it was used to estimate the total population of representatives. Of the 1,115 EWCs and SEWCs active at the time of the sampling, agreements were available for 999 (89.6 per cent). A full content analysis for each agreement was required. For 56 agreements available at the time, such an analysis had not yet been undertaken. When sampling was undertaken, 943 agreements (84.6 per cent of all EWCs and SEWCs) were thus analysed, 571 (51.2 per cent) of which contained information on the distribution of seats. This information was extrapolated, resulting in an estimated combined population of EWC and SEWC representatives comprising 17,974 individuals: 15,768 EWC representatives and 2,206 SEWC representatives. It is important to note that this estimation is based on the assumption that the information collected on seat numbers from the agreements is not biased. In the light of the information available, there is no way of verifying the validity of this assumption, resulting in a 'best guess' approach.

## **Constructing the sample**

In the absence of a central database on EWC and SEWC representatives, it is not possible to construct a direct random sample. It was therefore necessary to rely on an indirect approach. The first step in this process involved the creation of a stratified random sample of EWCs and SEWCs. The stratification was based on one variable: the sector of activity of the parent MNCs. These sectors of activity are important, as they are widely represented in the European trade union federation (ETUF) responsible for each EWC. The ETUFs listed below are responsible for coordinating the establishment of EWCs and SEWCs in the following sectors:

- industriAll: metal, chemical, energy, automotive, aerospace, defence, pharmaceutical and shipbuilding industries
- UNI Europa: commerce, cleaning and security, finance, gaming, graphical and

- packaging, hair and beauty, ICTS, post and logistics, media and sport
- EFFAT: food, tourism and agriculture
- EFBWW: building and woodwork
- ETF: transport sector
- EPSU: public sector, health and social services, and utilities

The distribution of EWCs and SEWCs is not equal across all sectors. IndustriAll is responsible for over half of the total number of active EWCs and SEWCs. In consequence, the stratified sample was disproportionate in that almost all of the EWCs and SEWCs established by the smaller ETUFs and only a selection of those set up by industriAll and UNI Europa were included. The EWCs and SEWCs associated with industriAll and UNI Europa were selected at random. Based on the sector of activity of the MNCs, a stratified sample was created comprising 846 EWCs and SEWCs. That number was based on the initial objective to collect responses from 2,000 representatives. An expected rate of return of 25 per cent meant that it would be necessary to contact 8,000 representatives. As the average EWC or SEWC has 16 representatives and it was anticipated that around 60 per cent of the EWCs and SEWCs in the sample would respond, it was decided to sample 840 EWCs and SEWCs. In the light of the decision to include all EWCs and SEWCs established by EFBWW, EFFAT, ETF and EPSU, in order to reach a total of 840 EWCs and SEWCs, it was necessary to select a random sample of 76 per cent of those established by industriAll and UNI Europa. A more detailed explanation of the stratification is provided below.

In a second step, the stratified sample of EWCs and SEWCs was used to construct the sample of representatives. This information was collected using two approaches. First, the EWCs and SEWCs were contacted through main points of contact. Generally speaking, EWCs and SEWCs have a president or chairperson and/or an EWC coordinator, nominated by the ETUF, who are responsible for the functioning of the institution. These contact persons, who hold information about the representatives, were instrumental in distributing the survey to them. The advantage of contacting representatives through these contact persons is that it made it possible for all representatives of an EWC or SEWC to be contacted, regardless of their home country or union affiliation. The disadvantage of this strategy was the amount of time involved in trying to contact all EWCs and SEWCs in the sample, especially given that there was no contact information available for a large number of them.

At the same time, a second method was used to contact the EWCs and SEWCs through the national unions and confederations in the different Member States. These organisations often implement policies to support EWC and SEWC representatives from their country by providing them with training and other forms of assistance. Like the chairpersons and presidents, the unions are important gatekeepers to the population of EWC and SEWC representatives. The advantage of this approach was that representatives from a large number of EWCs and SEWCs could be contacted. Only the responses provided by those who were part of the sample are presented in this volume. Other responses have been used in presentations made to specific trade unions. The disadvantage of this second approach is that contact can be made only with the members of a specific trade union from a specific country, resulting in potential bias

in the responses. Overall, information was collected in this manner from trade unions in 19 different countries.

One of the concerns raised during preparation of the survey was to ensure that non-members of trade unions would be selected to participate, which was assumed to be far from straightforward, as the two gatekeepers to EWC and SEWC representatives are EWC coordinators, the vast majority of whom are unionised, and national trade unions. While EWC coordinators may be able to provide access to non-members, national trade unions are not in a position to do so. Furthermore, the two sampling methods used do not guarantee access to those EWCs that do not have an EWC coordinator or any union members. There was no probability of such EWCs and SEWCs being included in the sample and, consequently, the survey. While the survey design tried to limit the over-representation of trade unionists, it is unlikely to have done so.

These two approaches made it possible to contact all representatives from 185 institutions in the sample (173 EWCs and 12 SEWCs) and a selection of them from 320 other institutions (286 EWCs and 34 SEWCs). Altogether, 5,099 representatives (4,746 EWC representatives and 353 SEWC representatives) in the sample were invited to participate in the survey.

In a third step, the 5,099 EWC representatives were contacted via e-mail to participate in a web-based survey comprising 69 questions, many of which required multiple responses. Responses were verified, and several reminder e-mails were sent to the participants. For some EWCs and SEWCs, the surveys were distributed physically before, during or after special training sessions.

The survey thus used a stratified cluster sample to identify representatives from a select number of EWCs and SEWCs. These EWCs and SEWCs were contacted using various means, resulting in the survey being sent to 5,099 representatives operating within 505 institutions (459 EWCs and 46 SEWCs). All responses were anonymous.

## **Overall response**

Unfortunately, not everyone who is invited to participate in a survey will do so. This non-response can occur for various reasons and may introduce a bias in the results. This section discusses the different steps in the survey process and the different sources of non-response that occurred by initially focusing on the institutional level and then the representatives themselves.

At the institutional level, the guiding questions are: did the survey manage to secure responses from a sufficient number of EWCs and SEWCs; and was a significant bias introduced at any point in the sampling process? These questions were examined by looking at three institutional characteristics: the sector of activity, the home country of the MNC and whether the institution is an EWC or SEWC.

Table A.1 EWC and SEWC population, sample and response

All institutions	N	Proportion of population %	Proportion of sample %
Population	1,115		
Sample	846	75.9	
Direct response	185		
Indirect response	320		
Total response	505	45.3	59.7
At least one completed survey	365	32.7	43.1
EWCs	N	Proportion of population %	Proportion of sample %
Population	975		
Sample	728	86.1	
Direct response	173		
Indirect response	286		
Total response	459	47.1	63.1
At least one completed survey	335	34.4	46.0
SEWCs	N	Proportion of population %	Proportion of sample %
Population	140		
Sample	118	84.3	
Direct response	12		
Indirect response	34		
Total response	46	32.9	39.0
At least one completed survey	30	21.4	25.4

Table A.1 shows the number of EWCs and SEWCs in the population, the sample, the institutions for which contact information could be collected, and the institutions from which at least one representative completed the survey. Of the total of 1,115 EWCs and SEWCs recorded as active within the EWCdb, a total of 846 institutions (728 EWCs and 118 SEWCs) were selected as the sampling frame. Using the methods mentioned above, contact was made with representatives in these 846 institutions. This resulted in 185 ‘direct responses’, meaning that all employee representatives of the institution could be contacted (173 EWCs and 12 SEWCs). At 320 other institutions, a selection of employee representatives could be contacted (286 EWCs and 34 SEWCs). This means that representatives were contacted (459 EWCs and 46 SEWCs) at 505 institutions (45.3 per cent of the population or 59.7 per cent of the sample). As not all representatives replied, the survey collected at least one response from 365 institutions, 32.7 per cent of the total population or 43.1 per cent of the sample. Of these, 335 were EWCs comprising 34.5 per cent of the population and 46.0 per cent of the sample, and 30 were SEWCs comprising 21.4 per cent of the population and 25.4 per cent of the sample.

Table A.2 Reasons for non-response

	N	%
No contact details	328	49.6
No answer	307	46.4
Refusal	3	0.5
Other/unknown	23	3.5
Total non-response	661	
Response	185	

The main source of non-response is the inability to obtain a direct response from the 846 EWCs and SEWCs selected. The approach of contacting a key person in the EWC or SEWC was successful for only 185 of these (21.9 per cent of the sample). Table A.2 thus examines the reasons for non-response. Almost half of this 'direct non-response' can be explained by the absence of contact details for the institution. In another 46.4 per cent of cases, the contact attempts were unsuccessful, as there was no reply to the request to participate. On a more positive note, only three contacts refused to participate: one because of a lack of time and two because they did not want to participate in the survey. Another 27 cases are marked 'other/unknown'. In these cases, there is doubt as to whether the EWC or SEWC is still active or which MNC it is functioning in.

In a next step, responses were verified to ascertain whether they were clearly disproportionate in relation to three characteristics: the sector of activity, the country of the MNC's headquarters and whether it was an EWC or SEWC. Table A.3 summarises the information relating to the sector of activity. As discussed above, a disproportionate stratified sample was drawn of EWCs and SEWCs based on the sector of activity. This was done in order to ensure sufficient participation of institutions from the smaller

Table A.3 EWC and SEWC population, sample and response: by ETUF

	Population		Sample		EWCs and SEWCs within which a representative could be contacted				EWCs and SEWCs from which at least one completed survey was returned	
	N	%	N	%	Direct	Indirect	Total	%	Total	%
EFBWW	71	6.4	67	7.9	20	21	41	8.1	29	7.9
EFFAT	102	9.1	98	11.6	26	30	56	11.1	43	11.8
EPSU	14	1.3	13	1.5	4	8	12	2.4	11	3.0
ETF	36	3.2	35	4.1	9	13	22	4.4	20	5.5
industriAll	634	56.9	449	53.1	99	203	302	59.8	222	60.8
UNI Europa	258	23.1	184	21.7	27	45	72	14.3	40	11.0
Total	1,115		846		185	320	505		365	

Table A.4 EWC and SEWC population, sample and response: by country of company headquarters

	Population		Sample		EWCs and SEWCs within which a representative could be contacted				EWCs and SEWCs from which at least one completed survey was returned	
	N	%	N	%	Direct	Indirect	Total	%	Total	%
Austria	18	1.6	18	2.1	8	4	12	2.4	7	1.9
Belgium	40	3.6	37	4.4	18	13	31	6.1	24	6.6
Denmark	26	2.3	21	2.5	3	8	11	2.2	10	2.7
Finland	43	3.9	26	3.1	17	5	22	4.4	22	6.0
France	129	11.6	109	12.9	24	39	63	12.5	46	12.6
Germany	246	22.1	189	22.3	20	83	103	20.4	70	19.2
Italy	36	3.2	30	3.5	9	6	15	3.0	12	3.3
Netherlands	64	5.7	51	6.0	9	20	29	5.7	21	5.8
Spain	13	1.2	13	1.5	4	5	9	1.8	7	1.9
Sweden	71	6.4	57	6.7	16	17	33	6.5	27	7.4
Switzerland	47	4.2	34	4.0	8	16	24	4.8	19	5.2
United Kingdom	102	9.1	77	9.1	10	22	32	6.3	19	5.2
United States	168	15.1	114	13.5	21	58	79	15.6	51	14.0
Other EEA	55	4.9	33	3.9	8	8	16	3.2	11	3.0
Other non-EEA	57	5.1	37	4.4	10	16	26	5.1	19	5.2
Total	1,115		846		185	320	505		365	

sectors. For EPSU, ETF, EFBWW and EFFAT, virtually all known EWCs and SEWCs were selected for participation. Only information and consultation procedures and EWCs based on the subsidiary requirements were excluded from the sample. For UNI Europa and industriAll, a random sample of 76 per cent of the population was drawn. This disproportionate stratification is reflected in the data. Table A.3, for example, shows that there are relatively more EWCs and SEWCs from the smaller ETUFs in the sample than in the overall population. The intended under-representation of industriAll EWCs and SEWCs is reversed in an over-representation of the institutions that could be contacted and within which at least one survey was completed. While relatively few EWCs and SEWCs from industriAll were selected in the sample, they tended to show higher response rates than the others. The reverse is true for the UNI Europa EWCs. The intended under-representation was accentuated due to the relatively lower response from EWCs and SEWCs. While 23.1 per cent of all EWCs and SEWCs are established by UNI Europa, only 11.0 per cent of the institutions from which survey responses were secured are set up by UNI Europa.

Table A.4 examines the distribution of EWCs and SEWCs over the countries in which the MNCs are headquartered. The second and fourth columns of data compare the population and the sample. The largest divergence is observed for France where the

sample is greater than the population by 1.3 percentage points) and the US where the sample is 1.6 percentage points lower than the population. These differences are small and result from chance.

Comparing the overall response with the sample and the population, however, illustrates clearer differences. In the first step (number of EWCs and SEWCs that could be contacted) and the second step (number of EWCs and SEWCs with at least one full response from a representative) of the response process, there is a clearly disproportionate non-response. The first step shows an over-representation of Belgian EWCs and SEWCs, while German- and UK-based EWCs and SEWCs are under-represented. In practice, it proved more difficult to make contact with EWCs and SEWCs from German and UK companies compared to their counterparts from other countries. Comparing the last two columns – EWCs and SEWCs with at least one completed survey – to the overall population distribution again shows an over-representation of Belgian EWCs and SEWCs. There is also an over-representation of Finnish EWCs and SEWCs. The under-representation of German and UK-based EWCs observed in the first response step is even more pronounced in the second.

## **EWCs and SEWCs at the level of representatives**

The previous section focused on responses at the institution level. In this section, the attention shifts to responses from EWC and SEWC representatives. The guiding question here is whether or not the survey results are representative for the population of EWC and SEWC representatives. To address this question, a comparison is made between the estimated population characteristics, those of the sample and those of the EWC and SEWC representatives who responded.

Up to this point, it has been established that 5,099 representatives received the survey. These representatives constituted 28.2 per cent of the estimated total population. Of the 5,099 representatives, 4,951 (97.1 per cent) were sent an invitation via e mail to complete an online survey. The other 148 representatives (2.9 per cent) received paper versions of the survey: 30 questionnaires were sent by normal mail and 118 were handed out at training sessions.

Table A.5 shows that, of the total of 5,099 representatives, 1,479 (29.0 per cent) completed the whole survey. A further 156 representatives (3.1 per cent) started the survey and answered at least 25 per cent of the questions, but did not complete the survey. These surveys were deemed as 'useable'. A further 397 respondents started the survey, but answered very few questions. These responses were discarded. There were thus 1,635 questionnaires (1,479 + 156) that were useful for the project, constituting a rate of return of 32.1 per cent. Responses to the survey amount to 9.0 per cent of the total estimated population of 17,974 representatives.

This section looks at the majority of the sample that did not respond to the survey. Table A.5 shows that 7.7 per cent could not be reached due to incorrect e-mail addresses. Almost 2 per cent were 'oversampled', meaning that those contacted indicated that they

Table A.5 Response and reasons for non-response

	N	Proportion of sample %
<b>Response</b>		
Completed the survey	1,479	29.0
Completed at least 25 per cent of the survey	156	3.1
Total response	1,635	32.1
<b>Non-response</b>		
Completed very few questions	397	7.8
No response	2,508	49.2
Opted out	79	1.5
Oversampled	87	1.7
Incorrect e mail address	393	7.7
Total non-response	3,464	
Total sample	5,099	

were not or were no longer EWC or SEWC representatives. Another 7.8 per cent began the survey but completed less than a quarter of it, while 49.2 per cent of non-responders simply failed to reply to the request for participation. Only a minority of respondents explicitly chose to 'opt-out' of the survey (79 or 1.5 per cent of the total sample).

Table A.6 shows the estimated population distributed over sectors, the distribution of EWC and SEWC representatives within the sample, and the distribution of the responses from representatives. Reflecting the disproportionate stratification applied, there is a slight over-representation of representatives from sectors organised by the EFBWW, EFFAT, EPSU and ETF, coupled to an under-representation of representatives from industriAll and UNI Europa. A comparison between the sample and the responses reveals no significant differences between sectors, none of which showed a disproportionate number of representatives who replied or failed to reply to the survey. Comparing the distribution in the estimated population with the distribution in the responses, however, shows the under-representation of representatives from industriAll and UNI Europa and a slight over-representation of the other ETUFs. Again, this is consistent with the disproportionate stratification performed at the institutional level.

The EPSU sample comprises 214 representatives, while the estimated population size was 203 representatives. This apparent anomaly can be explained by the presence of all EWCs and SEWCs established by EPSU being included in the sample and the relative ease of contact. Additionally, EWCs and SEWCs established by EPSU appear to be larger than average, resulting in the estimation of the total population being lower than the number of representatives to whom an invitation to participate was sent.

Table A.7 compares the distribution of the estimated population with the sample of representatives and responses disaggregated by EWCs and SEWCs. In comparing the

Table A.6 Population, sample and response by sector

	Estimated population		N	Sample		N	Response	
	N	%		%	%			
EFBWW	914	5.1	453	8.9	131	8.0		
EFFAT	1,642	9.1	621	12.2	197	12.0		
EPSU	203	1.1	214	4.2	70	4.3		
ETF	599	3.3	292	5.7	112	6.9		
industriAll	10,358	57.6	2 872	56.3	898	54.9		
UNI Europa	4,258	23.7	647	12.7	227	13.9		
Total	17,974		5,099	28.4	1,635			

sample with the population, Table A.7 depicts an over-representation of EWC members and an under-representation of SEWC members. This is consistent with the findings at the institutional level, which showed that it was more difficult to make contact with an SEWC than an EWC. No disproportionate pattern is observed when the responses are compared with the sample, suggesting that, once contact was made, the response rate of EWC and SEWC representatives was similar. In practical terms, the 1,520 respondents from EWCs constitute the value of N for this study and comprise 9.6 per cent of the estimated population of EWC representatives. These respondents work in 335 EWCs, which is 34.4 per cent of all EWCs.

Finally, Table A.8 compares the population, sample and responses by reference to the country of origin of the EWC and SEWC representatives. It is noteworthy that, from the outset, the country of origin of some 300 EWC and SEWC representatives in the sample could not be determined with certainty. With this caveat in mind, comparing the sample with the estimated population shows that there is a considerable under-representation of representatives from France, Italy and the UK. There is also a small over-representation in the sample of representatives from Belgium, Germany and Poland. This situation is neither new nor unexpected insofar as respondents from different countries do not reply to surveys at the same rate.

Comparing the response with the sample reveals only minor differences. The relative proportion of the French EWC and SEWC representatives appears to have decreased by more than three percentage points. A possible explanation for this is that, at

Table A.7 Population, sample and response by institutional type

	Estimated population		N	Sample		N	Response	
	N	%		%	%			
EWC	15,768	87.7	4 746	93.1	1 520	93.0		
SEWC	2,206	12.3	353	6.9	115	7.0		
Total	17,974		5,099		1,635			

Table A.8 Population, sample and response by country of origin of representatives

Country	Estimated population		Sample		Response	
	N	%	N	%	N	%
Austria	587	3.3	141	2.8	56	3.4
Belgium	970	5.4	427	8.4	163	10.0
Bulgaria	88	0.5	40	0.8	22	1.3
Croatia	16	0.1	22	0.4	13	0.8
Czechia	366	2.0	184	3.6	52	3.2
Denmark	459	2.6	83	1.6	44	2.7
Estonia	67	0.4	20	0.4	6	0.4
Finland	559	3.1	170	3.3	52	3.2
France	2,619	14.6	558	10.9	128	7.8
Germany	3,217	17.9	1,048	20.6	328	20.1
Greece	201	1.1	34	0.7	15	0.9
Hungary	191	1.1	124	2.4	42	2.6
Ireland	345	1.9	40	0.8	20	1.2
Italy	1,207	6.7	232	4.5	80	4.9
Latvia	48	0.3	11	0.2	3	0.2
Lithuania	38	0.2	22	0.4	8	0.5
Luxembourg	144	0.8	29	0.6	9	0.6
Netherlands	876	4.9	140	2.7	55	3.4
Norway	425	2.4	82	1.6	38	2.3
Poland	414	2.3	261	5.1	85	5.2
Portugal	379	2.1	55	1.1	15	0.9
Romania	162	0.9	84	1.6	39	2.4
Slovakia	145	0.8	60	1.2	18	1.1
Slovenia	57	0.3	15	0.3	11	0.7
Spain	1,118	6.2	360	7.1	116	7.1
Sweden	772	4.3	198	3.9	82	5.0
Switzerland	277	1.5	41	0.8	12	0.7
United Kingdom	2,195	12.2	329	6.5	123	7.5
Other	33	0.2	289	5.7	0	0.0
Total	17,974		5,099		1,635	100.0

the same time of the surveying period, another survey was distributed to a large proportion of the French EWC representatives by French trade union confederations. It is likely that potential French respondents might not have distinguished between the surveys or might have been tired of answering questionnaires. The difference between the distribution of the population and responses from French representatives is pronounced at eight percentage points. In practice, the survey contacted relatively

fewer French representatives, and those that were contacted responded at a lower rate than representatives from other countries, leading to a pronounced under-representation of French respondents. This problem of under-representation is seen not only in the case of French respondents: representatives from Italy, the Netherlands and the UK are also under-represented in the response to the survey. Representatives from Belgium, Germany, Hungary and Poland, on the other hand, are over-represented. Representatives from these countries were more likely to respond to the survey than representatives from the countries that were under-represented. For the purpose of analysing the data, a weight factor was applied to correct for the differences between the estimated population of representatives and the responses to the survey. The next section discusses the application of the weight factor.

## Weighting procedure

The weighting procedure was used to ensure that the results of the survey are 'representative' of the whole population. As explained above, the survey was intentionally imbalanced through disproportionate stratification. It was also unintentionally imbalanced due to disproportionate non-response. A weight factor corrects for both the intentional and unintentional imbalance by increasing the weight assigned to under-represented groups and reducing the weight assigned to over-represented groups in the calculation of the results. The use of the weighting procedure means that the results of analysis should be closer to the estimated population value (Dorofeev and Grant 2006: 45). Mirroring these two reasons for weighting, a weight factor can be calculated in two steps: a design weight and a non-response weight. The design weight corrects for the disproportionate stratification, while the non-response weight corrects for the disproportionate non-response. As the disproportionate stratification was intentional, the weighting procedure applied consisted of a single step, which compared the distribution of the responses with the estimated population distribution.

In calculating weight factors, a distinction is drawn between cell weighting and marginal weighting. Marginal weighting is a multi-stage process applied when the exact 'expected' distribution of some categories is unknown. Cell weighting is a more intuitive single stage process used when the distribution of the population is known. In this process,

Table A.9 Weight factor by ETUF

	Population %	Unweighted sample %	Weighted sample %
EFBWW	6.4	8.0	4.5
EFFAT	9.1	11.8	9.0
EPSU	1.3	3.0	1.0
ETF	3.2	5.2	3.2
industriAll	56.9	61.0	58.3
UNI Europa	23.1	11.0	23.9

Table A.10 Weight factor by country of company headquarters

	Population %	Unweighted sample %	Weighted sample %
AT	1.6	1.9	1.0
BE	3.6	6.6	3.7
CH	4.2	5.2	4.5
DE	22.1	19.2	22.3
DK	2.3	2.8	2.5
ES	1.2	1.9	1.1
FI	3.9	6.0	4.1
FR	11.6	12.6	12.2
IT	3.2	3.3	3.4
NL	5.7	5.8	6.0
SE	6.4	7.4	6.2
UK	9.1	5.2	9.2
US	15.1	14.6	15.5
Other EEA	4.9	3.0	3.1
Other non-EEA	5.1	4.4	5.2

the expected response of a cell (a combination of categories) is compared with the actual response. The weight is calculated by dividing the cell target by the actual number of respondents in the cell (Dorofeev and Grant 2006: 53).

The cell weights of the population of representatives were calculated for different cross-sections based on three variables: sector, country of origin of the headquarters of the company and type of institution. Tables A.9 and A.10 demonstrate the impact of including the weights by comparing the distribution of the estimated population of EWCs and SEWCs, the unweighted response of EWC and SEWC representatives to the survey and the weighted responses of representatives to the survey by reference to sector and the country in which the company is headquartered. The two tables show how the weight factors correct for observed over- and under-representation.

For the population of representatives, the cell weights for different cross-sections were calculated based on the three variables: sector, country of origin of the representative and type of institution. Tables A.11 and A.12 illustrate the effect of including the weight variable by comparing the distribution of the estimated population of representatives, the unweighted responses to the survey and the weighted responses to the survey by reference to country and type of institution. The two tables show that inclusion of the weights ensures that the survey results are more representative of the total estimated population on these variables.

Table A.11 Population, unweighted survey and weighted survey responses by nationality of respondents

	Estimated population %	Unweighted survey %	Weighted survey %
Austria	3.3	3.4	3.0
Belgium	5.4	10.0	5.6
Bulgaria	0.5	1.3	0.4
Croatia	0.1	0.8	0.1
Czechia	2.0	3.2	2.1
Denmark	2.6	2.7	2.6
Estonia	0.4	0.4	0.1
Finland	3.1	3.2	3.1
France	14.6	7.8	15.0
Germany	17.9	20.1	18.2
Greece	1.1	0.9	1.1
Hungary	1.1	2.6	1.0
Ireland	1.9	1.2	2.0
Italy	6.7	4.9	6.8
Latvia	0.3	0.2	0.0
Lithuania	0.2	0.5	0.2
Luxembourg	0.8	0.6	0.7
Netherlands	4.9	3.4	5.0
Norway	2.4	2.3	2.3
Poland	2.3	5.2	2.2
Portugal	2.1	0.9	2.1
Romania	0.9	2.4	0.7
Slovakia	0.8	1.1	0.8
Slovenia	0.3	0.7	0.2
Spain	6.2	7.1	6.4
Sweden	4.3	5.0	4.4
Switzerland	1.5	0.7	1.4
United Kingdom	12.2	7.5	12.6

Table A.12 Population, unweighted survey and weighted survey responses by ETUF

	Estimated population %	Unweighted survey %	Weighted survey %
EFBWW	5.1	8.0	4.5
EFFAT	9.1	12.0	9.0
EPSU	1.1	4.3	1.0
ETF	3.3	6.9	3.2
industriAll	57.6	54.9	58.3
UNI Europa	23.7	13.9	23.9