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Quantitative text analysis and the study of EU lobbying and interest groups.

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Abstract

Interest groups' policy position documents constitute an important data source for estimating their policy positions and lobbying success. We examine applications of quantitative text analysis to research these documents in the context of the European Commission's open consultations. We show a considerable degree of incongruity between this method's assumptions and the text characteristics of EU position documents. We examine how these incongruities affect the validity of position estimates and conduct an empirical analysis of documents submitted in one consultation on CO₂ car emissions. We compare estimates derived on both quantitative and qualitative content analysis and find relatively limited correspondence between the two. These observed differences matter substantively: they result in different findings concerning levels of interest groups' lobbying success.

Keywords

Content analysis, European Union lobbying, policy position estimates, preference attainment

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Interest groups' policy position documents constitute an important data source for estimating their demands and lobbying success. In the literature on US interest groups, these documents are used, for example, to research lobbying in the context of federal bureaucratic rule-making (Yackee Webb, 2006) and judicial politics (Caldeira and Wright, 1990). In the literature on EU lobbying, the use of position documents submitted as part of the formal decision-making process represents a relatively recent, but increasingly popular, line of research. These documents are employed to study lobbying success (Bunea, 2013) the structure and impact of lobbying coalitions on preference attainment (Klüver, 2011), and patterns of interest participation within EU decision making (Rasmussen and Carroll, 2014).

In both literatures, most researchers employed qualitative content analysis to extract interest groups' policy positions (see Yackee Webb, 2006: 109-111). However, quantitative content analysis was also applied to the study of EU lobbying and this resulted in a set of large-n, quantitative studies that represent a significant contribution to the advancement of the discipline (Klüver, 2011, 2012). *Wordfish*, in particular, was suggested as 'the most useful [quantitative] content analysis technique' {...} 'in order to measure interest groups' influence on a large empirical scale' (Klüver, 2009: 547). *Wordfish* is an unsupervised text scaling algorithm developed by Slapin and Proksch (2008) that has been successfully applied, for example, to the analysis of legislative speeches (Proksch and Slapin, 2012).

This method was recommended as a suitable tool for studying EU lobbying based on some of its noteworthy methodological advantages: its high reliability, time efficiency, compatibility with conducting large-n research and comparatively lower labour intensity of data collection. However, as is often the case with research methods in the social sciences, its application implies a set of methodological trade-offs, which require careful consideration on behalf of researchers. We identify and critically assess these trade-offs and examine their empirical implications by comparing *Wordfish* estimates of groups' positions (and derived measures of preference attainment) with estimates of their positions extracted using a hand-coding approach we developed. We focus our analysis on position documents submitted in EC open consultations and we use as a case study the consultation on the reduction of CO₂ emissions from passenger cars. We argue that the application of quantitative content analysis to the study of EU lobbying presents a series of analytical and methodological challenges that require careful

consideration when choosing the most appropriate research design to research EU lobbying based on interest groups' position documents.

We construct our argument in two stages. First, we outline the *fundamental methodological assumptions* that need to be considered when applying quantitative text analysis to any research design. We discuss these assumptions in the context of research on EU lobbying and of current applications of quantitative text analysis (i.e. *Wordfish*) to this field. We observe a considerable degree of incongruity between these assumptions and the characteristics of documents to which it was applied in this scholarship. Second, we ask *whether and how these incongruities affect the validity of the estimates derived based on quantitative text analysis*. Our analysis shows a relatively limited correspondence between position estimates derived based on qualitative hand-coding, and the *Wordfish* ones. Since it is difficult to empirically assess and precisely indicate how much each and every 'methodological breach' identified in part one affects the validity of *Wordfish* estimates, we focus our empirical analysis on two aspects only: (1) a key methodological aspect that has been a classic topic of academic research and debate in legislative studies and quantitative text analysis, namely the dimensionality of the policy space; and (2) the empirical implications of excluding documents from the *Wordfish* analysis because they were not written in English or because they had a different organizational form (i.e. they were not membership organizations). We find that the limited correspondence between position estimates based on the two approaches are partially explained by the fact that the policy space for the considered consultation was two-dimensional, while current applications of *Wordfish* to an analysis of EU lobbying made use of the complete text of position documents to capture just one dimension. We also find that the exclusion of texts has empirical implications for the measurement of preference attainment. The measures of preference attainment we computed, based on both methods, indicate some level of association, but the strength of the relationship is rather weak. We examine how much these differences matter by testing a substantive hypothesis that business had significantly higher levels of preference attainment relative to environmental NGOs. While *Wordfish* estimates indicate higher levels of preference attainment for business organizations, our hand-coding scheme does not find significantly different results between the two.

Our article speaks to the scholarship on EU lobbying, and to that on applications of quantitative content analysis in political science. With respect to the former, we address two

fundamental theoretical and methodological topics of academic interest and debate: designing research strategies allowing a reliable and valid measurement of preference attainment; and studying interest groups' participation in EU policymaking by investigating empirically their policy positions. Our article constitutes an independent validity test for a newly proposed analytical tool and suggests opportunities for alternative strategies of content analysis. We illustrate the opportunities and caveats entailed in the use of quantitative content analysis in one defined field of research and thus facilitate a comparative understanding of how successfully research methods travel across fields of research in political science. We conduct an analysis of different methodological assumptions of quantitative text analysis to which both 'general practitioners' and methodologists in political science can relate to and find useful in their research pursuits and propose an article similar in scope of analysis to that of Grimmer and Stewart (2013) and Lowe and Benoit (2013).

Theoretical considerations: analytical assumptions and methodological implications of quantitative content analysis

We build our argument on a recent and comprehensive review of applications of quantitative content analysis to the field of legislative studies (Slapin and Proksch, 2014: 126-144). This review points to four key issues of research design that need to be considered when applying quantitative content analysis¹:

- (1) Assumptions about the *dimensionality of the political/policy space*: the quantitative content analysis technique employed must be able to capture the dimensionality of the latent policy space appropriately;
- (2) Assumptions about the *informative nature of texts*: quantitative content analysis requires that the analysed texts provide information about the relevant policy dimensions(s);
- (3) Assumptions about the *data/text generating process* behind analysed documents: the texts should result from a similar data generating process, namely they should be produced in similar institutional/organizational environments, authored by similar types of actors, serving the same communication purposes, and written in the same terminology;
- (4) Assumptions about the *comparability of texts*: the analysed texts should be comparable with respect to their data generating process, written in the same language and for the same audience (i.e. voters, legislators, etc.).

While Slapin and Proksch (2014) discuss the assumptions that have to be met when conducting quantitative text analysis in general, we focus on how these assumptions hold when this technique was applied to researching EU lobbying with the help of one particular algorithm, namely *Wordfish*. Before discussing each set of assumptions, we briefly introduce this method to the reader. *Wordfish* is a statistical scaling method that uses word frequencies to place documents within a single dimension of a policy space (Slapin and Proksch, 2008). It does not use any anchoring (reference) documents. The method assumes that word frequencies follow a Poisson distribution, which has a single parameter (λ) representing both the mean and the variance. The functional form of the model is the following:

$$y_{ij} \sim \text{Poisson}(\lambda_{ij})$$

$$\lambda_{ij} = \exp(\alpha_i + \psi_j + \beta_j * \omega_i)$$

where y_{ij} is the frequency of word j in the document of the actor i , α a set of document fixed effects, ψ a set of word fixed effects, β the estimate of a word-specific weight that captures the importance of the word j in discriminating between actors' positions, and ω represents an estimate of the position of the actor i . By having fixed effects for actors and words, the method accounts for the possibility that some actors have longer documents and some words are used more often than others by all actors. The model is estimated using an expectation maximization algorithm.

We discuss each of these four points in relation to current applications of quantitative text analysis to the scholarship on EU lobbying. For simplicity's sake, each point is discussed in the above-mentioned order. We consider each to be equally important, and their ordering does not imply a hierarchy of their relevance for our analysis. All aspects are important from a substantive point of view and therefore of high interest for scholars of EU lobbying. We illustrate each point with examples taken from position documents. We test and empirically assess the effect of breaches in the assumptions made about the dimensionality of the EU policy space and about the comparability of texts based on their linguistic regime and on the organizational form of actors generating them. We take this task further and present a more extended and in-depth methodological discussion in section two.

Dimensionality of the EU policy space

A first challenge when applying quantitative content analysis to the study of EU lobbying is analysing a policy space that has more than one dimension. Current applications of quantitative text analysis to research EU lobbying used the complete text of a position document to estimate one policy dimension only (Klüver, 2009).² Yet, the realities of EU policymaking in general, and those of the EC consultations in particular, speak of a policy space that has more than one dimension. An attentive reading of both the Commission's consultation calls and of interest groups' submissions reveals that the drafting of EC legislative proposals revolves around several, substantially different (although of course interrelated to a certain extent), policy issues that can be clustered into different dimensions of one proposal. Within the EC consultations, an issue refers to those policy aspects on which the EC asks for stakeholders' input. In most policy contexts 'issues are difficult to identify' and 'may be aggregated in different ways' (Baumgartner and Leech, 1998: 39-41). However, within EU policymaking, issues are relatively easy and straightforward to identify, based on the usually very detailed official documentation accompanying policymaking events. Previous research identified between 14 and 24 issues per policy proposal: for example, König and Pöter (2001: 340) indicate that '[t]he proposal on Free Movement consists of 22 issues, Subcontracting of 14 issues, Pregnant Women of 18 issues and Working Time of 24 issues'. Similarly, we identified ten issues discussed in the consultation on CO₂ emissions. Given this high number of issues, it is fairly unlikely that they can be collapsed into one dimension. In our empirical analysis we find that the ten issues identified in the consultation on CO₂ emissions correspond to two policy dimensions.

Information provision in analysed texts

A second challenge follows from the assumption that the analysed texts are directly related to, and provide information about, the relevant policy dimension(s). If EU position documents provide information about more than one dimension, then treating these documents as texts referring to one dimension when applying quantitative content analysis is problematic and might affect the construct validity of position estimates (Slapin and Proksch, 2014: 136). A case in point is the following example: our hand-coding of the consultation on CO₂ emissions revealed that seven organizations (Associacio per la Divulgacio de les Tecnologies Sostenibles -

ADTS, The Spanish Association for the promotion of Electric and non-contaminated vehicles - AVELE, the European Association for battery, hybrid and fuel cell electric vehicles - AVERE, the European Tyre and Rubber Manufacturers' Association - ETRMA, the International Energy Agency - IEA, Micheline, Shecco) did not express any specific positions on the considered issues, but instead made general remarks about how environmental standards and emissions levels can be improved. However, the quantitative content analysis indicates that three of these organizations had the most pro-environmental stances (ADTS, AVELE, AVERE), while one of them (ETRMA) had a very close position to that identified for the EC post-consultation, indicative of lobbying success (Klüver, 2009: 543).

Another fundamental challenge in this respect stems from the fact that quantitative text analysis estimates positions based on the frequency of words in texts. This is a key aspect when analysing party manifestos and political speeches, by their very nature ideological texts in which the frequency of specific words has a substantive meaning. However, this aspect is problematic when analysing EU policy position documents because these texts employ a technical language that does not use the emphasis of certain words (by repetition) as a way of conveying a political or ideological message. Both EU scholars and practitioners agree on the technical nature of European policymaking, documentation and legislative acts, in which a significant amount of relevant information is transmitted with the help of few technical words. In some cases, positions are articulated entirely with the help of numbers that convey the substantive difference between positions expressed in documents. Quantitative content analysis does not capture these differences because it estimates positions based on word counts and not based on the observation of differences in the numerical values stated in the documents. A difference in numerical values is sometimes the key aspect allowing us to differentiate between groups' positions, as illustrated below. Moreover, the removal of such numerical information (an approach usually used when applying quantitative content analysis) might result in over-simplified (and potentially imprecise) estimations of positions, based on partial/incomplete information.

In our empirical analysis, one relevant example is the issue of how to reach the target of 120g/km for the reduction of CO₂ emissions. Different positions were expressed, among which we note the following: lowering the target to only 233g/km; a 135g/km reduction resulting from motor technological improvements, plus a further 15g/km reduction coming from other technological improvements and fuel efficiency measures; a reduction of 130g/km resulting from

motor technological improvements, plus a further 10g/km reduction from other technological improvements and fuel efficiency measures. The removal of numbers from the text prevents, for example, an adequate estimation of ACEA's position on this issue, which was expressed in the following way: '*ACEA supports reaching the Community target of 120g/km by a reduction to 135g/km via car/engine technology and a reduction of 15g/km via other measures.*' This illustrates a relevant characteristic of EU documentation that is not adequately matched by current applications of quantitative text analysis techniques to the study of EU lobbying.

The text generating process

We contend that the requirement of quantitative content analysis that all analysed documents underwent a similar text generating process also raises challenges when considering its application to EU position documents. These texts are authored by organizations that differ considerably in terms of interests represented, organizational structure and communication purposes. Organizations participating in EC consultations are diverse: business, NGOs, local authorities, etc. They lobby as Euro-federations, national associations or individual organizations. Previous research indicates that EU interest groups employ position documents in different ways and for different purposes: some submit them to express their positions on issues the EC consults them on; others use these documents just to signal to decision makers their stakeholder status and to show their constituency that they are performing their interest representation mandate (Bunea 2014: 1227). They have different organizational environments and resources. *BusinessEurope* has, most probably, a different approach to generating a position document to the *Royal Society for the Protection of Birds* (RSPB). Some organizations use highly technical language, while others do not. We observed this to be the case in the consultation on CO₂ emissions: organizations representing the car industry employed a more technical language and were more likely to use tables and figures to formulate their documents than environmental NGOs.

Current applications of *Wordfish* to EU lobbying research emphasize the importance of interest groups' organizational form and distinguish explicitly between membership and non-membership organizations (Klüver, 2009: 540). The organizational form represents thus the criterion on which current *Wordfish* analyses excluded eight position documents submitted by eight organizations that did not comply with this (rather inadequate in our view) definition of an interest group in the context of EU lobbying. This distinction is however particularly relevant for

and supports our argument regarding the diversity of the generating process of EU position documents: it directly implies that there are fundamental substantive differences between EU lobbying organizational actors authoring these texts. These differences translate into text generating processes that are not similar: for example, EU level associations face other constraints than individual firms when articulating their positions due to their more complex intra-organizational environments in which they have to reconcile the ‘logic of membership’ to that of ‘influence’ (Beyers, 2008). We also note at this point that several of the individual business actors that were excluded from the *Wordfish* analysis because they did not comply with the aforementioned definition (e.g. General Motors, Micheline, Volkswagen United Kingdom), submitted documents that included to a relevant extent technical information conveyed with the help of tables and figures.

Therefore, it is reasonable to argue that the text generating processes vary across organizations according to their advocate type and organizational form. This also means that these documents are not comparable to each other, an aspect which is at odds with the fourth requirement of quantitative content analysis.

We note that it is equally problematic to apply the same estimation technique to interest groups’ position documents and to ‘press releases accompanying the {EC} communication and the adoption of the proposal’ as currently done in the literature (Klüver, 2009: 539). These are two different and non-comparable categories of texts generated by two types of actors (interest groups and decision makers), within very dissimilar intra-organizational environments and subject to differing ‘institutional constraints’ (Proksch and Slapin, 2012).

Comparability of analysed texts

A further reason why EU position documents are not comparable texts amenable to quantitative content analysis is their linguistic regime. Quantitative content analysis requires a unique language across texts. For example, applying *Wordfish* explicitly requires that all documents are written in the same language. In the EU, many organizations choose to make submissions in their native language and therefore the application of quantitative content analysis usually means excluding all submissions made in languages other than English. This can often lead to the exclusion of potentially relevant observations about individual organizations. For example, this implies that German organizations making submissions in German cannot be

included in quantitative content analyses together with English submissions, despite the fact that these groups form one of the key players in the design of European policies. This suggests a biased approximation of the number of relevant data points included in the subsequent empirical analyses investigating determinants of lobbying behaviour and lobbying success within a certain community of stakeholders, and a limitation of the certainty with which causal inferences are made. This also raises concerns about the validity of position estimates extracted based on quantitative text analysis, given that these estimates are calculated upon (and therefore sensitive to) the total number of submissions analysed.

The number of analysed actors is particularly relevant when considering one of the main aspects recommending quantitative content analysis: its ability to facilitate large-n analyses. Yet, in practice, the method seems to systematically reduce the actual number of observations, because of its linguistic and text requirements. For example, applying *Wordfish* to a study of the consultation on CO₂ emissions implied loss of information from about 45% of the interest groups lobbying on this consultation, either because of *Wordfish*'s linguistic and text requirements or because they were authored by organizations that participated in the consultation as an individual firm, international organization or local authority (i.e. non-membership organization). We also note that the documents generated by such actors consisted on average of more technical content. We identified 45 organizations submitting individual or collective position documents, whereas the *Wordfish* based study examined only 25 following the exclusion of documents based on considerations related to language, organizational form and document text format (see Klüver, 2009: 540). In total, the *Wordfish* analysis excluded 10 organizations because their individual or joint submissions were not in English and eight organizations because of their organizational form. Two submissions made by two interest groups were excluded because of their text format: one submission (authored by the European Aluminum Association) was excluded because it was presented as a power point presentation in a .pdf file, while another submission was at that point in time (2009) protected by a password.³ These particular two last exclusions provide in our view additional evidence about the diversity of texts submitted as position documents in the EU consultations. This heterogeneity is at odds with the assumption of comparable texts intrinsic to unsupervised text scaling algorithms.

Last but not least, the substantive differences among EU policy domains in terms of characteristics of policy issues, dimensionality of the policy space, technicality levels, specific

terminology and type of organizations participating in policymaking raise further challenges relative to the assumption that interest groups' position documents are comparable texts across policy areas, suitable for quantitative content analysis.

Empirical considerations: evaluating measurement validity of quantitative text analysis

The discussion above warrants further empirical investigation of quantitative content analysis applied to the study of EU lobbying in terms of its measurement validity. To address this, we compare the *Wordfish* estimates for positions and preference attainment with those extracted based on our hand-coding (detailed below). We examine whether the two methods result in significantly different measures. In all our analyses we employ the *Wordfish* estimates based on the replication materials accompanying Klüver's 2009 article. We first present our hand-coding. We then compare estimates on positions, noticing some similarities but also notable differences. Following this, we explore what we contend to be the main sources of these observed differences: the assumption of a unidimensional policy space, and the omission of some organizations either because of linguistic requirements or because of their organizational form. In addition to being highly relevant in theoretical and substantive terms, the 'methodological breaches' related to these aspects are also easier to examine with the help of statistical analysis based on the available data. Lastly, we examine whether, and to what extent, these differences in positions translate into different estimates of preference attainment.

An alternative view: qualitative content analysis

We ground our empirical assessment of quantitative content analysis applied to the study of EU lobbying in a research design that relies on the human coding of groups' position documents submitted to the Commission when drafting a regulation on the reduction of CO₂ emissions from passenger cars (COD/2007/297). We selected this case because it was also used in the scholarship to validate *Wordfish* as a suitable method of quantitative content analysis to research EU lobbying (Klüver, 2009).

We used the position documents to identify *policy issues* and interest groups' *positions*. To identify the relevant information, our unit of analysis were text paragraphs in the document addressing a specific issue and describing the group's position. Employing text paragraphs as a unit of analysis was informed by two reasons. This approach follows the imperative to select a

relevant unit of analysis based on the context of research (Roberts, 2000: 268). Next, to pay attention to the context of research focusing on EU policymaking and involving EU documents means taking into account their high technicality. Using text paragraphs as a unit of analysis instead of words, natural sentences or clauses, is therefore considered a more suitable approach. The informative value of text paragraphs when analysing EU official documentation is illustrated, for example, in the scholarship on EU compliance studies. These studies include text recitals from the EU laws as a measure of the information intensity, or complexity, of the European legislation (Thomson and Torevlied, 2010: 151). Most commonly, in the analysed documents, one or several paragraphs were used by organizations to express their position on one issue. These paragraphs were usually part of titled sub-sections that announced that there is a relationship between the formulated text paragraphs and the issue to which the title of the section refers to. A group's position on one issue was identified by taking into account all relevant paragraphs providing information with respect to that issue. In most cases, the position was succinctly stated in one or two key sentences contained in the considered paragraphs, and these informed our qualitative judgment and coding. We identified the position expressed by the interest group and assigned it a value. Organizations articulating the same position received an identical score on the position variable in our dataset.⁴

We define a *policy issue* as a discrete policy problem on which the EC explicitly asks for policy input. We identified ten issues for the consultation on CO₂ emissions:

- (1) Measures for reaching the target of 120g/km for the reduction of CO₂ emissions;
- (2) Time frame for reaching the target;
- (3) Including commercial vans in the regulation;
- (4) Parameter(s) to consider when deciding which vehicles are covered by the regulation;
- (5) Should targets be mandatory;
- (6) Should there be penalties for non-compliance;
- (7) Should there be fiscal incentives to assure compliance;
- (8) Harmonizing the cars' fuel efficiency labelling system;
- (9) Establishing a EU-wide car marketing code of conduct;
- (10) Flexibilities allowed for car manufacturers to reach the target.⁵

Figure 1 presents the aggregate distribution of positions across issues and organizations.

[Figure 1]

A *policy position* refers to a formally expressed support for a certain policy outcome. It denotes an *observed position* or *expressed/revealed* preference of an actor (Benoit and Laver, 2006: 11-34). For each issue, we identified all substantively different positions articulated by organizations in their submissions. We constructed an ordinal scale to estimate positions. Each position received a value indicating that it is substantially different from the others while expressing the rank of each position relative to each other in terms of the underlying policy dimension characterizing each issue. Our measure indicates that the positions are substantively different, and in which way they differ on the policy continuum described by each issue, but they do not indicate by how much. The policy distance between them cannot, therefore, be assessed. Figure 2 exemplifies our concept of policy position.

[Figure 2]

Based on the text of the EC proposal drafted post-consultation, we identified the *policy outcomes*. In a similar manner to estimating positions, outcomes were coded based on text paragraphs from the Commission's proposal. This allows us to estimate interest groups' preference attainment during the EU policy formulation stage: we looked at the correspondence between a group's position and the outcome (Dür, 2008). We first coded a dichotomous measure of preference attainment, indicating for each organization whether or not it achieved its position on each issue. In our analyses we aggregated this into a continuous measure of preference attainment, indicating for each organization the share of positions achieved out of the total number of positions expressed across issues.⁶

Our content analysis approach presents several advantages when researching EU lobbying: it allows capturing salient characteristics of EU position documents, such as their technical content and diverse linguistic regime; it permits applying a similar coding scheme and analysis to two different types of documents that resulted from two different data generating procedures (interest groups' documents and EC proposals); it facilitates differentiating between groups' positions based on their substantive meaning; it results in disaggregate measures of both issues and positions which can then serve different levels of analysis, depending on research goals and designs; it increases the accuracy with which organizations are identified as actors in policy events by allowing the analysis of submissions made in different languages; it enables the coder to identify and discern between informative and non-informative documents with respect to the dimension of interest.

Thus, our approach performs well on those points where quantitative text analysis fails to meet the specificities of researching EU lobbying. However, as any qualitative content analysis, our strategy suffers from a set of limitations: it is time consuming and labour intensive, and its systematic application to large-n research designs requires patience, time, a serious deployment of research funds and a body of well-trained coders that possess a solid and thorough knowledge of the analysed policy events.

Validity of position estimates

As a first step to check the validity of position estimates, we plotted the *Wordfish* scores in relation to the hand-coded ones for each of the ten issues we identified, and present this in the online appendix accompanying this article. The plot revealed some commonalities (i.e. a dichotomous distribution of positions on some issues indicated by both methods), as well as some significant differences. For example, across several issues, organizations that we identified to have expressed the same position are placed by *Wordfish* on different points of the policy continuum, sometimes even at the opposite ends. On three issues, *Wordfish* estimates place car producers organisations on opposite sides of the spectrum: the European Automobile Manufacturers' Association (ACEA), the Japanese Automobile Manufacturers' Association (JAMA) and the British Society of Motor Manufacturers and Traders (SMMT) are placed on the negative side of the spectrum (anti-environment) while RAI Association (the Dutch Automotive Association) is placed by *Wordfish* on the opposite side (pro-environment). Similarly, *Wordfish* indicates that the *Association of German Car Manufacturers* (VDA) took the most anti-environmental policy stance. This diverges significantly from what we find: while VDA did indeed ask for lower environmental protection standards, it was not the *avant-garde* of anti-environmentalists. VDA expressed only three positions, on a total of ten issues that could be labelled 'anti-environmental', while *General Motors* (GM) and ACEA articulated respectively six and five positions on ten issues asking for lower environmental standards. These two organizations adopted thus a stronger anti-environment stance, indicated by a higher number of positions demanding lower environmental control.

As a second step to check the validity of position estimates, we computed a measure of association between the *Wordfish* scores and our hand-coded positions for each of the ten issues, reported in Table 2. On some issues, we notice a relatively high level of association between the two methods, which is explained by the fact that some issues generated indeed a dichotomous

positioning of organizations on the policy spectrum, as attested by our qualitative coding (e.g. issues two and three). However, on other issues we notice lower association levels, which may be explained by the fact that, as detailed below, the issues were belonging to a second policy dimension that *Wordfish* scores do not capture appropriately (e.g. issues seven, eight and nine). This relates directly to the first methodological challenge we identified in section one, namely the necessity to capture appropriately the dimensionality of the policy space.

[Table 2]

To uncover underlying patterns of groups' positioning across issues and corresponding policy dimensions, we analysed hand-coded positions of interest groups using Specific Multiple Correspondence Analysis (SMCA). The Multiple Correspondence Analysis is a well-established method for analysing nominal data, such as the coding of groups' positions used in this research. The specific MCA is a variant of MCA restricting the analysis to selected categories only (Le Roux and Rouanet, 2010: 61; Greenacre (2007: 161) refers to this method as 'subset MCA').

Before presenting our results, we note that, in comparison to other consultations organized by the European Commission, the consultation on the CO₂ emissions from passenger cars is more likely to be characterized by a unidimensional policy space. The number of organizations that participated in this consultation was relatively low (less than 50) compared to many other consultations that involve hundreds of stakeholders. Moreover, the range of issues covered by this legislative act was also relatively narrow by comparison to other consultations: for example, the consultation on the waste electric and electronic equipment (2008) revolved around twenty-five issues. Also, the organizations that participated in this consultation represented mostly business interests in one particular economic sector (car manufacturing) and environmental NGOs. The diversity of interests and expressed positions was thus potentially lower than that of other consultations. Thus, if, despite these contextual features, the policy space in this consultation has more than one dimension, then it is likely to be multi-dimensional in many other consultations as well.

We restricted the analysis to non-missing positions only; in other words, the cases in which organizations did not express a position on a specific issue do not affect the results of the analysis. Twenty-four different positions on ten issues were adopted by the actors participating in the consultation.⁷ We excluded five positions expressed by a single actor only; such categories with very low frequencies can contribute substantially to the determination of the axes derived

from the analysis, which may impede the interpretation of these axes (Le Roux and Rouanet, 2010: 61-62). The analysis included 19 positions on 10 issues. We implemented our analysis with the help of the *soc.ca* package in R.

Figures 3 and 4 illustrate the results. The modified rates (measures of the total variance related to dimensions identified by MCA) of the first and second dimensions are 79.8% and 11.6%. The modified rate of the third dimension by contrast is only 5.9%. The first two dimensions therefore describe the data reasonably well. Thus we believe the two-dimensional solution suits the data best.⁸ Figure 3 places the categories on the two dimensions. The plot on the left shows the placement of the 19 categories on Dimension 1 (x axis) and the extent to which these categories contribute to Dimension 1 (y axis). The plot on the right presents the same information for Dimension 2.

[Figure 3]

The first plot suggests that *the first dimension* is related to the stringency of the regulatory regime aimed at reducing emissions with the help of ‘fuel efficiency measures’. On the left we identify the category that contributes the most to this dimension: it refers to an earlier and more ambitious deadline for reaching the reduction target (‘time.2012’), together with other categories asking for a stricter regulatory regime (e.g. ‘penalties.yes’). On the right are the positions that refer to a more relaxed regulatory regime. These positions proposed less ambitious technical measures aimed at motor improvements (‘target.2’), asked for an extended deadline to reach the target (‘time.2015’), advocated increased flexibilities for car producers (‘flex.increased’) and supported weight as a parameter for deciding which vehicles were covered by the regulation (‘param.weight’). This dimension corresponds to what the EC identified as *supply oriented measures* (European Commission, 2007:8).

The second plot illustrates the second dimension. This relates to setting up an additional regulatory framework aimed to complement the aforementioned one, and consisting of a set of measures (fiscal and marketing oriented) to motivate consumers to buy fuel-efficient cars. On the left of its spectrum we notice such positions as the agreement with the establishment of an EU-wide car marketing code of conduct (‘marketing.yes’), no flexibilities allowed to car manufacturers (‘flexibility.none’) and more ambitious fuel efficiency measures (‘target.4’). The positions on the right side are characterized by the opposition to, or less support for, this

additional regulatory framework: disagreement with the marketing code ('marketing.no'), allowing moderate flexibility for reaching the target ('flexibility.modest') and the position that the emission target should be reached through basic fuel efficiency and motor improvements measures ('target 3').⁹

Figure 4 illustrates the placement of organizations on these two dimensions and supports the notion of a two-dimensional space. On the first (x-axis), related to fuel efficiency regulatory measures, the environmental NGOs and the car industry are placed at opposite ends of the policy spectrum. This suggests their divergent views on how ambitious this regulatory framework should be. The estimates of positions on this dimension are quite closely related to the *Wordfish* estimates ($r = -0.59$). However, on the second (y-axis) the positioning of groups based on their advocate type does not follow a clear-cut pattern and one cannot distinguish between lobbying sides based on their advocate type. On some issues linked to this dimension, environmental NGOs and industry organizations expressed identical positions. The coefficient of the correlation between this dimension and *Wordfish* estimates is only 0.12.

[Figure 4]

Figure 4 also differentiates between 21 organizations that were included in the *Wordfish* analysis and 17 that were not included. This figure relates to the fourth point in our theoretical section where we discuss the issue of comparability of texts and the importance of having texts written in the same language, following the same text generating process by similar actors. The graph demonstrates that the exclusion of organizations required by *Wordfish* is not random with regard to their positions and interest type. While the mean positions of the 'included' and 'excluded' groups are roughly similar on both dimensions, 10 out of 17 'excluded' groups were environment NGOs, leaving only 6 NGOs among the 'included' groups. Out of 10 'excluded' organizations that submitted documents in French or German, nine were NGOs. Importantly, the policy positions of these NGOs excluded for linguistic reasons were substantially less extreme (and closer to the positions of the Commission) on the first dimension than the positions of the NGOs that submitted their documents in English (the mean values were -0.36 and -0.59, respectively), as clearly indicated in Figure 4. As explained below, these differences lead to

substantively different results with regard to the hypothesis that environmental NGOs had lower preference attainment scores.

This illustrates why the estimation of a unidimensional policy space might be inadequate when researching EU lobbying and policymaking. While, similar to our analysis, *Wordfish* captures positions expressed in relation to the regulatory regime consisting of fuel efficiency measures (dimension one), it does not capture the second dimension referring to fiscal and marketing measures. The exclusion of some groups because of linguistic requirements or level of text technicality is not random, and can potentially affect the results of the studies aimed at understanding EU lobbying.

Validity of preference attainment estimates

Do these differences in the conceptualization of the policy space and the measurement of positions between quantitative and qualitative content analysis translate into different findings with respect to levels of preference attainment? We answer this by constructing a measure of preference attainment based on each of the two methods and we assess their correspondence (agreement) graphically (Figure 5) and with the help of regression analysis (Table 2).

Preference attainment is most commonly conceptualized in the literature in the following manner: ‘[a]t its most basic, [...] the distance between an outcome and the ideal point of an actor reflects the influence of this actor’ (Dür, 2008: 566). The *Wordfish*-based measure, which approximates this understanding of the concept closely, and also scores high on simplicity, is the absolute difference between the EC position and that of the interest group. Higher scores on this measure indicate that the position of the group was further away from that of the Commission (i.e. the estimated position score of the group was much lower or much higher than the estimated position score of the Commission), and therefore indicate lower preference attainment.¹⁰

Based on our hand-coding we construct a measure of preference attainment that captures for each organisation the share of positions achieved out of the total number of positions expressed across issues: *Share of preferences achieved*. This is a straightforward measure estimated at organization level, which corresponds directly to the basic logic of the preference attainment approach – getting one’s position translated into outcomes.

We first examine the relationship between the *Wordfish* and our measure of preference attainment. We expect a negative correlation between the two, since higher scores on the

Wordfish estimate indicate lower preference attainment. The regression line in Figure 5 shows some level of association between our estimates and the *Wordfish* measure but the strength of the relationship is modest ($r = -0.3$). We observe thus some level of association between the two measures. This is most probably attributable to the fact that the two approaches share the policy dimension referring to fuel efficiency issues (dimension one above). Yet, the association is modest in strength because our hand-coding captures information about actors' positions on what we identified as a second relevant policy dimension. This test challenges thus the validity of the *Wordfish* estimation of preference attainment.

[Figure 5]

To explore this issue in more depth, we take the analysis one step further and use both coding schemes on positions to examine a substantively important hypothesis suggesting that business organizations more successfully achieve their policy preferences. The dependent variables are the two measures of preference attainment we computed based on *Wordfish* and on our hand-coding. We use OLS models to explore interest groups' levels of preference attainment. The main independent variable is a four-category variable, which differentiates between car producers, non-car industry business, environmental NGOs and other groups (local government, etc.). We expect that, all else being equal, organizations representing the car industry will have lower scores on the *Wordfish* measure (indicating a higher preference attainment) and higher scores on the measure derived based on hand-coding, relative to other organizations.

We control for the amount of opposition the group faced from other organizations when trying to achieve its preferences. In Model 1, this opposition variable is constructed as the average distance between the estimated position of the interest group and the positions of all groups for which estimates were available. In Models 2 and 3 (that employ a preference attainment measure based on our hand-coding), the opposition control variable is computed in two steps. First, for each issue in relation to which the organization expressed a position, the share of organizations that expressed substantially different positions is computed. Second, the mean of these shares is computed for each organization.

The results of our statistical analysis presented in Table 2 demonstrate similar effects of some variables, but important differences with regard to others. All three models provide some evidence that organizations representing the non-car business industry are less likely to achieve

their positions compared to organizations representing car producers. Moreover, the coefficients of the opposition variables, although not statistically significant, have signs that are in line with the theoretical expectations (i.e. positive in Model 1 and negative in Models 2 and 3). Models differ mainly with respect to the difference between car manufacturers and environmental NGOs. Model 1 shows substantially lower levels of preference attainment for environmental groups (by 0.65, or 86% of the standard deviation of the preference attainment variable), even if the effect is not statistically significant. However, the effect of environmental NGOs in Model 2 is very low and the standard error is more than 5 times higher. This indicates that any important differences between the two advocate types are very unlikely.

[Table 2]

While differences in preference attainment scores may be related to the two-dimensional space, which is not captured in the quantitative content analysis sufficiently well, it may also be a result of omitting some groups from the analysis. Model 3 explores this possibility. The dependent variable is our measure of preference attainment. The main independent variable is a dichotomous variable indicating whether the *Wordfish* estimate of the position expressed by the interest group is available. This dichotomous variable is interacted with the advocate type, in order to investigate whether preference attainment by different advocate types was over- or under-estimated.

The results provide relatively strong evidence that environmental NGOs included in the *Wordfish* sample indeed had a lower score of preference attainment than those excluded because of language (documents in French or German). The interaction effect between the category indicating ‘environmental NGO’ and the variable indicating the inclusion of the organization in the *Wordfish* analysis is negative, close to the 0.1 level of significance (t-test statistic is -1.55). Given the small sample size, this suggests quite strong evidence that French and German NGOs were more successful than their counterparts in other countries in translating their policy preferences into the policy proposal. The *Wordfish* analysis misses this important point by excluding these groups, which explains at least partially why Model 2 finds no difference between the car industry and environmental NGOs in terms of preference attainment.

We also attempted to investigate the extent to which different reasons for excluding groups from the *Wordfish* analysis (non-English documents vs. different organizational form) account for the lack of support to the hypothesis that environmental NGOs were less successful

in attaining their preferences. However, the coefficients of the interaction effects between the dichotomous variables indicating groups excluded for each of these two reasons and the categorical variable indicating the interest type cannot be estimated due to the small sample size. Nevertheless, the evidence that environmental NGOs submitting documents in French or German were closer to the positions of the Commission (see Figure 4 and sub-section 2.2), suggests that omissions due to language explain to a larger extent why we find no support for the hypothesis that these organizations had lower preference attainment scores.

CONCLUSIONS

We addressed a simple yet fundamental methodological question for the scholarship on applications of content analysis to the study of politics and political science: which method ‘best affords answers to what research question?’ (Roberts, 2000: 260). We answered this in the context of EU lobbying research and of current applications of unsupervised text scaling algorithms to the study of interest groups’ submissions to EC open consultations. Our analysis focused on the *Wordfish* technique. We grounded our arguments and empirical evaluation of *Wordfish* in a qualitative content analysis relying on human coding applied to one environmental consultation, and concluded that *Wordfish* does not provide a suitable solution to text analyse EU policy position documents.

We argued that the use of quantitative content analysis in general, and that of *Wordfish* in particular, to research EU lobbying raises several challenges, due to a mismatch between this method’s strict analytical assumptions and the specific text characteristics of EU position documents. We outlined these key methodological assumptions and explained these text characteristics: they are technical (and therefore non-ideological) texts, which provide (different degrees of) information about several issues and policy dimensions, in which numbers and figures are frequently used to convey key information about expressed positions, and they are written in several languages and are generated by diverse organizational actors. We illustrated how these features imply several methodological trade-offs, which affect the precision of position estimates and implicitly the measures of preference attainment. Our empirical investigation supports this argument and shows that position estimates based on quantitative and qualitative text analyses differ from each other in substantive ways, although we also notice

some similarities. We find that the levels of association between the measures of preference attainment derived based on the two methods are modest, leading (among other reasons) to divergent evidence with regards to the substantive hypothesis that car producers displayed significantly higher levels of preference attainment in the consultation analysed as a case study.

Our analysis suggests that a thorough reading of analysed texts and an in-depth qualitative judgment about text characteristics is an absolute must for choosing the right method of content analysis in general, and the appropriate automated content analysis method in particular (Grimmer and Stewart, 2013: 270). This would allow applied researchers to clearly identify the number of policy issues and the dimensionality of the policy space. This in turn should inform their choice between qualitative and quantitative approaches to text analysis and, if the case, the choice for the appropriate unsupervised text scaling algorithm suitable for the analysis of a unidimensional or a multidimensional space. Unsupervised text scaling algorithms should be applied to analyse consultation documents under the constraints of the assumption of a unidimensional space, only provided that the researcher identifies the relevant policy issues and dimensions characterizing a consultation and makes sure that for each dimension the analysis considers only those text sections/paragraphs that are relevant and of informative value in relation to that specific dimension. This is in line with what the creators of *Wordfish* strongly recommend: “[...] a researcher must carefully read the manifesto to be able to divide it into issue areas, or policy dimensions.” (Slapin and Proksch, 2008: 711-712). Alternatively, consultations could be studied using unsupervised algorithms that allow for the analysis of a multidimensional policy space, provided that the conditions assuring text comparability are met.

The choice of the method should be guided by the diversity of languages employed across texts. If the documents are written in several languages, this should discourage the application of automated text analysis since this diverse linguistic regime can result in the systematic exclusion of texts and of potentially relevant observations from the analysed sample. Similarly, the method should be chosen based on a qualitative judgment about their level of technicality, looking for example at how much texts rely on numbers and figures to convey their message. Texts of a technical nature are not amenable to quantitative analysis since word frequencies do not have the same meaning as in ideological texts, and the presence of numerical values and of figures require either the deletion of relevant information from texts or the exclusion of these texts from the automated analysis. Equally, it is less suitable to apply

unsupervised text scaling algorithms to examine texts describing lobbying events in which organizations are highly heterogeneous in terms of advocate type and organizational form. This organisational diversity implies that texts are not generated by similar actors, which in turn implies that they are not comparable texts amenable to analysis using unsupervised text scaling algorithms.

A final call on the most adequate application of quantitative content analysis to researching EU lobbying requires further research covering a larger sample of consultations, organizations and documents, and employing several other automated techniques. Research should investigate what are the most relevant sources of potential non-random measurement error affecting the validity of estimates obtained from the quantitative content analysis of position documents. Of particular interest is the explanatory power of the characteristics of these documents across policy areas and of the organizational features of actors authoring them. We discussed the theoretical relevance of these aspects but did not evaluate their impact empirically. This would provide an empirical indication of how important the text generating process is in the application of automated analysis to documents that are not comparable in some respects. These are all essential issues to be addressed by future research on how to improve the application of automated text analysis to the fields of research that might not constitute their primary public, such as the scholarship on EU lobbying.

Tables and figures

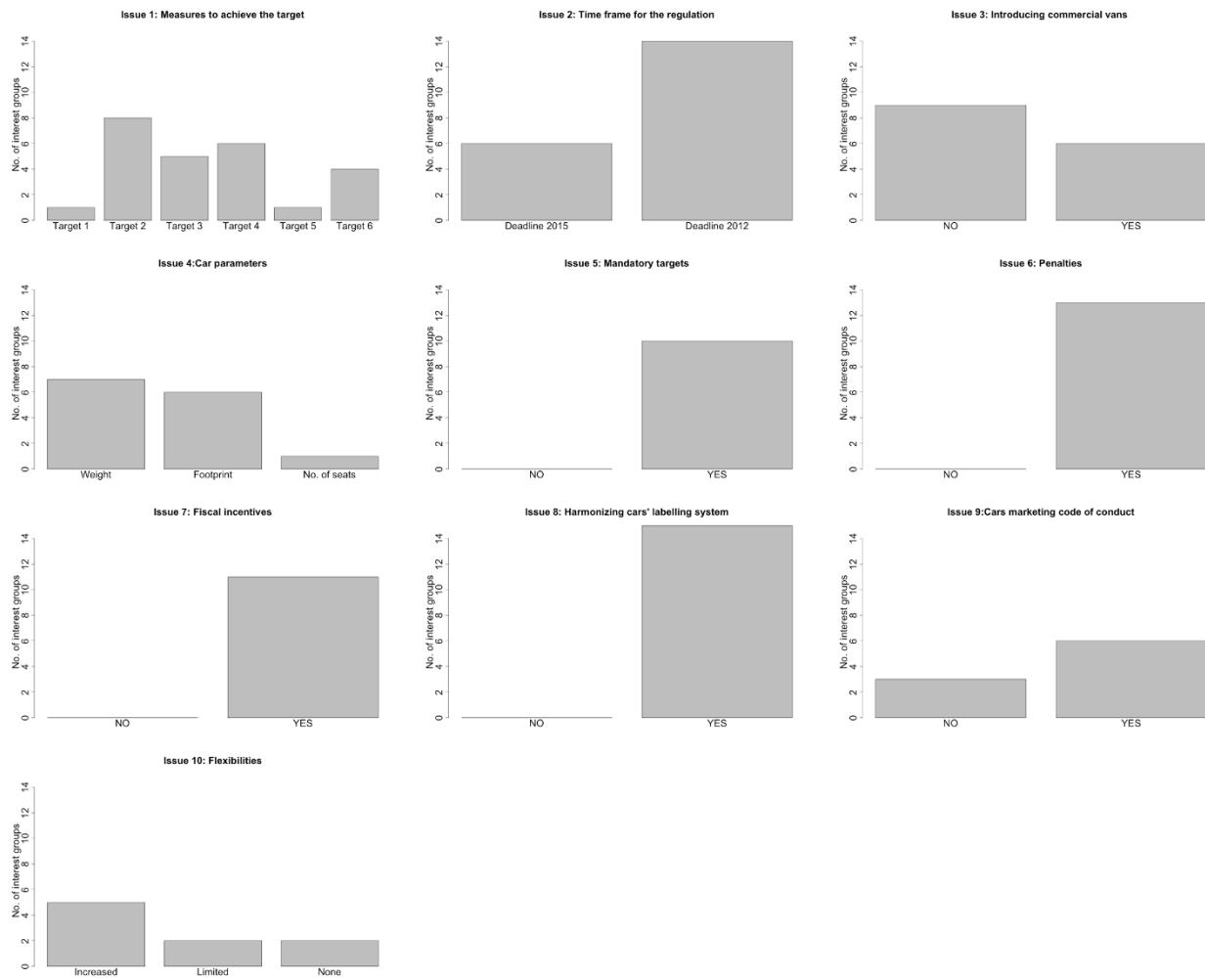


Figure 1. Issue, positions and the number of organizations adopting a certain position in the consultation on the reduction of CO₂ emissions from passenger cars (2007).

Note: See online appendix for a detailed description of positions expressed on issue 1.

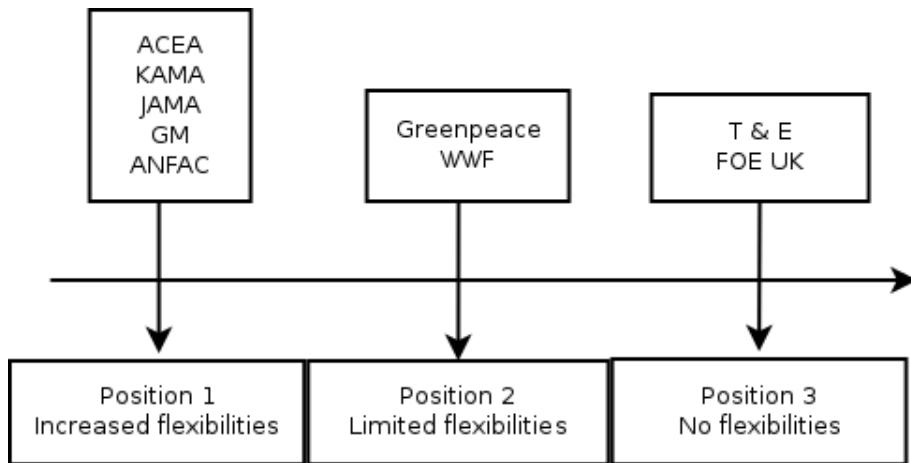


Figure 2. Policy positions on the issue of what flexibilities should be allowed for car manufacturers to reach the required reduction target of CO₂ emissions.

Note: See online appendix for a full specification of acronyms.

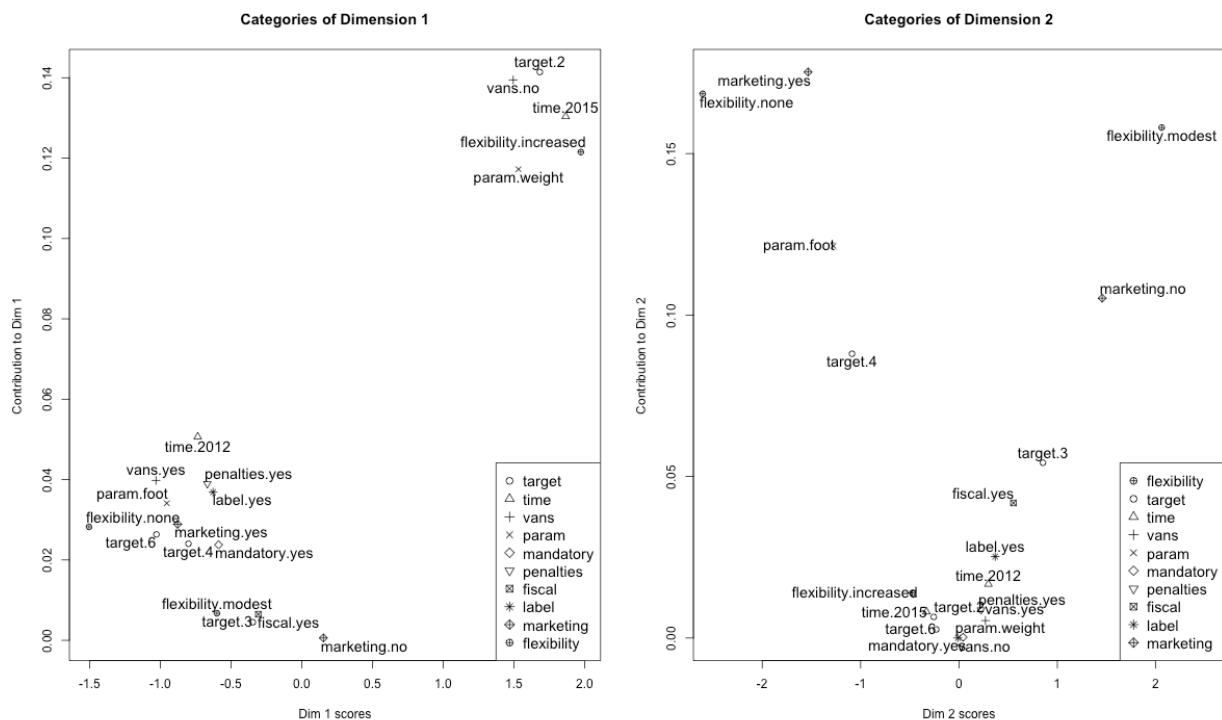


Figure 3. Specific Multiple Correspondence Analysis of policy issues.

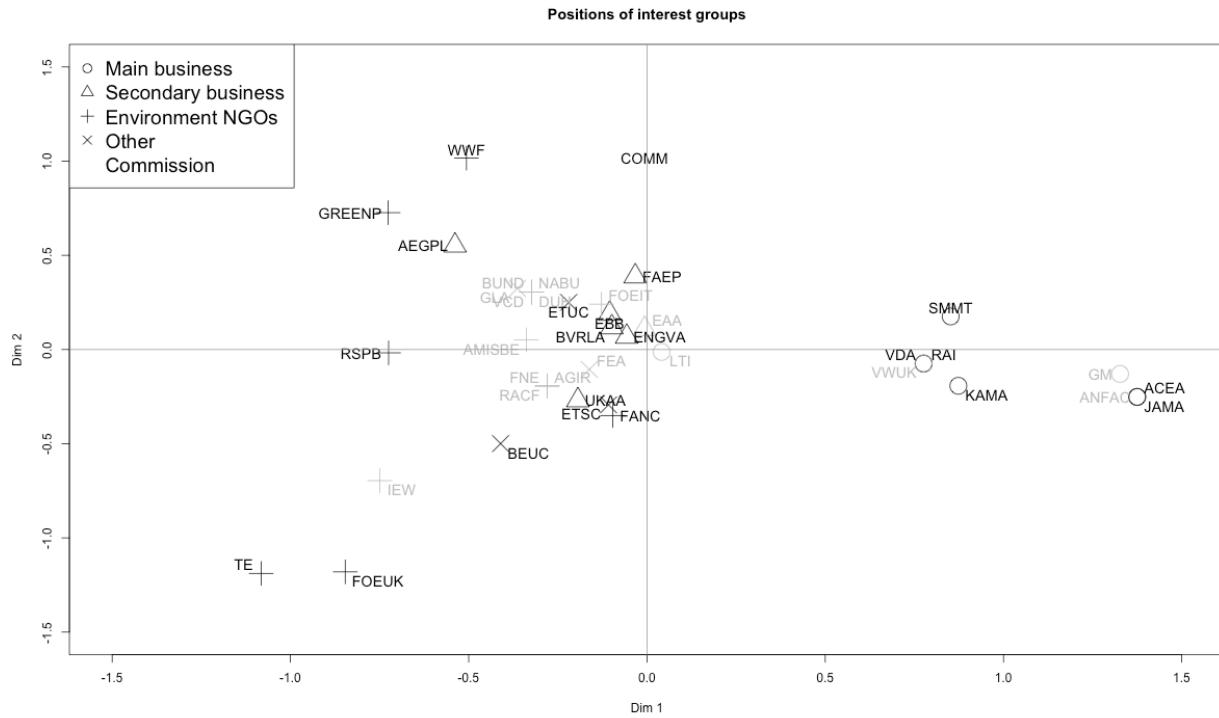


Figure 4. Interest groups' positions on the two-dimensional policy space in the consultation on CO₂ emissions.

Note: Organizations that were included in the *Wordfish* analysis: in dark black. Those excluded: in grey. For three organizations included in the *Wordfish* analysis hand-coded position estimates were not available.

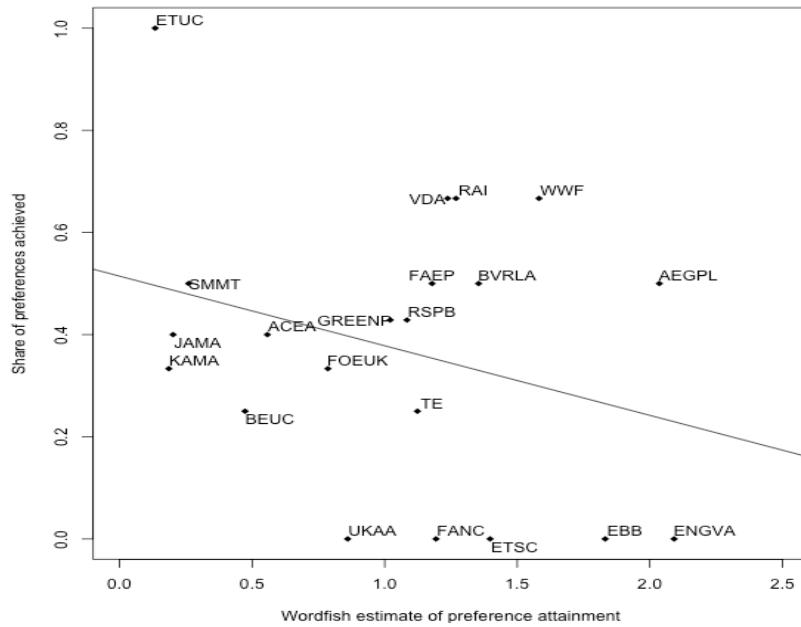


Figure 5. *Wordfish* measures versus Share of preferences achieved. ($r = -0.3$)

Note: See Section 2.3 and the note under Table 1 for the description of the variables used in this figure.

Table 1. Spearman rho correlation coefficients of *Wordfish* and hand-coding estimates of policy positions.

Issue no	Spearman rho
1	0.47*
2	0.72**
3	0.72**
4	0.61*
7	0.65
8	0.50
9	0.09
10	0.76**

Note: No correlation coefficients are reported for issues 5 and 6 because the hand-coding scheme identified only one position expressed by organizations for each issue. * $p<0.1$; ** $p<0.05$.

Table 2. Explaining preference attainment

	Model 1	Model 2	Model 3
Intercept	-0.09 (0.73)	0.60** (0.16)	0.47* (0.20)
<i>Reference category: car producers' business organizations</i>			
Non-car business	0.91*(0.37)	-0.35* (0.16)	-0.47 (0.31)
Environmental NGOs	0.65 (0.48)	-0.02 (0.11)	0.15 (0.17)
Others	0.04 (0.51)	-0.02 (0.13)	0.13 (0.20)
Opposition	0.67 (0.46)	-0.28(0.24)	-0.19 (0.26)
<i>Included in Wordfish?</i>			
Non-car*included		0.13 (0.15)	0.14 (0.30)
Environmental*included			-0.31(0.20)
Other*included			-0.23(0.26)
R ²	0.30	0.20	0.30
Adj. R ²	0.16	0.10	0.11
No. of obs.	25	38	38

Note: OLS regression models. Reference category: car industry organizations. Standard errors in parentheses. The dependent variable in Model 1 is the absolute difference between the position estimate of the organization and that of the Commission post-consultation. The dependent variables in Models 2 and 3 are the share of the issues on which the position of the organization coincided with the position of the Commission post-consultation from the total number of issues on which this organization adopted a position. * $p < 0.05$, ** $p < 0.01$.

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Notes

¹1. Slapin and Proksch also address a fifth point: the replicability of results in quantitative text analysis. We do not address this because we aim to address the more fundamental issue of quantitative content analysis, namely its validity.

2. We note, however, that the latest applications of quantitative text analysis to legislative studies research propose approaches that are multidimensional and allow analyzing policy spaces that have more than one underlying latent dimension (see Diermeier et al., 2012). Lowe (2008) suggests solutions to current limitations of text scaling algorithms regarding their capturing of multidimensional spaces.

³3 Klüver justifies her selection of submissions as it follows: *'In total, 32 comments were submitted by interest groups. Five submissions were not written in English and were excluded since WORDSCORES and Wordfish can be applied only to texts in the same language. Two further submissions were excluded since one consists only of a PowerPoint presentation and the other is protected by a password. Hence, 25 interest group submissions remain for the analysis.'* (Klüver, 2009: 540).

4. Our qualitative content analysis approach is therefore not a 'classical unitize-code-aggregate content analysis' as rightly indicated by one of our reviewers. Our approach resembles more a checklist type of judgment according to which the text is inspected according to a checklist of 10 issues/points. This implies that the position is identified based on one (or two) key sentences that explicitly express the position and not based on a systematic coding of all sentences in a paragraph/sub-section followed by their distribution into positive and negative categories and the analysis of the aggregate distribution of these positive and negative values (as employed for example in the Comparative Manifestos Project (CMP)). We consider our approach more appropriate given the text characteristics identified for EU policy position documents.

5. These issues are abbreviated in the graph presenting the SMCA as: 'target', 'time', 'vans', 'param.', 'mandatory', 'penalties', 'fiscal', 'label', 'marketing', 'flexibility'.

6. We conducted one inter-coder reliability test. Two coders independently identified the issues addressed in the position documents and the expressed positions on each issue. Ten out of fourteen issues identified by the two coders were identical. The coding of positions was identical with respect to 73 per cent of the interest group-issue dyads identified (Krippendorff's Alpha = 0.77, C.I: 0.7; 0.84). We computed the confidence intervals for the Krippendorff's Alpha coefficient using the SPSS algorithm designed for this, based on Hayes and Krippendorff (2007).

7. While a different number of positions was expressed on the issues in the consultation, we note that methodological work on MCA also provides examples when this method is applied to the datasets that include variables with a different number of categories (Le Roux and Rouanet 2010: 46-67; Abdi and Valentin 2007: 651-657; see also the notes accompanying the FactoMineR package in R.)

8. The results of the Rasch residual factor analysis (Rasch 1960; Masters 1982; Wright 1996; Linacre 1998; Heine 2014), presented in the Appendix of this article and conducted as a robustness check, also provide evidence of the multidimensionality of the policy space in the CO₂ emissions consultation case.

9. It is important to note that if two categories ('marketing.no' and 'fiscal.no'), that were made 'inactive' in this analysis, were allowed to affect the SMCA results, they contributed most to Dimension 2. These positions were adopted by the Commission in the legislative proposal, even if a relatively large number of environmental NGOs and some non-car industry organizations expressed an opposite position, favoring these fiscal and marketing oriented measures. Interestingly, on these issues, none of the groups representing car manufacturers expressed the same position as the Commission. When these categories are included in the analysis, the modified rate of Dimension 2 increases almost threefold to 29.6%. While we believe that the exclusion of these positions is justified by the infrequency with which they were adopted, they also strengthen our argument that the consultation on CO₂ emissions was characterized by a two-dimensional space.

10. Klüver (2009) does not explicitly propose a direct measure of preference attainment based on *Wordfish* but instead indirectly suggests how these scores could be applied by future research in this respect: '*First, one could simply code success dichotomously: the Commission either did or did not move towards an interest group's ideal point. Second, one could calculate the relative change in the distance between the Commission and an interest group from t0 to t1 as a percentage of the original distance at t0.*' (Klüver, 2009: 547). Later, she develops a dichotomous measure by examining whether '*the distance between the policy position of interest groups and that of the Commission is smaller at t₂ [final policy proposal] than at t₁ [preliminary draft proposal]*', and by defining successful groups as those for which '*the final policy proposal (COMM_{t2}) is closer to their ideal point than the preliminary draft proposal (COMM_{t0})*' (Klüver 2011: 493). Alternative specifications of our analyses considered this dichotomous measure, but since there was no difference with respect to correlation levels with our hand-coding estimates ($r = 0.4$), nor in terms of results of statistical modelling, we decided to exclude this dichotomous measure from our analysis.

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