Scaling policy preferences from negotiation position networks in the Council of the European Union

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Abstract

Normative evaluations and positive studies of legislative politics often require information about actors' policy positions. This study presents a new approach to generate case-specific preference data for governments in the Council of the European Union, relying on the negotiation position support relationships amongst member states recorded in the Council's archival documents. The approach combines automated information extraction methods for the collection of negotiation position support network data with multiple correspondence analysis for the identification of the dimensionality of the underlying political space and the scaling of member states' policy positions. The largely automated nature of the methodology allows for producing comprehensive policy position data based on contemporary sources, in a completely reproducible manner, and at largely reduced costs compared to existing approaches. A cross-validation study with preference data derived from expert surveys demonstrates that the approach is able to uncover substantively meaningful policy dimensions and estimate valid policy positions.

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Introduction

Although policy positions are a core element of many theories of legislative politics, reliable and valid measures of such positions are hard to come by. In the case of the Council of the European Union, both deductive and inductive scaling methods have been employed to generate policy position data for member states. However, from a point of view of providing meaningful tests of theories of collective decision-making, existing approaches produce measures at an inappropriate level of abstraction. The level of abstraction refers to the generality of the policy dimensions on which actor positions are scaled. As a review of the literature shows, general party ideological policy differences along the left-right dimension or the pro-anti integration dimension have little relevance for day-to-day legislative politics in the Council. Thus, policy positions on these general dimensions might tell us something about the broader development of the EU over time, but they are not very suitable as position indicators and explanatory variables in the analysis of particular decision-making case.

Recurring cleavages between member states are more likely to occur within particular policy sectors. Thus, measures of policy positions on the dimensions presumably salient in a specific policy area are more likely to reflect the positions in individual decision-making cases. However, the only way to ascertain that a measurement approach can at least in principle produce policy positions that mirror the views of participants in a particular case is to rely on information that is case-specific. Very few studies have taken this approach. The Decision-Making in the EU (DEU) project (Thomson *et al*., 2006, Thomson 2011) provides case specific information on issue positions. However, these issues are so specific that they are more sensibly thought of as indicators of somewhat more general case-specific policy dimensions rather than constituting the dimensions of the political space themselves. In other words, while most existing policy position data are measured at too high a level of abstraction, the DEU data provide direct measurements of stated negotiation positions without any abstraction to an underlying policy space at all.

In comparison to the DEU approach to data collection, which is based on identifying issues and positions through expert interviews of practitioners, the approach suggested here also has further practical and methodological advantages. It relies on publicly available and permanently archived documents, the automated extraction and coding of information from those documents, and the application of fully documented statistical scaling analyses. As a result, the measurement process is completely transparent and reproducible; not only in principle, but also in practice. The documents from which the position information is

extracted are drafted almost in 'real time' by impartial Council officials. Thus, the information contained in those documents is less likely to be biased for political reasons, distorted because of post-hoc rationalizations, or simply incomplete because of fading memories or lack of knowledge. Finally, the measurement process is also likely to be more efficient, allowing for the collection of preference data on a large scale with minimal cost. However, the efficiency of the approach depends to a large extent on the degree to which the whole process can be automated. Thus, although the suggested measurement approach promises many benefits, a core issue to consider is whether the raw text contained in Council documents provides sufficient information for identifying meaningful policy dimensions and allow the valid scaling of member state positions.

After reviewing the existing literature on the dimensionality of the Council's political space and the measurement of member states' policy positions in the next section, I describe the general data collection and coding process. This description is followed by a discussion of multiple correspondence analysis as a scaling method. The remainder of the paper examines the validity of the measurement results. The first part of the results section deals with the determination of the dimensionality of the political space, and the second part with the scaling of policy positions of member states on the relevant dimensions. To validate the results, I examine both their content and construct validity. To assess content validity, I draw on manually coded data to assess the extent to which the solution reflects the information contained in documents. To assess convergent validity, I compare the results to the issues and positions derived from expert judgements contained in the DEU data. Finally, the last section concludes with a summary of the findings, discusses limitations of the measurement approach and possible directions for future research.

Measuring Council policy dimensions and member state positions

Existing approaches to mapping the political space in which political actors operate in the Council can be distinguished according to the level of abstraction of the resulting policy positions, the specification of the number and content of dimensions, and the data sources relied upon. Table 1 provides a cross-classification of the different types of analyses according to level of abstraction and specification of dimensions. The cell entries provide the specific data sources that have been used for each type of analysis, as well as references to illustrative examples. The highest level of abstraction refers to analyses that map the political space of the Council through general policy dimensions, without allowing for the possibility that individual ministers might pursue different interests in different sectoral formations of

the Council. Some of these analyses also ignore possible changes in the policy space and positions over time. The intermediate level of abstraction refers to analyses that produce dimension and position results for individual policy sectors. Finally, the lowest level of abstraction refers to analyses that generate those types of results for individual decision-making cases.

Table 1 Overview of existing measurement approaches

		Specification of dimensions	
		A priori: Dimensions assumed, positions inferred from data	*A posteriori*: Both dimensions and positions inferred from data
Level of abstraction	*High*: General dimensions	Cell 1: Party manifestos, expert judgements (Manow *et al.*, 2008) (Warntjen *et al.*, 2008) (König and Luig, 2012)	Cell 2: Voting records (Mattila and Lane, 2001) Surveys of network ties (Beyers and Dierickx, 1998) Expert judgements (Thomson *et al.*, 2004) Party manifestos (Veen, 2011a)
	Intermediate: Policy area-specific dimensions	Cell 3: Party manifestos (König, 2007) (Franchino, 2007) (Veen, 2011b)	Cell 4: Expert judgements (Zimmer *et al.*, 2005)
	Low: Case-specific dimensions	Cell 5: Expert judgements (Thomson *et al.*, 2012)	Cell 6: Council documents (König and Pöter, 2001)

Note: Cell entries provide the data sources used in past research and references to example studies.

Mapping a political space consists of the identification of the number and content of relevant policy dimensions, as well as the scaling of actors' positions on those dimensions. With regard to the specification of dimensions, *a priori* and *a posteriori* approaches can be distinguished (Benoit and Laver, 2012; Laver, 2014). In the *a priori* approach, the analyst makes assumptions about the dimensionality of the political space and the content of the policy dimensions based on existing empirical knowledge, theory, or both. The actual analysis focuses then on locating actors' policy positions on those dimensions. In the *a posteriori* approach, the policy dimensions and the positions of actors in the resulting space are both inferred inductively from the data.

Existing research on policy positions in the Council falls mainly in Cells 1 and 2 of Table 1. Studies have predominantly aimed at mapping the political space of the Council as a whole in terms of very general policy dimensions, using either the *a priori* or *a posteriori* approach in determining the number and content of relevant policy dimensions. When

specifying policy dimensions in advance, scholars often assume that a left-right and a pro-anti European integration dimension are relevant for describing the political space of Council decision-making (Manow *et al.*, 2008; Warntjen *et al.*, 2008; Veen, 2011b; König and Luig, 2012). They then proceed to locate the positions of governments on those dimensions by aggregating party policy positions derived from expert surveys or the coding and scaling of policy statements in election manifestoes.

In contrast, fully inductive approaches do not start with the assumption that particular dimensions structure the political space in the Council, but attempt to infer the number and meaning of dimensions together with actors' positions from data about similarities and differences in some observable actor attribute. These attributes include their voting behaviour (Mattila and Lane, 2001; Hagemann, 2007, 2008; Hagemann and Hoyland, 2008; Mattila, 2008, 2009; Plechanovová, 2011), their choice of communication or cooperation partner (Beyers and Dierickx, 1998; Elgström *et al.*, 2001; Naurin and Lindahl, 2008), their positions on particular policy issues as perceived by practitioners directly involved in the decision-making process (Selck, 2004; Thomson *et al.*, 2004; Kaeding and Selck, 2005; Zimmer *et al.*, 2005; Thomson, 2009, 2011), and content-coded policy statements in their parties' election manifestos (Veen, 2011a).

Most of these studies find evidence that governments are divided along geographical lines, and that party ideology plays at best a minor role. In the EU of 15 member states, countries seem to have been divided along a North-South dimension. The enlargement in 2004 is supposed to have added a division between old and new member states. Although there is a relatively large consensus about the existence of a geographical pattern, analysts disagree about its substantive interpretation. Some argue it reflects a redistributive conflict between net-contributors to the EU budget and net-recipients (Zimmer *et al.*, 2005; Veen, 2011a) or the "appropriate level of regulatory intervention in free markets" more generally (Thomson *et al.*, 2004; Thomson, 2009; 2011: 77), others suggest that cultural affinities might underlie this division (Beyers and Dierickx, 1998; Elgström *et al.*, 2001; Naurin and Lindahl, 2008). In contrast to the relatively consistent finding of a geographical divide, fewer studies find evidence for the relevance of a left-right dimension (Hagemann, 2008; Hagemann and Hoyland, 2008; Mattila, 2009) or the pro-anti European integration dimension (Veen, 2011a).

As purely inductive studies provide only limited support for the assumption that left-right ideology and attitudes towards European integration structure political conflict in the Council, assuming them to be relevant *a priori* is questionable. Although inductive

approaches face a formidable task in simultaneously determining both the dimensionality of the space and the positions of actors within it (Benoit and Laver, 2012), they are usually able to produce a map of positions that at least remotely resembles the expected pattern. To take a close example, inductive analyses of roll call votes in the European Parliament consistently demonstrate the relevance of the left-right and pro-anti European integration dimension for determining the political space of that institution (Hix and Noury, 2009). Inductive analyses have also confirmed the relevance of the left-right dimension in many national political systems. However, the results for the Council are at best ambiguous.

Part of the problem might be the generality of the left-right and pro-anti European integration dimensions. Such broadly defined policy dimensions are only useful for enhancing our understanding of political decision-making if they closely reflect the positions of actors on a wide range of issues in particular cases. However, if member state governments mainly represent particularistic "national interests", which could be determined by long-term and path-dependent institutional developments or the lobbying power of particular interests, then such a connection between preferences on particular issues and broad party ideological policy positions is unlikely to exist. In this respect, specifying dimensions and positions for particular policy areas or, even better, particular decision-making cases is more likely to yield valid results.

Not many studies have attempted to estimate policy positions at these lower levels of abstraction. With respect to the estimation of policy area-specific positions, Franchino (2007), König (2007) and Veen (2011b) follow the *a priori* approach and specify the relevant dimensions in advance (Cell 3 of Table 1). They then select sets of policy statements deemed related to those dimensions from party manifestos and use the relative frequency of those statements to scale member states' positions. König (2007) and Franchino (2007) rely on policy statements from manifestoes for national elections, which are often only indirectly related to the EU policy dimensions of interest. However, Veen (2011b) achieves a closer link between the latent dimensions and the operational indicators by relying on statements in manifestos for European Parliament elections. These manifestos were specifically coded to capture stances on EU-related policy issues. All studies make the implicit assumption that a single dimension structures the political space within each policy area, indicating the general direction in which policies should be developed (e.g. more or less protectionist policies in agriculture, or more or less harmonization in the common market).

However, the only study inductively deriving policy dimensions and positions for specific policy areas (Zimmer *et al.*, 2005; Cell 4 of Table 1) only partially supports this

view. Relying on DEU data, Zimmer *et al.* (2005) analyse issue positions on particular pieces of legislation as identified by participants in negotiations. The study results suggest that in at least some policy areas two dimensions describe the political space better than one (e.g., the level of consumer protection is identified as the second dimension in the area of common market policy). Thus, while the assumption of a single policy area-specific dimension seems more plausible than the assumption that left-right and pro-anti European integration dimensions structure political conflict in the Council as a whole, no systematic empirical evidence exists to confirm this view.

In the end, to be certain that scaling results can at least in principle describe the political space in question, the level of abstraction at which the measurement takes place needs to correspond to the level of abstraction of the analysis. Broad measures of party ideology might be able to shed some light on the general direction and shape of European integration over time. Yet if the goal of the analysis is to explain aspects of particular decision-making cases, like the duration of the process or individual states' influence on the negotiation outcome, the relevant dimensions and member states' policy positions need to be identified separately for each case. The DEU project has made great strides towards providing such measures (Thomson *et al.*, 2006; Thomson, 2011). The research design of this project essentially follows the *a priori* approach to dimension specification. However, rather than the analyst specifying the relevant dimensions, this task is left to the interviewed practitioners at the data collection stage. The practitioners are first asked to identify the most controversial issues in the proposal, and then to locate the positions of member states on those issues. The datasets resulting from this approach have been used to study a wide variety of questions and have greatly advanced our understanding of EU legislative politics. However, while the data might be useful for many purposes, from a conceptual point of view, the measurement of specific issues and issue positions is unlikely to produce an appropriate representation of the political space in which member states operate.

In contrast to previously discussed approaches, which yield policy dimensions and positions that are too general, the focus on specific issues in the DEU data is too narrow. A cursory look through the description of the proposals and issues of the DEU II dataset (Thomson *et al.*, 2012) suggests that in many of the cases, at least some of the issues relate to a somewhat more general policy dimension. A related argument has been made by Finke and Fleig (2013), who suggest that many of the issue positions in the DEU data reflect non-separable preferences. If it is correct that many of the issue dimensions can be reduced to a more general policy dimension, the number of issue dimensions will not correctly indicate the

dimensionality of the political space. The incorrect specification of the dimensionality of the political space has profound consequences for the testing of spatial models, because the dimensionality is an important parameter affecting the models' predictions. Furthermore, if issue positions are seen simply as input for a statistical scaling procedure rather than an end product in itself, it also becomes clear that the coverage of issues is quite selective. Even if the included issues correspond to the most controversial ones, including positions on other, somewhat less controversial issues that nevertheless map on the same policy dimension allows for generating more nuanced distinctions in actors' positions. In short, the DEU data is mapping positions on a selective set of issues, not on some broader policy dimensions that actually describe the political space of decision-making and therefore allow for more sensible empirical tests of spatial models of Council politics.

Only one study has so far applied the inductive approach to dimension specification at the level of individual decision-making cases. After manually coding issues and positions in four decision-making cases, König and Pöter (2001) infer the dimensionality and the positions of actors on those dimensions through multi-dimensional scaling. They find that two dimensions provide a sufficient description of the underlying political space but do not interpret the dimensions' content. Thus, whether these dimensions were substantively meaningful remains an open question. Still, the general idea of applying scaling techniques to issue positions for particular proposals has the potential to maximize the fit between the level of abstraction of the measurement and the level of abstraction of the political space under consideration. Being able to specify the relevant dimensions in advance would make the task of estimating policy positions much easier (Benoit & Laver 2012). However, at this low level of abstraction, we usually do not have a clear *a priori* idea about what these dimensions might be. Thus, a completely inductive approach is the only feasible option.

Identification and coding of negotiation positions

The proposed methodology consists of two stages. In the data collection stage, information about member states' support for different negotiation positions is gathered for each case from internal Council documents. The result of this data collection process is a two-mode network, where member states and negotiation positions are the two types of nodes, and the existence of a tie between a member state and a negotiation position indicates that states' support for the position. In practice, the collected information is stored in a matrix where member states define the rows and negotiation positions define the columns. The binary values in the matrix indicate whether (value = 1) or not (value = 0) a member state supports a

certain negotiation position. In the second stage, the two-mode network data is scaled to identify policy dimensions and member states' positions on those dimensions. The basic assumption of this scaling analysis is that the extent of joint support for negotiation positions is an indication for how close actors' policy positions are in the underlying political space.

Regarding the collection of data, one question that requires clarification concerns the stage of the negotiation process at which the position data should be collected. After the Commission has transmitted its proposal to the Council, the relevant working party usually starts discussions on the dossier. Working parties consist of relatively low-ranking officials from national ministries, either travelling to Brussels for each meeting or temporarily seconded to the country's permanent representation. The working party usually conducts several 'readings' of the dossier, each of which might consist of a number of meetings. In total, this part of the process often lasts for several months or even years. The first reading is mostly used to agree on relatively consensual matters and to establish member states' views on the more controversial issues. Subsequent readings try to resolve the more controversial issues by reaching generally acceptable compromises, often based on proposals made by the Presidency. During this part of the process, the Presidency might also call upon higher levels of the Council, especially the relevant ministerial formation, to clarify the views of governments on certain points and to provide further guidance to progress the work of the working party.[2]

In cases where the working party cannot reach a complete agreement on the dossier, the Presidency refers it to one of the two formations of the Committee of Permanent Representatives (Coreper). Coreper II consists of the permanent representatives themselves and prepares the meetings of the General Affairs formation of the Council, the External Relations formation, the Justice and Home Affairs formation, and the Economic and Financial Affairs formation. Coreper I consists of their deputies, who prepare the meetings of all other Council formations. Coreper is often able to settle some of the outstanding issues, but if not all conflicts can be resolved at this level, the Presidency asks the relevant ministerial formation of the Council to reach a final agreement.

The substance and process of negotiations is often well documented in Council documents. Importantly, in many instances, information on governments' negotiation positions is recorded at various stages of the process. At the working party level, these records often take the form of revised proposal texts where objections of member states are

[2] See Häge (2012) for detailed case study descriptions of Council decision-making processes.

recorded in footnotes to the relevant article, paragraph, or sentence. Referrals of the dossier to Coreper or ministers are often accompanied with a summary of the "major outstanding issues" to be resolved, which contrasts the different views of delegations on those points. The documents are drafted shortly after the respective meetings by officials of the Council secretariat. Thus, they constitute relatively neutral, comprehensive and contemporary records of the state of play of negotiations at a particular point in time.

In this stylized decision-making process, two possible stages recommend themselves for the collection of negotiation position data. The first stage is the end of the working party's first reading and the second stage is the time of referral of the dossier from the working party to Coreper and the Council. The position information contained in the working party progress report after the first reading might come closest to the true initial preferences of member states in the sense that the positions have not been affected by concessions made over time during the negotiation process. However, this argument only holds if positions sincerely reflect preferences and governments do not strategically misrepresent their true preferences at the beginning of negotiations to gain a bargaining advantage. Even if concessions are being made and positions change over time, the absolute locations of actors' positions are of little relevance for the scaling analysis as long as their positions relative to each other remain the same.

From a practical point of view, collecting position information after the first reading is problematic in that the collected data has a much larger noise to signal ratio. At the beginning of negotiations, documents contain dozens, often hundreds of position footnotes, many of which relate to rather technical details of the dossier or idiosyncratic concerns of particular member states. Without detailed case knowledge, it is almost impossible to distinguish purely technical issues from politically salient ones that determine the Council's political conflict space. Another problem is that some member states may not have formed clear-cut positions on all important issues at this early stage of the negotiation process.

Collecting data from the progress reports submitted to Coreper after the working party has concluded its discussions overcomes these problems to a large extent. Coreper and ministers deal only with the most contentious issues in a dossier. Thus, the position information on the issues that remain at this stage of the process is more likely to reflect the main dimensions of the underlying political space. At this stage, member states have also had enough time to determine their positions on all issues of significance. Another practical advantage of collecting position data at this stage is that the positions of different delegations are outlined in some more detail and contrasted more explicitly in the progress report to

Coreper than in the footnotes of working party documents. This additional information is very useful for interpreting the substance of the policy dimensions resulting from the analysis. Finally, positions are more consistently recorded in progress reports to Coreper than in the working documents of the working party. In many cases where no documents are available that detail member states' positions after the first reading or where delegations are not identified by name in the working party documents, the progress reports to Coreper include such information.[3]

Once the relevant document with the progress report to Coreper has been identified in the Council's public register of documents,[4] downloaded and converted from PDF to text format[5], the negotiation position information is extracted through a computer script written in Python. In light of a possible extension of this method to a much larger number of cases, which requires at least partial automation of the data collection and coding process, the extraction process neglects information about the ordering of positions along the underlying issue scale. The identification of issue scales and the order of positions along those issues would require quite labour-intensive manual coding. Rather, each individual position statement is treated as a separate, atomic measurement item. In practice, position statements usually coincide with natural sentences. Thus, after converting the Council document from PDF to text format and splitting the text into sentences, positions are identified by searching for sentences that mention at least one of the member states or the Commission. In a second step, member states' support of statements is coded by searching the list of identified sentences for individual country names and country abbreviations. Since the size of the resulting data matrix is relatively small for each individual case, false positive items (i.e. member state mentions that do not relate to any negotiation position statement) can be removed from the data set after manual review.

Simple and multiple correspondence analysis

To simultaneously identify the dimensions of the political space and scale actors' positions within it, I employ correspondence analysis (Greenacre, 2007). Correspondence analysis provides quantitative values for each row and each column category for *n*-1 orthogonal dimensions, where *n* corresponds to the minimum of the number of items and actors (i.e. the

[3] In cases where the report to the Council included more position data than the report to Coreper, the former was used as data source.
[4] http://register.consilium.europa.eu/content/int?typ=ADV&lang=EN (accessed 2 July 2014).
[5] Because of idiosyncratic errors in the PDF formatting of the first page of the documents, a two-step approach was employed: Adobe Acrobat XI Pro was used to convert the documents from PDF to RTF format, and Microsoft Word 2007 to convert them from RTF to text format.

dimensionality of the full matrix). Variability is measured in terms of chi-square distances of observed table entries from the table entries expected under the independence assumption of no association between rows and columns. In other words, the analysis is adjusted for differences in the total number of positions taken by an actor (i.e. the degree of the actor in network analytic terms) and the total number of supporting actors of a particular position (i.e. the degree of the negotiation position). The method decomposes the variability in the data as measured by chi-square distances in such a way that the first dimension captures the largest part of the variability, the second dimension the second largest part, and so on. The resulting quantitative values for each dimension can be scaled in different ways. When row values are scaled as so-called principal coordinates and column values are scaled as standard coordinates, the row values can be interpreted as centroids (i.e. weighted averages) of the column values.

Unlike item-response models, correspondence analysis does not require the specification of a particular statistical model that is supposed to have generated the data, it always converges to a unique solution, and it is much less computationally intensive. At the same time, its results closely approximate those of basic Gaussian item response models (ter Braak, 1985; Lowe, 2008; Polak *et al.*, 2009). Another advantage compared to other dimension reducing techniques is that correspondence analysis simultaneously scales both actors and items. In the literature on two-mode networks, this property has long been identified as an advantage for jointly representing both types of nodes in a single graph (Roberts 2000; Faust et al. 2002; Faust 2005). With respect to scaling policy preferences, the joint representation of actors and negotiation position items allows for a relatively straightforward interpretation of the policy substance of dimensions. In comparison, Veen (2011a) for example had to run a regression analysis for each of the 125 items included in his multidimensional scaling analysis to identify those items that were most closely associated with the recovered dimensions. Correspondence analysis also provides measures for how highly each column or row point is correlated with each dimension and of how much of the variability of each dimension is attributable to a certain column or row point. These features allow for a relatively efficient interpretation and validation of the specified policy dimensions.

A common modification of simple correspondence analysis when scaling preferences consists of the ‘doubling’ of columns (Greenacre, 2007; Polak *et al.*, 2009; D’Esposito *et al.*, 2014). This modification is also known under the names of ‘dual scaling’, ‘homogeneity analysis’, and ‘multiple correspondence analysis’, and has recently been introduced to the

network analysis literature by D'Esposito and colleagues (2014). In the case of a matrix with binary entries, doubling consists simply of the addition of new columns that contain the complements of the original column values. Values in the new column receive a 1 if the value in the original column is 0 and 0 if the value in the original column is 1. While the original column indicates support for a particular position, the newly added column indicates a lack of support for that position. The doubling of the original matrix has advantages and disadvantages. On the one hand, calculating the similarity of row profiles not only based on the number of positions countries jointly support, but also on the number of positions they jointly do not support seems to make conceptual sense. Council documents often only mention positions of minorities that demand changes to the current version of the text. In those cases, the extracted data in their raw form only indicate the positions supported by a minority of member states, but not the positions supported by the majority, which is supposedly satisfied with the text as it stands. In the way the Council secretariat drafts the documents, information about majority coalitions usually remains implicit and does not enter the analysis if the original matrix is not doubled.

On the other hand, some desirable properties of simple correspondence analysis are lost. First of all, doubling neutralizes the correction for the overall number of positions a country holds, i.e. the size of the network degree of the country. After doubling, all rows sum to half of the number of columns, regardless of how many positions are supported, because for each 0 in the original column, we have added a 1 in the new column, and *vice versa*. Thus, the row values of all countries add up to the same row sums, and without different row margins, there is no differential adjustment of the row profile differences. The lack of an adjustment for differences in the network degree of a country can be problematic if a country's degree is related to non-preference characteristics like the importance that it attaches to the dossier, the degree to which it is affected by the policy, or the country's administrative capacity.[6] From a scaling point of view, disproportionally large actor degrees are also problematic if they consist mainly of support relationships for positions that are not supported by any other country. In this case, a large degree identifies the country as being very exceptional, but the data do not provide any constraints in terms of the dimension and direction this difference should be represented by. As a result, the MCA solution based on the full two-mode network data often provides a solution in which one or more of the main dimensions captures the uniqueness of a particular country rather than general patterns in

[6] For some types of network visualizations, eliminating the correction for unequal degrees can be seen as an advantage (D'Esposito et al., 2014).

policy positions. One way to avoid such a scenario is to drop positions that are only supported by a single member state from the analysis.[7]

In contrast to the rows, the differential weighting of columns is not neutralized by the doubling. In fact, for the purpose of preference scaling, the differential weighting of columns might actually make more sense in the analysis with doubling than in simple correspondence analysis. In the doubled case, columns with a relatively large number of 1s are those that indicate the absence of support for a certain position. In other words, they indicate the member states that implicitly support the text as it stands at the moment. To some extent, the absence of a stated position might not only indicate the lack of support, but also indifference towards the issue. Thus, in the doubled case, it makes sense that columns with larger margins contribute less information towards the results of the solution than columns with smaller ones. In the case of simple correspondence analysis, column margins are generally small, given that the explicitly recorded positions usually refer only to those of a minority of member states that disagree with the current text. In relative terms, the columns with the largest margins in simple correspondence analysis are those that describe the most controversial issues and provide the most crucial information about dividing lines in the political space. Thus, weighting them down in comparison to more idiosyncratic positions that are supported by even fewer member states seems counter-productive.

A more conceptual objection to doubling derives from the assumed shape of the preference function (Warrens and Heiser, 2006; Polak *et al.*, 2009). In spatial models, analysts usually assume that preferences are single-peaked, i.e. the preference function has a single maximum in the political space at the actor's ideal point and utility decreases for policy alternative the further they are away from that ideal point. However, doubling is best suited for measuring monotonically increasing or directional preferences. When doubling the original matrix, we have two items per negotiation position. The original item indicates support for the position, i.e. the association with the positive pole of the dimension, and the new item indicates a lack of support for the position, i.e. the association with the negative pole of the dimension. In the case of single-peaked preferences, a lack of support for a position can occur either because the position is too far to the negative pole or too far too the positive pole of the scale. The coding in doubling does not allow for such a differentiated interpretation. Based on this insight, Polak *et al.* (2009) advocate that such unimodal

[7] The removal of idiosyncratic negotiation positions is similar to the removal of bills that have gathered almost unanimous support in scaling analyses of roll-calls in legislatures. In both instances, not much useful information is lost.

preference data should be analysed through standard correspondence analysis, where the similarity of actors is only based on shared agreement, not shared disagreement. Note, however, that this interpretation problem only affects intermediate position items, where disagreement with the item can either mean that the demand goes 'too far' or that the demand does not go 'far enough' for the member state in question. Such intermediate positions are comparatively rare in Council documents. Often, the documents only mention a single issue position that advocate a change in the draft (i.e. a position associated with the positive pole), implying that member states not mentioned in the statement are happy with the current version of the text (i.e. have a position associated with the negative pole). Even if two positions are explicitly mentioned, they usually refer to the two endpoints of the issue scale. In these cases, the ambiguity in the doubled coding of single-peaked preference data does not exist. Finally, the problem disappears in its entirety if preferences cannot only be treated as if they are directional in practice, but if they actually are directional and not single-peaked.

From a purely statistical point of view, the preceding discussion makes clear that good reasons exist to apply either simple or multiple correspondence analysis for scaling negotiation position support networks. However, the nature of the data in the current application suggests that multiple correspondence analysis is the more sensible choice. The fact that the identity of member states agreeing with the current version of the negotiation text is often not recorded implies that a simple correspondence analysis produces more missing values for states' policy positions and, even more importantly, misses important information for the identification of dimensions and the scaling of positions. By analysing a doubled matrix that explicitly codes the implicit opposition to a negotiation position by other member states, multiple correspondence analysis overcomes those shortcomings.

Research design

To investigate whether this scaling approach is able to recover meaningful dimensions and valid policy positions, cases for the analysis were selected from the only existing data set that provides somewhat comparable information, i.e. the Decision-making in the European Union (DEU) data set (Thomsen, 2006; Thomson et al. 2012). The DEU data combines the results of two different research projects, one conducted around 1999 and 2000 (DEU I), and one in the post-2004 enlargement period (DEU II). The analysis focuses on the cases from the post-2004 enlargement period, because the Council only started to make its documents publicly available in the year 2000. In total, the DEU II data consists of position data on 158 issues within 56 legislative proposals. In total, 27 proposals had to be removed from the sample for

various reasons. Two were excluded on the basis that they formed a package and one of them was adopted through the assent procedure. Thus, they were not independent cases and other DEU selection criteria specify that only proposals decided through the consultation or co-decision procedure should be included. One proposal had to be dropped because the European Parliament rejected it before the Council could form a consolidated position. Similarly, four proposals had to be dropped because informal negotiations with the EP under the co-decision procedure had already started before internal Council negotiations had come to a conclusion. In those cases, either no report to Coreper existed or the report conflated negotiation positions on internal and inter-institutional issues. Another eight proposals were removed because they lacked in controversy. In those cases, higher Council levels were not at all or only hardly involved in the negotiations. Consequently, the corresponding report to Coreper records too few issues or positions to make a scaling analysis feasible. Finally, twelve cases had to be removed either because no reports to Coreper or Council existed or did not include the required position information. This leaves 29 legislative proposals for the validation study.

As mentioned earlier, a scaling analysis consists of identifying meaningful policy dimensions and assigning valid position scores on those dimensions to the actors involved. The validation study examines those two steps of the scaling analysis in turn. In each step, the study relies on manually coded information from document texts to assess content validity, and on DEU data information to assess convergent validity. In the first step, the number and content of policy dimensions derived from the multiple correspondence analysis is assessed by examining the extent to which they reflect the major issues described in the document text and the issues identified by experts in the DEU data set, respectively. In the second step, those issues of the manually coded text data and of the DEU data that contribute significantly to a MCA dimension are aggregated into a single policy dimension and the relative positioning of individual actors along that dimension is compared to the relative positioning of actors along the respective MCA dimension. In all comparisons, the DEU data is not treated as the gold standard. Many reasons exist to expect that the MCA results will sometimes be more valid and reliable than the DEU measurements. However, the two sets of results should be related to each other to some extent, and largely consistent results would increase our confidence in the ability of both approaches to accurately measure member states' policy positions.

The case of the air quality directive

Before discussing the large-N results, each step of the measurement and validation approach is first illustrated by example through the study of a single case. The air quality directive merged five existing pieces of legislation on air quality, introduced ways to provide member states with more flexibility in the implementation of existing air quality standards, and established new measures to limit the human exposure to fine particles.[8] The Commission adopted the proposal on 21 September 2005, but substantive discussions of the dossier in the Working Party on Environment only started in January 2006. During the Austrian Presidency term in the first half of 2006, the working party met twelve times before Coreper and the Council were asked to resolve the remaining outstanding issues. Coreper met on 7th June 2006 and the Council reached a general approach on the dossier on 27th June. After the European Parliament delivered its opinion on 26th September, the Council adopted the text of the general approach with some minor technical modifications as a political agreement on 23rd October. The Netherlands and Poland voted against the adoption of the political agreement. The Netherlands justified its negative vote by arguing the directive imposed legal obligations on member states to comply with standards whose achievement were beyond their control. Sweden abstained for the opposite reason. Rather than less it preferred more restrictive air quality standards. Although Sweden could support most parts of the agreement, the regulation of fine particles did not go far enough in its view.[9] The political agreement then formed the position of the Council in further informal negotiations with the European Parliament and the Commission under the co-decision procedure.

The following analysis focuses on the positions of member states as recorded in the report of Coreper to the Council on 22nd June.[10] The analysis focuses on this document rather than the report of the working party to Coreper, because in this particular case, Coreper hardly reduced the number of controversial issues, but teased out the positions of a few more member states. Thus, the report to the Council is somewhat more comprehensive in terms of information about states' support for different negotiation positions than the previous report by the working party to Coreper.

[8] European Commission (2005) Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe. COM (2005) 447, 21 September, Brussels.
[9] Council (2006) Draft Minutes: 2757th meeting of the Council of the European Union (Environment), held in Luxembourg on 23 October 2006. 14289/06, 10 November, Brussels.
[10] Council of the European Union (2006) Note from the General Secretariat to Council: Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe - general approach. 10453/1/06, 22 June, Brussels.

For the purposes of illustrating the method, the case of the air quality directive has a particular advantage. It is a relatively small case with a limited number of issues, which eases both the exposition of the method and the graphical and tabular representation of results. Given that all major new provisions in the proposal refer to the establishment or implementation of some form of air quality standards, there is a strong *a priori* expectation that the level of ambition with respect to reducing air pollution is at least one of the main policy dimensions, if not the only one. At the same time, although the number of contested issues is relatively small, a large number of member states supported different positions with respect to those issues, therefore creating sufficient variability amongst member state positions to allow for the application of scaling methods.

Identification and interpretation of policy dimensions

Graphically, each issue in the MCA solution is represented by two position items, one indicating the presence and one indicating the absence of support for the negotiation position. The two item points can be connected by a straight line through the origin, and the distance from the origin to the two points on either side is a function of the number of actors supporting or opposing the position, respectively. The more unequally distributed actors are between support and opposition for a position item, the more lop-sided the line. Positions taken by few actors are located further away from the origin, which coincides with the centroid of the entire dataset, than positions taken by many actors. As the doubling creates many columns with positions taken by many actors (i.e. the implicit majority position), many issue points are concentrated close to the origin, which makes the interpretation of the standard MCA graph sometimes difficult.

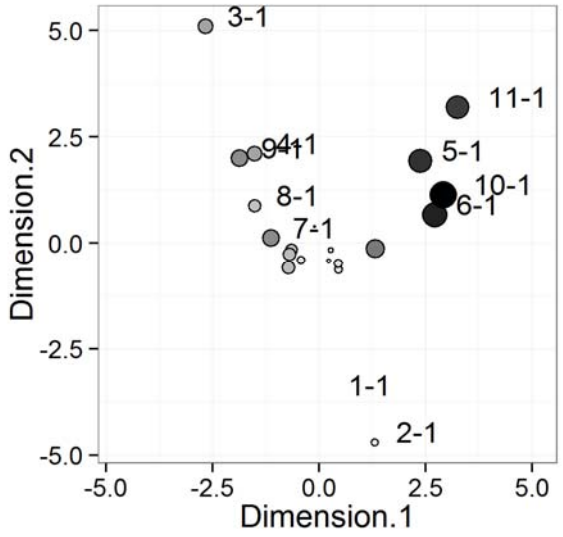

Figure 1: Negotiation positions on first two MCA dimensions

Note: The size and shading of the plot symbols are weighted by the negotiation positions' contribution towards the variance of the first dimension. For legibility, only negotiation positions indicating joint support rather than joint opposition are labelled.

Figure 1 presents a plot of the first two dimensions of the multiple correspondence analyses results for the air quality directive case. The figure plots the estimated locations of negotiation positions in standard coordinates. In order to allow for an easy identification of influential position items, the size of an item's plot symbol is weighted by how much of the first dimension's variance it explains. To keep the figure legible, only the labels of negotiation positions indicating support (i.e. -1s) rather than implicit opposition (i.e. -0s) are plotted in the figure. The latter positions are clustered in smaller plot symbols around the origin. The full numerical results of the multiple correspondence analysis, including all country and position item contributions to the explained variance, can be found in Appendix 1. The text of the negotiation positions is presented in Appendix 2.

Once the MCA solution has been computed, a crucial step in the measurement process is the selection of relevant dimensions. Any formal criterion for choosing the number of dimensions is to some extent arbitrary and might lead to measurement error in particular cases. However, if the measurement approach is to be applied to a large number of cases, a detailed examination of negotiation position contributions to different dimensions is practically not feasible. Instead, an easily computable criterion based on the standard MCA output is required. In this study, I follow convention in selecting all dimensions responsible for an explained variance larger than the average explained variance. Figure 2 shows a skree plot of the explained variances of the dimensions in the ambient air directive case. The

variances are adjusted according to the method proposed by Greenacre (2006, 2007). The first dimension explains about 75% of the variance, which is well above the 21% average explained variance threshold for this case. The explained variances of all other dimensions are far below this value.

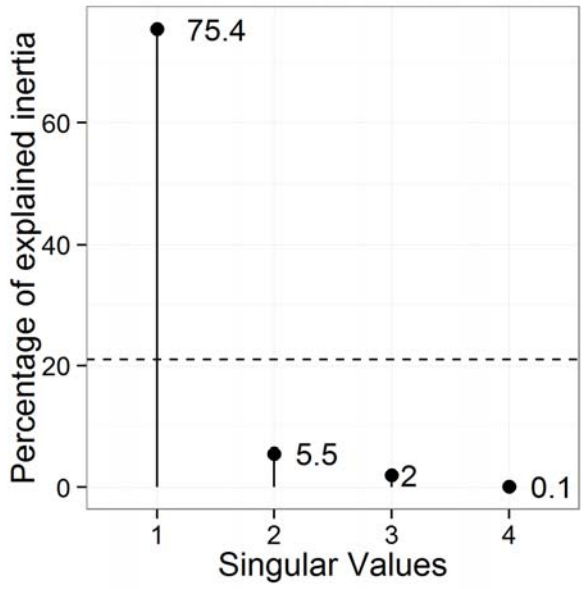

Figure 2: Percentage of explained variance of MCA dimensions

Note: The percentage of explained variance for each dimension is calculated based on the adjusted variance estimates proposed by Greenacre (2006, 2007). The horizontal line indicates the average explained variance across all relevant dimensions, which is used as a threshold level for the selection of dimensions.

For the interpretation of the substantive meaning of a dimension, the relative contribution of each position item to the variance of a dimension is informative. According to the respective item contributions, the first dimension in the ambient air directive case distinguishes between calls for the earlier achievement of binding fine particle reduction targets (5-1, 6-1), more far-reaching exposure redaction targets (11-1), and opposition to more flexibility in the implementation of existing standards (10-1) on the one hand, and a call for an extension of the derogation period for implementing existing standards (7-1) on the other hand. Although other negotiation positions calling for only non-binding fine particle target values (4-1), for a second postponement period for existing standards (9-1) and for later attainment deadlines for the new fine particle standards (8-1) do not show above-average contributions to the variance of the dimension, their consistent locations on the left part of Figure 1 suggests that the first dimension captures the level of ambition for air quality improvements.

Whereas the contributions of position items to the first dimension make conceptual sense, the item contributions to the second dimension are less consistent. The two item

contributions in the bottom part of Figure 1 refer to calls for more onerous requirements for the practical implementation of the air pollution standards (1-1, 2-1), whereas the two items in the top part represent demands for reducing those standards (3-1, 4-1). Thus, the dimension could reflect differences in terms of opposition to strict standards versus opposition to onerous implementation requirements for those standards. However, conceptually, such an interpretation does not make sense. It implies that countries that are opposed to both strict standards and onerous implementation requirements are located somewhere in the middle of the second dimension, rather than at one of its endpoints, as would be expected given their extreme views. In addition, two negotiation position items that clearly reflect demands for higher air quality standards (5-1, 11-1) are also located in the top part of the second dimension and contribute significantly to its variance, thereby further undermining the consistency of position items contributing to the variance of the dimension. Thus, the qualitative post-hoc interpretation further confirms the selection of dimensions based on the formal criterion in this case. Overall, the multiple correspondence analysis suggests that one policy dimension underlies the observed support relationships for different negotiation positions, and that this dimension reflects differences in views about how ambitious the air pollution reduction targets should be in terms of extent and timing.

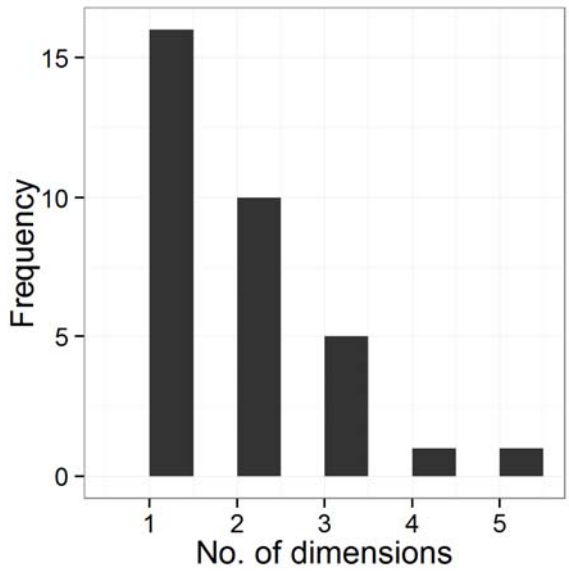

Figure 3: Frequency of MCA solution dimensionality

Note: The criterion for retaining a dimension is an above-average explained variance amongst all dimensions of the particular case. $N = 29$.

In general, one-dimensional solutions are quite common. The histogram in Figure 3 shows the distribution of the number of selected dimensions of the MCA solutions across all cases

using the ‘above-average explained variance’ criterion. This criterion indicates that more than half of the cases can be adequately described by a single dimension. Roughly another third of the cases is best described by two dimensions. Only about a sixth of the cases exhibit three dimensions. Finally, four or five dimensions occur only once each in the sample.

Validation of dimensionality

The multiple correspondence analysis of the ambient air directive indicates that the first dimension is the only substantively meaningful dimension distinguishing between actors’ positions. The dimension differentiates actors that prefer low air pollution reduction targets and long implementation periods from actors that prefer high reduction targets and tight implementation deadlines. One way to assess the content validity of an MCA solution is to examine the degree to which member state positions on the most controversial issues contribute to the variance of solutions’ dimensions. In Council documents, these controversial issues are often identified as “key issues” or “major outstanding issues” (MOI). The more of those MOIs contribute to the MCA solution’s dimensions, the better the MCA solution represents what it is supposed to represent. In order to assess the extent to which the selected dimensions capture MOIs, I manually coded MOIs and whether or not a negotiation position was presented as part of an MOI from the text of the relevant Council document.

Table 2 helps to illustrate this validation approach in the case of the ambient air directive. In this case, I identified three MOIs from the relevant Council document. These are recorded in the last column. The first one relates to whether or not the new fine particle standards should be legally binding (1), the second to the length of the exemption period for existing standards (2), and the third one to a possible postponement of the attainment deadline for the new fine particle standards. Three of the negotiation positions recorded in the first column (4, 5, and 6) were concerned with the first MOI, another three (7, 9, and 10) with the second, and one (8) concerned the third. The remaining four negotiation positions (1, 2, 3, and 11) were recorded under “other issues” in the document (see Appendix 2 for the text of all positions). Of the negotiation positions related to MOIs, four out of seven made a significant contribution to the variance of the MCA dimension. The average contribution to the dimension of all negotiation positions was 9.1%, which was surpassed by MOI negotiation position 5 (15.3%), 6 (16%), 7 (13.4%), and 10 (18.4%). Thus, a simple way to get an idea about the content validity of the MCA solution is to calculate the percentage of

MOI negotiation positions making an above-average contribution to the dimensions of the MCA solution. In this case, four out of seven corresponds to 57.1%.

On the other hand, one could argue that the contributions of individual negotiation positions are of secondary importance, as long as at least one negotiation position related to a particular MOI contributes to the dimension variance. The fact that a negotiation position does not make an above average contribution to a dimension does not mean that it is completely irrelevant for determining its shape and direction or even that it is misleadingly represented by that dimension. In Figure 1, the MOI negotiation positions with lower than average contributions (4, 8 and 9) are all about less strict standards and attainment deadlines and they are all located in the left half of Figure 1. As discussed above, this constellation is entirely consistent with the interpretation of the first dimension as signifying the level of ambition for reducing air pollution. If MOIs rather than individual positions are deemed to be the relevant unit of analysis, the proportion contributing to a dimension is not calculated over individual MOI negotiation positions, but over the MOIs themselves. In the ambient air directive case, two of the three MOIs or 66.7% have at least one negotiation position that makes an above average contribution towards the variance of the MCA dimension.

Table 2: Variance contributions of MOIs and MOI positions (air quality directive case)

Negotiation position ID	Negotiation position contribution to dimension	Average neg. position contribution to dimension	Above average MOI contribution to dimension (yes/no)	MOI (yes/no)	MOI ID
1	0	91	n.a.	0	n.a.
2	13	91	n.a.	0	n.a.
3	53	91	n.a.	0	n.a.
4	62	91	0	1	1
5	153	91	1	1	1
6	160	91	1	1	1
7	134	91	1	1	2
8	38	91	0	1	3
9	76	91	0	1	2
10	184	91	1	1	2
11	125	91	n.a.	0	n.a.
Total	1000	1000	4 positions from 2 MOIs contribute above average 4*100/7 = 57.1 2*100/3 = 66.7	7 MOI positions	3 MOIs

Note: MOI refers to 'major outstanding issue'. Contributions to dimensions are measured in per mille. Shaded rows highlight the positions of the two MOIs that have above average contributions towards the variance of the MCA dimension.

The average percentage of MOI positions making a significant contribution to the dimensions of the MCA solution over the entire sample of cases is 60.2. The corresponding percentage

for MOIs as a whole is 70.6. However, the mean percentage masks some interesting variation in the extent to which MOI negotiation positions and MOIs contribute towards the MCA solutions' dimensions. The two panels in Figure 4 show the entire distribution of those two variables with the dashed vertical lines indicating the respective means. Considering individual MOI positions, the results are rather mixed. In most cases, 50% or more MOI positions contribute towards the MCA solution's dimensions. However, in 7 out of 29 cases, the percentage is below 50%. The picture is somewhat more encouraging when considering entire issues as the relevant unit of analysis. Indeed, in 6 out of 29 cases, all MOIs contributed to the MCA solution's dimensions. Overall, in 25 out of 29 cases, half or more of the MOIs made an above average contribution. Only 4 cases show a percentage value smaller than 50%.

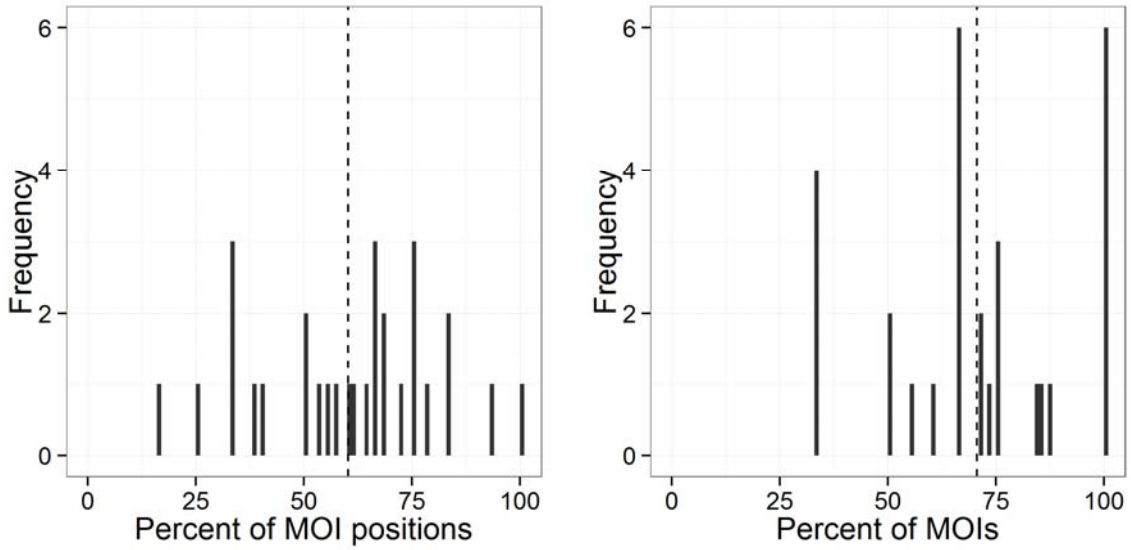

Figure 4: Variance contributions of MOIs and MOI positions

Note: Dashed lines indicate the means of the distributions. The mean percentage of units contributing towards the MCA solution's dimensions is 60.2% for MOI positions (left panel) and 70.6% for MOIs as a whole (right panel). $N = 29$.

To assess the MCA solutions convergent validity, I first linked the DEU issues of the 29 cases to the MOIs mentioned in the documents. On average, 69.8% of the DEU issues in each case were mentioned as MOIs in the relevant Council document. As Figure 5 illustrates, the overlap was in many cases even better. In 11 out of 29 cases, all DEU issues were also mentioned as MOIs in the document. Only in 5 out of 29 cases was the overlap smaller than 50%, and in two of those cases, there was no overlap at all. Being linked to an MOI (i.e. mentioned in the respective Council document) is a trivial necessary condition for a DEU issue to make any contribution to the MCA solution's dimensions. Also, a lack of consistency

in issue definitions between the expert judgements of the DEU data and the Council documents does not necessarily indicate a problem with the quality of the latter. Therefore, the remaining analysis calculates the proportions in relation to the number of DEU issues linked to MOIs rather than to the total number of DEU issues.[11]

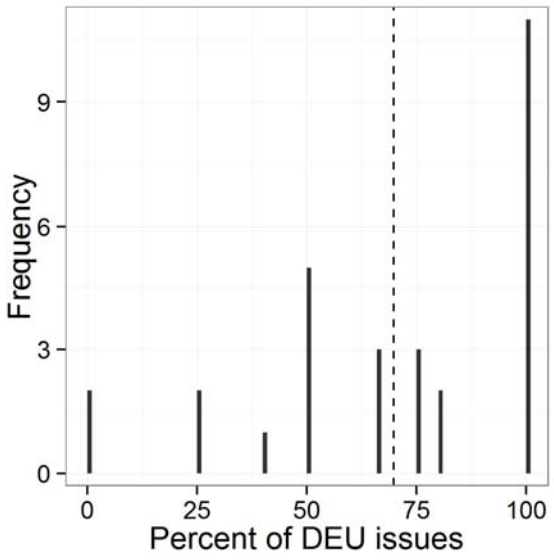

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Figure 5: Percentage of DEU issues linked to MOIs

Note: The dashed line indicates the mean of the distributions, which is 69.8% (*N* = 29).

Table 3 illustrates the relevant calculations in the case of the air quality directive. In his instance, the DEU data identifies two issues, one related to the postponement of the deadline for existing pollution reduction targets, and one related to the new standards for fine particles. The former corresponds closely to the first MOI mentioned in the Council document. However, as the position coding of that issue in Appendix 3 shows, the second DEU issue is an amalgamation of both the timing of the introduction of new standards for fine particles and the extent to which they are legally binding. From the information in the documents, I have coded the timing and the nature of new fine particle standards as two separate issues. Thus, DEU issue number 199 regarding the new targets for fine particles is linked to two MOIs. In light of the content validity analysis, where an aggregation of more negotiation positions into fewer issues leads to more favourable results, MOIs were coded rather conservatively (i.e. if in doubt, a negotiation positions was coded as a separate MOI). Thus, the linkage of a single DEU issue to several MOIs is not uncommon. At the same time, it is not always obvious which type of coding is the more appropriate or reasonable one. Thus, I calculate two percentages, one based on the total number of MOIs linked to DEU issues, and one based on

[11] As none of the DEU issues could be linked to an MOI in two cases, those two cases drop from the analysis.

the total number of DEU issues. In the case of the ambient air directive, two of the three MOIs linked to the DEU issues or 66.7% make an above-average contribution to the MCA dimension. If DEU issues are seen as the relevant reference unit, then the percentage becomes 100%, as both of the DEU issues are linked to at least one MOI that makes a significant contribution to the variance of the MCA dimension.

Table 3: Variance contributions of MOIs linked to DEU issues (air quality directive)

DEU issue title	DEU issue ID	MOI ID	Above average MOI contribution to dimension (yes/no)
The postponement of the deadline for targets regarding certain pollutants	198	1	1
Targets for fine particles; PM2.5	199	2	1
Targets for fine particles; PM2.5	199	3	0
Total	2 DEU issues	3 MOIs	2 out of 3 MOIs or 2 out of 2 DEU issues contribute above average: 2*100/3 = 66.7 2*100/2 = 100.0

Note: MOI refers to 'major outstanding issue'. DEU refers to the Decision-Making in the European Union II dataset; see (Thomson et al. 2012).

Figure 6 plots the results of these calculations for the entire sample. The left panel shows the percentage of MOIs linked to DEU issues that contributed significantly towards the variance of the MCA dimensions. In more than the majority of the cases (15 out of 27), all DEU-linked MOIs made such a contribution. The value is below 50% in only four cases, resulting in an overall average of 72.9%. However, in three of those cases, none of the MOIs made an above average contribution. When DEU issues as a whole are taken as the relevant unit of analysis, the average is 80.6%. In 19 out of 27 cases, all DEU issues contributed significantly to the MCA solution. Of course, in the three cases where no individual DEU-linked MOI made a significant contribution, no DEU issue as a whole made a significant contribution either. However, these were the only cases with a value lower than 50%.

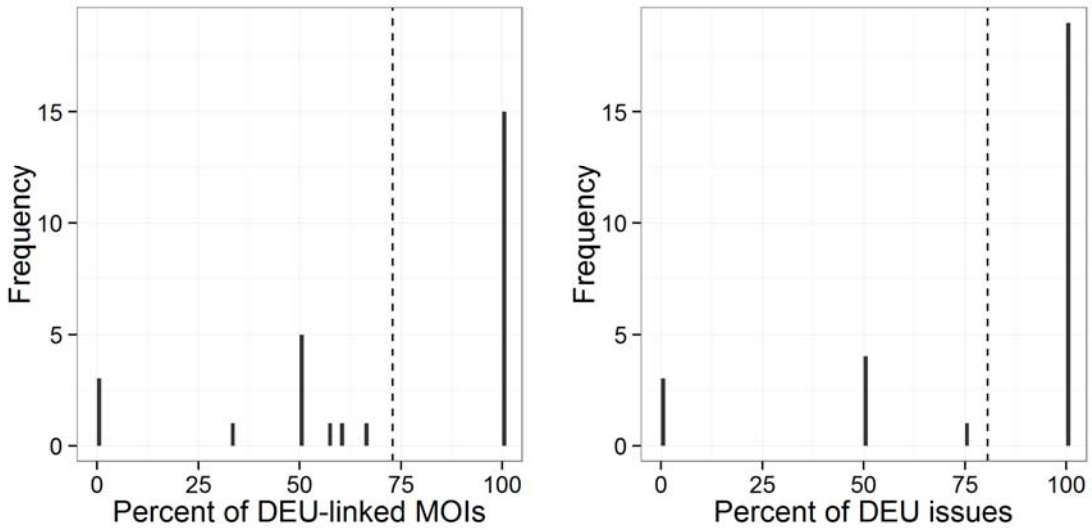

Figure 6: Variance contributions of DEU-linked MOIs and DEU issues

Note: Dashed lines indicate the means of the distributions. The mean percentage of units contributing towards the MCA solution's dimensions is 72.9% for MOIs linked to DEU issues (left panel) and 80.6% for DEU issues as a whole (right panel). $N = 27$.

As a preliminary conclusion, the validation analysis for the dimensionality indicates that the MCA solution produces reasonable results in most cases. However, in a minority of cases, the results require further investigation. In a further revision of the paper, an extension of the validation analysis will investigate whether particular features of the input data are systematically related to the low performance in those instances. Another extension will examine the consistency of the ordering of the MCA dimension coordinates with the manually coded ranks of MOI positions.

Validation of policy positions

The preceding analysis examined whether the MCA is able to recover meaningful and relevant policy dimensions. The second stage of the scaling analysis is concerned with the assignment of positions of countries along those dimensions. The MCA scale positions can be compared with both the positions derived from a manual coding of Council documents and from the DEU data.

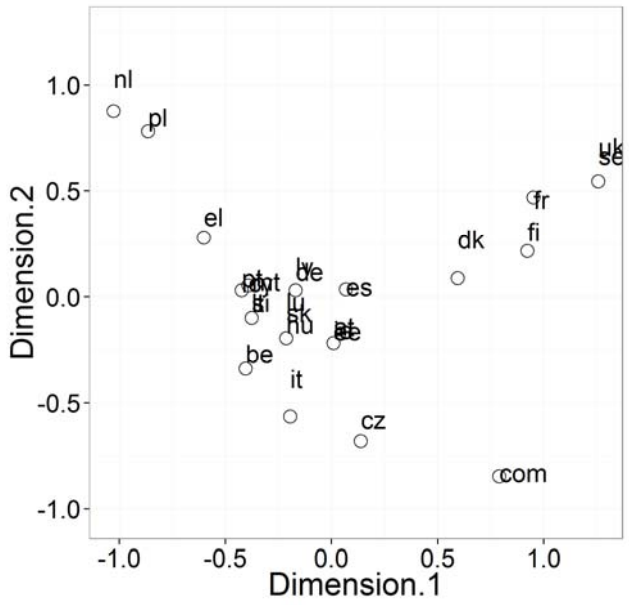

Figure 7: Member state positions on first two MCA dimensions

Figure 7 plots the positions of countries on the first two dimensions of the MCA solution for the air quality directive case. As established above, the dimension of interest is the first dimension. Along this dimension, the figure shows a pattern that corresponds to many qualitative depictions of environmental policy-making in the EU, where the Nordic countries are often characterised as the 'leaders' and the Southern and Eastern European countries as the 'laggards'. The MCA solution also confirms the common impression of the Commission generally promoting high environmental standards. All Scandinavian countries and the Commission occupy positions to the right of the origin, indicating more than average support for ambitious air pollution reduction targets. Given that the Netherlands are usually considered to be an environmental 'leader' as well, its extreme position at the laggard end of the dimension is somewhat surprising, but completely consistent with the countries' stated positions and behaviour in this case.

Table 4: Issue position frequency and country rank

Country	Air quality standards				Rank
	low	med-low	med-high	high	
nl	4	0	0	0	1
pl	3	0	0	0	2
el	2	0	0	0	3
cy	1	1	0	0	5.5
lt	1	1	0	0	5.5
mt	1	1	0	0	5.5
si	1	1	0	0	5.5
de	1	0	0	0	9
lv	1	0	0	0	9
pt	1	0	0	0	9
hu	0	1	0	0	12.5
lu	0	1	0	0	12.5
sk	0	1	0	0	12.5
sk	0	1	0	0	12.5
be	1	0	0	1	15.5
es	0	1	1	0	15.5
it	0	1	0	1	17
cz	0	0	0	1	18
dk	0	0	0	2	19.5
fi	0	0	0	2	19.5
fr	0	0	1	2	21
uk	0	0	0	3	22
se	0	0	0	4	23
com	0	0	0	5	24

Note: The country rank is based on a weighted average of the issue position frequency. The formula for calculating the weighted average (*wavge* = - 1.1**low* - 0.6**med-low* + 0.5**med-high* + 1**high*) weights statements advocating lower standards (low or medium-low) slightly stronger than statements advocating higher standards (med-high or high) to break ties in favour of countries that have fewer statements advocating lower standards.

To further assess the quality and the validity of the scaling results, we can compare the relative location of positions along the MCA dimension to the ranking of positions derived from the manual coding of the text and from the DEU data, respectively. To assess content validity, I coded the 18 stated positions in the text in terms of their location on 13 specific issue dimensions on an air quality protection scale ranging from 1 to 4. Table 4 provides the results of this coding exercise. The rows of the table are sorted according to a weighted

average of countries' air quality standard positions. In the calculation of this average, statements promoting low and medium-low standards received a high and low negative weight, respectively; and statements promoting medium-high and high standards received a low and high positive weight, respectively. The resulting rank of countries based on this weighted average is provided in the rightmost column of the table. Positions favouring higher standards remain often implicit and are therefore not counted towards the medium-high and high standard statements in Table 4. Thus, the formula for the weighted average weights the negative values for low and medium-low statements slightly stronger than the positive values for high and medium-high statements to break ties in the resulting ranking in favour of those cases that have fewer low and medium-low statements.

Figure 8 plots the ranking of positions derived from the MCA solution against the ranking derived from the manual coding of the document information. For reasons of comparability, the MCA ranking is based on the results for the 24 actors that are part of the ranking derived from the manual coding. Figure 8 clearly shows that the MCA produces results that are very similar to those produced by the manual coding of the text. Indeed, the correlation between the two ranking variables is extremely high (r = 0.88).

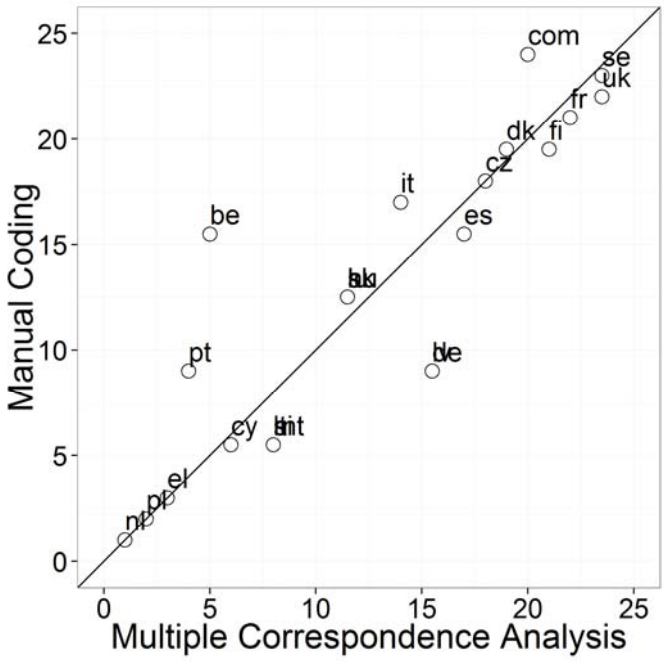

Figure 8: Country position ranks of MCA results vs. manual coding

In order to compare the MCA scaling results with the positions in the DEU data, I first calculated member states' positions on the underlying policy dimension by adding up the

values of the two DEU issue scales. The DEU data contains only position values for 16 countries. Thus, the sample for comparison is reduced accordingly. I ranked those countries according to their value on the policy dimension. Figure 9 plots the ranks of the MCA solution against the ranks derived from the DEU data. Given that the DEU data does not differentiate member state positions at the lower end of the dimension, Figure 6 shows a very high association (r = 0.74). The only country for which the comparisons with the manual coding results and the DEU data agree that the MCA solution might be off is Belgium. Both Figure 8 and 9 indicate that the MCA solution locates this country at a position too close to the lower end of the dimension.

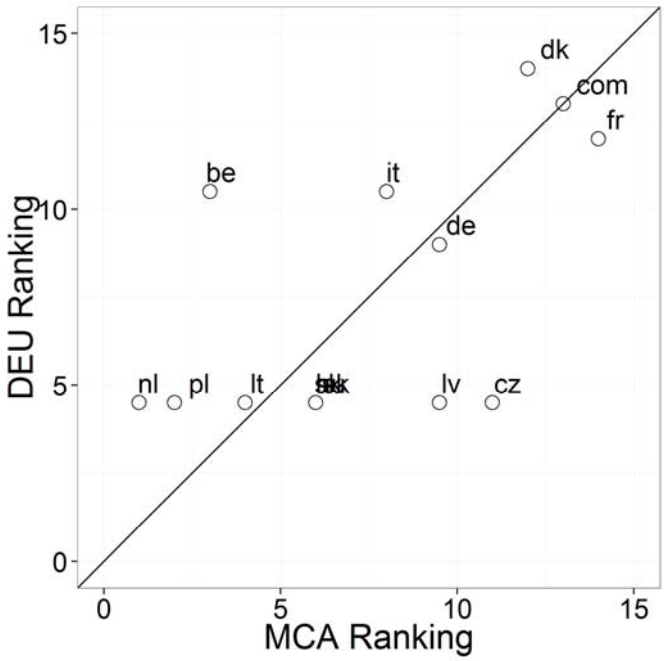

Figure 9: Country position ranks of MCA results vs. DEU data

In summary, the ranking of the MCA position estimates shows a very high correlation with the rankings derived from the manual coding as well as the DEU data. Indeed, the MCA results are further validated by the actual voting record. The Netherlands and Poland voted against the adoption of the political agreement, and Sweden abstained. On the MCA scale, the Netherlands take the lowest position and Poland takes the second lowest position. At the other end of the scale, Sweden takes the highest position. Thus, the results for the ambient air directive suggest that the scaling approach promoted here is not only able to identify the relevant policy dimensions, but also to establish valid actor positions along those dimensions. Future revisions of this paper will discuss at this point to what extent the result of valid policy positions holds up in the larger sample of cases.

Conclusion

This study has demonstrated that it is possible to identify meaningful policy dimensions and valid member state policy positions from relatively unstructured information contained in Council documents. Much of the collection of data, the extraction of information, and the coding of variables can be automated. Future revisions of this paper will analyse in more detail to what extent and under what conditions the results established for the air quality directive case can be generalised to a larger number of cases.

Appendix 1: Multiple correspondence analysis results for ambient air directive case

Rows (countries):

	name	mass	qlt	inr	k=1	cor	ctr	k=2	cor	ctr
1	at	36	284	9	1	0	0	-267	284	15
2	be	36	157	50	-409	120	17	-226	37	11
3	bg	36	284	9	1	0	0	-267	284	15
4	de	36	61	20	-184	61	3	-2	0	0
5	dk	36	389	34	605	382	38	83	7	1
6	cy	36	287	20	-397	282	16	51	5	1
7	cz	36	321	51	134	13	2	-663	309	95
8	es	36	11	20	76	10	1	23	1	0
9	ee	36	284	9	1	0	0	-267	284	15
10	el	36	506	34	-614	394	39	327	111	23
11	fr	36	695	61	978	561	98	478	134	50
12	fi	36	704	48	944	658	92	249	46	13
13	hu	36	361	9	-212	180	5	-213	181	10
14	it	36	289	36	-192	37	4	-501	252	55
15	ie	36	284	9	1	0	0	-267	284	15
16	lt	36	199	28	-381	185	15	-101	13	2
17	lu	36	361	9	-212	180	5	-213	181	10
18	lv	36	61	20	-184	61	3	-2	0	0
19	nl	36	795	95	-1057	420	115	999	375	216
20	mt	36	199	28	-381	185	15	-101	13	2
21	pl	36	740	76	-889	371	81	887	369	171
22	pt	36	290	23	-429	284	19	62	6	1
23	ro	36	284	9	1	0	0	-267	284	15
24	se	36	962	75	1293	795	172	592	166	76
25	si	36	199	28	-381	185	15	-101	13	2
26	sk	36	361	9	-212	180	5	-213	181	10
27	uk	36	962	75	1293	795	172	592	166	76
28	com	36	373	106	809	221	67	-672	152	98

Columns (negotiation positions):

	name	mass	qlt	inr	k=1	cor	ctr	k=2	cor	ctr
1	11	10	160	81	118	2	0	-1149	158	78
2	21	6	257	84	801	49	12	-1645	208	107
3	31	6	625	84	-1653	210	51	2323	415	213
4	41	19	477	71	-942	242	50	928	235	102
5	51	19	776	71	1469	588	121	828	187	81
6	61	16	651	75	1680	613	132	416	38	17
7	71	45	491	45	-690	477	62	119	14	4
8	81	13	176	78	-934	145	33	428	31	14
9	91	16	511	75	-1155	290	62	1009	222	100
10	101	16	790	75	1806	709	153	611	81	37
11	111	10	712	81	2018	488	114	1365	223	110
12	10	81	160	10	-14	2	0	138	158	9
13	20	84	257	6	-62	49	1	127	208	8
14	30	84	625	6	127	210	4	-179	415	16
15	40	71	477	19	257	242	14	-253	235	28
16	50	71	776	19	-401	588	33	-226	187	22
17	60	75	651	16	-365	613	29	-90	38	4
18	70	45	491	45	690	477	62	-119	14	4
19	80	78	176	13	156	145	5	-71	31	2
20	90	75	511	16	251	290	14	-219	222	22
21	100	75	790	16	-393	709	33	-133	81	8
22	110	81	712	10	-242	488	14	-164	223	13

Appendix 2: Code and text of position items

MCA code	"Two major outstanding issues":
	1. Fine particles PM2.5 (Article 15, Annex XIV):
4-1	A group of delegations (**CY/DE/EL/LV/NL/PL**) would prefer, at this stage, to decide only non-binding standards for fine particles. The introduction of binding values should take place at a later stage.
5-1	Another group of Member States (**ES/FI/FR/UK/SE/DK**) and the Commission would like to see a more ambitious approach, with stricter standards for $PM_{2.5}$.
6-1	**Cion/DK/FI/SE/UK** are in favour of a limit value to be met from 2010.
n.a.	**France** defends an earlier review of standards for PM2.5 on the basis of a proposal to be presented by the Commission and a lower PM2.5 target value (20µg/m3) for 2010.
	2. Flexibility clause (Article 20):
7-1	Several delegations (**BE/CY/EL/ES/HU/IT/LT/LU/MT/NL/PL/PT/SI/SK**) would like to introduce more flexibility for Member States in the implementation of the directive, especially by enlarging the period of exemption for PM_{10} from three to five years.
8-1	Some Member States (**LT/MT/NL/SI**) would also like to further postpone the attainment deadlines for $PM_{2.5}$ by a maximum of five years.
9-1	Some delegations (**BE/EL/NL/PL/PT**) asked for the possibility of a second postponement period of a maximum of five years for PM_{10} and nitrogen dioxide in certain conditions, namely in case of a delayed establishment of Community measures like Euro5/6 on light duty vehicles and Euro VI on heavy duty vehicles.
10-1	**Cion/FI/FR/SE/UK** are against the introduction of more flexibility in the Directive.
	"Other issues":
11-1	**France**, **Sweden** and the **United Kingdom** would like to see a mandatory second stage for the exposure reduction target.
n.a.	**Denmark** would like to replace, at this stage, the national exposure reduction target with a common EU-25 reduction target (Article 15).
n.a.	**Sweden** would like to clearly reflect in the Directive the principle that limit values apply everywhere throughout the territory of a Member State and that assessment of air quality is not limited to places where sampling points are located. For that purpose, Sweden suggests draft changes to Annex III, Section A: (i) the deletion, in paragraph 1, of the text after "except those listed in paragraph 2." and (ii) the deletion of paragraph 2 a).
	"Technical remarks" in footnotes:
n.a.	1 **Cion**: Suggests "throughout their zones and agglomerations".
n.a.	2 **Cion**: Reservation on this paragraph.
n.a.	3 **Cion**: Reservation on this paragraph.
n.a.	4 **Cion**: Reservation on this paragraph.
1-1	5 **Cion/BE/IT**: Replace this indent with: //- location of traffic-orientated samplers:
n.a.	6 **Cion/CZ**: reservation on Presidency's proposal for the table.
3-1	7 **NL/PL**: Delete the daily limit for PM10.

Note: "Cion" refers to the Commission.
Source: Council of the European Union (2006) Note from the General Secretariat to Coreper: Preparation of the Council (Environment) meeting on 27 June 2006. 9944/06, 2 June, Brussels.

Appendix 3: Issue description of air quality directive (2005/0183/COD) in DEU II dataset (Thomson *et al.*, 2012)

1. The postponement of the deadline for targets regarding certain pollutants (198)

    0: Possibility of postponing for a long time (six or more years mentioned)

    25: Possibility of postponing NOX target by 5 years, PM10 by 3 years

    50: Possibility of postponing NOX target by 5 years, PM10 target by 2 years

    100: No possibility of postponing targets

2. Targets for fine particles, PM2.5 (199)

    0: Non-binding targets

    40: Limit value of 25 units by 2015

    45: Limit value of 25 units by 2015 with exposure concentration 20 units

    50: Limit value of 25 units by 2010

    60: Limit value of 20 units by 2015

    70 Limit value of 20 units by 2010

    100: More ambitious targets (e.g. 12 units by 2010)

Source: http://www.robertthomson.info/wp-content/uploads/2011/01/Issues_list_new_26March2012.pdf (accessed 31 May 2014)

Appendix 4: Coding of missing values and corrections in DEU II data

The DEU data include some position information for 16 countries, but only 10 of those have positions recorded for both dimensions. For the six countries with missing values on the second issue, I manually coded their positions from information available in the Council document.[12] The DEU data also seems to include two measurement errors. Italy and Belgium are both coded as favouring the status quo on the first issue dimension, which corresponds to "no possibility of postponing [existing] targets" (i.e. a value of 100). In contrast, Council documents state that both Italy and Belgium were part of a group of member states that requested "more flexibility... in the implementation of the directive, especially by enlarging the period of exemption for PM_{10} from three to five years". In addition, Belgium and some other member states also asked for "a second postponement period of a maximum of five years for PM_{10} and nitrogen dioxide in certain conditions".[13] The positions stated in the document do not map directly onto any of the positions recorded in the DEU data (see Appendix 3). The amended text of the proposal as it stood before the meeting by the Council already included a provision of postponing the deadline for nitrogen dioxide by five years and for PM10 by three years. This constellation corresponds to position 25 on this issue in the DEU dataset. The fact that both Belgium and Italy wanted to introduce more flexibility indicates that their positions should be coded as somewhere below 25. Since Belgium in addition asked for a second postponement period, its position should be somewhat lower than that of Italy. Thus, I recoded the value for Italy to 20 and the value for Belgium to 10.

[12] Manual imputation of missing values in the DEU II data is possible when the issue dimension and positions correspond to those mentioned in the Council documents. Unlike in the case of the air quality directive, such a direct correspondence does not always exist.

[13] Council of the European Union (2006) Note from the General Secretariat to Council: Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe - general approach. 10453/1/06, 22 June, Brussels, p. 3.

Table A1: Issue dimensions and position coding in DEU II dataset

		Issue 1: Implementation of existing standards			
	Positions	0	25	50	100
Issue 2: New standards for fine particles	0	CZ, EE, HU, LV, LT, PL, SK, NL*	DE*		
	40		BE*†, IT*†	FR*	DK*
	50			COM	
	100			UK	SE

Source: Thomson et al. (2012).
Notes: * Missing value for this country on issue 2 has been recoded according to information from Council documents (see footnote 15 for source). † Initial coding of 100 for this country on issue 1 was corrected based on information from Council documents (see text for details).

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