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Abstract

EU agencies have become important regulatory venues. Initially established to provide expert advice, many have gained far-reaching decision-making and enforcement powers. This has attracted considerable attention from stakeholders, but the extent of their influence on EU agency conduct has remained a black box. We employ a novel dataset of 203 consultations (2007-2017) containing 26,468 attempts of stakeholders to change proposed regulatory rules by the European Union Aviation Safety Agency, as well as the agency's response. This dataset allows for an original approach to measuring influence by linking influence attempts to rule changes. We found that business interests are far more influential than diffuse public interests. This has important implications for the legitimacy of EU agency stakeholder policies, as they are meant to make EU agencies more broadly accessible. National regulators are also influential in EU agency consultations, pointing to the unacknowledged importance of stakeholder consultations for EU national regulator interactions.

Keywords: interest groups, European Union, influence, lobbying, regulatory agencies, consultations

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Introduction

European Union (EU) agencies have gained importance in the European regulatory system (Levi-Faur, 2011; Egeberg, Trondal and Vestlund, 2015). They assist the European Commission in preparing legislative proposals, adopt binding rules (Chamon, 2016) and enforce EU regulation on private actors (Scholten, 2017). EU agencies have thus become powerful regulators in their own right. Researchers have focused on how EU agencies fit the wider EU institutional landscape, in particular their relationship with the European Commission and member states (see Egeberg and Trondal, 2017 for an overview). The influence on EU agencies via other channels and from a broader set of interests, however, largely remains a black box. Nonetheless, we know that EU agencies consider stakeholders to be important sources for information, input legitimacy, and reputation (Borrás, Koutalakis and Wendler, 2007; Arras and Braun, 2018), while scholars also suggest that stakeholder access could lead to regulated industries having an undue influence on EU agencies' regulatory conduct (Kudrna, 2016; Arras and Braun, 2018).

The few empirical studies on this topic mostly focus on access when considering how stakeholders behave towards EU agencies. Researchers concluded that many EU agencies invite interest groups to provide input in their decisionmaking, for instance through stakeholder bodies, consultations, or agency boards (Borrás, Koutalakis and Wendler, 2007; Arras and Braun, 2018; Pérez Durán, 2018). There are also studies on the actual participation of interest groups in EU agency consultations (Chalmers, 2015; Beyers and Arras, 2019). Yet participation does not equal influence, and interest groups are not the only stakeholders that participate in EU agency consultation processes.

The questions of who actually shapes what EU agencies do and to what extent, have not yet been directly addressed. This paper addresses this gap in the literature by focusing on *influence* rather

than access and participation, and by distinguishing different types of interests, including those of national regulatory agencies. We zoom in on the regulatory rulemaking of the European Union Aviation Safety Agency (EASA) and ask: *Which type of interest has the most influence on EASA's rulemaking?*

Using resource dependence theory, we derive expectations of which stakeholders will most likely attempt to and succeed in having influence in EASA's rulemaking consultations. We include bureaucratic politics literature to establish expectations concerning national agencies' influence. We therefore also contribute to the EU agency literature by theorising and observing whether national regulators, on top of management board and working group membership (Busuioc, 2012; Egeberg and Trondal, 2017), influence EU agencies through consultations. The level of influence from national regulators on EU agency conduct shows whether national authorities still play an important role in an increasingly supranational institutional setup (Egeberg and Trondal, 2017). This has important implications for the position of both actors in the European regulatory space. This research also makes a methodological contribution by employing novel data to measure influence. As the literature on interest group influence has bemoaned, it is often not observable whether an influence attempt has actually taken place, or whether a policy has changed in response to an explicit individual attempt (Dür, 2008; Lowery, 2013; Rasmussen, Carroll and Lowery, 2014). In our data, influence attempts from individual stakeholders and the agency's responses to these attempts are explicit and are directly linked to each other, allowing for an insightful influence measurement.

Literature review

Both the literature on EU agencies and on interest groups in the EU have focused on their respective relationships with typical EU institutional actors such as the European Commission

and EU member states (Klüver, Braun and Beyers, 2015; Egeberg and Trondal, 2017). Both strands of literature, however, have largely neglected the interaction between EU agencies and interest groups. To the extent that interest groups are studied in relation to EU agencies, the focus has been on *access* and *participation*. *Access* denotes engagement in a political arena granted by a relevant gatekeeper. *Participation* is engagement at the discretion of the interest group itself (Halpin and Fraussen, 2017). Studies have found that it is mostly business groups that have the means to comment on EU agency consultations and that frequently participate (Chalmers, 2015; Beyers and Arras, 2019). This is noteworthy as consultations were established to facilitate citizen and public interest engagement by lowering the costs of participation (Bignami, 1999; Quittkat, 2011).

Stakeholder *influence*, defined here in line with Dür (2008, p. 561) as when a stakeholder induces, forces, or compels an agency to adopt its policy preferences, has not been empirically researched in an EU agency context. Empirical studies on US agencies do tackle this issue and find strong influence from business groups on US agency conduct (Crow et al., 2016; Golden, 1998; West, 2009; Yackee, 2006, 2019). Some authors even hint at interest group capture (Libgober and Carpenter, 2018; Yackee and Yackee, 2006).

The findings of frequent business participation in EU agency consultations and strong business influence on US agencies adds urgency to the question of which types of stakeholders are most influential in EU agency consultations.

Theoretical framework

We distinguish three types of stakeholders: business groups, that is groups representing the interests of for-profit firms, or those firms themselves; diffuse interests, which we define as

‘*collective interests held by a large number of individuals*’ (Pollack, 1997, pp. 572–573); and national regulatory agencies.

Additionally, we distinguish two measures of influence. Firstly, *influence rate*, which is the likelihood that a single influence attempt¹ was successful. Influence rate shows us whether an agency is biased in favour of a certain stakeholder type in incorporating their input. Secondly, we look at *total influence*, which is the amount of influence attempts of a stakeholder type that was successful. This shows whether a certain type of stakeholder has made a bigger impact on the regulatory framework as a whole. Total influence depends on the influence rate of a stakeholder but also on how many influence attempts it makes. Stakeholders with a low influence rate can hypothetically have a larger total influence than those with a high influence rate if they participate enough. To arrive at expectations of total influence, we therefore include expectations regarding the participation of our three stakeholder types as well as differences in influence rate.

Our hypotheses rely on resource dependence theory and, for the expectations on national regulators’ influence rate, on bureaucratic politics theory. We assume that EU agencies and stakeholders depend on resources provided by their environment to fulfil their tasks (Pfeffer and Salancik, 1978; Hillman, Withers and Collins, 2009). The interaction between stakeholders and EU agencies is shaped by these dependencies.

We assume that stakeholders are more likely to participate in consultations the more they depend on EU agencies to function and achieve their goals. Stakeholders, therefore, seek to influence regulatory policymaking when they are most affected by it (Bouwen, 2002; Klüver, 2012; Arras and Braun, 2018). The costs and benefits of regulation are more concentrated on business groups compared to diffuse interests (Wilson, 1980; Arras and Beyers, 2020). We, therefore, expect that business interest groups have a larger incentive to participate in consultations compared to diffuse

interests. These differences have likely not been overcome by EU agencies' efforts to attract more diffuse interest groups (Bignami, 1999; Borrás, Koutalakis and Wendler, 2007; Arras and Braun, 2018) as others have shown that businesses dominate EU agencies' consultations (Chalmers, 2015; Beyers and Arras, 2019). Hypothesis 1 therefore reads:

H1: Diffuse interest groups participate less in EU agency consultations compared to business interest groups.

Similar to business interest groups, national regulators have incentives to comment during EU agency consultations as they depend on regulatory rules. These shape the terms of monitoring and enforcing the EU regulation (Chiti, 2013), which national agencies' responsibilities. To provide a benchmark for national agencies' resulting high likelihood of participation, we relate it to that of business interests. National agencies likely depend much more on regulatory rules for their day to day functioning than businesses. Enforcement is regulators' primary task, whereas complying with regulation is not a primary task for business. This should provide national regulators with larger incentives to participate in consultations compared to businesses. However, as there are many more business actors than national regulators, the total participation of businesses should be higher.

We therefore expect that:

H2: National agencies have a lower level of participation in EU agency consultations compared to business interest groups.

We continue with our expectations regarding influence rate. In line with resource dependence theory, we assume that EU agencies are more likely to accept stakeholders' input when the latter are willing and able to provide the resources the agencies depend on. The *raison d'être* of regulatory agencies is to provide expert advice to policymakers and to develop and enforce

technically complex rules (Coglianese, Zeckhauser and Parson, 2004; Braun and Busuioc, 2020). Information, target group support, and wider legitimacy are scarce resources in this regard, and consultations are established to harvest them from stakeholders (Arras and Braun, 2018). We offer two competing expectations on how this dependence shapes the influence rate of business and diffuse interests.

One could argue that business has a higher influence rate than diffuse interest groups because they are better able than diffuse interest groups to supply the information regulatory agencies need most: meaningful technical expertise (Beyers and Arras, 2019; Crow *et al.*, 2016; Quittkat, 2011; Yackee and Yackee, 2006; Yackee, 2019). Regulated actors possess scarce information about their sector, the firm-level consequences of regulation, and its feasibility (Binderkrantz, Christiansen and Pedersen, 2014; Beyers and Arras, 2019). While there are certainly exceptions, diffuse interest groups can only produce comparable information at relatively high costs. Supplying technical expertise likely allows business interests to have more influence than diffuse interests, which lack such expertise. Gaining business' support is, furthermore, important for regulatory compliance (Arras and Braun, 2018), making EU agencies more attentive to business concerns. We would therefore expect that:

H3a: Business interest groups have a higher influence rate in EU agency consultations compared to diffuse interest groups.

Conversely, one could argue that diffuse interest groups have a higher influence rate than business groups. Beyond harnessing technical expertise, consultations allow agencies to increase their wider legitimacy (Bignami, 1999; Borrás, Koutalakis and Wendler, 2007; Arras and Braun, 2018). A specific concern for regulators' legitimacy is regulatory capture, referring to instances where regulators are too attentive to the interest of regulated actors, at the expense of the public

interest (Dal Bó, 2006). Claims that regulation is captured are detrimental to the legitimacy of the agency (Yackee, 2021). To prevent such accusations, agencies may listen to diffuse interest groups more frequently to show that they are not dominated by the businesses they regulate. They thus depend on political support from diffuse interests and resulting legitimacy gains. The competing hypothesis is, therefore:

H3b: Diffuse interest groups have a higher influence rate in EU agency consultations compared to business interest groups.

With regard to the influence rate of national regulators, they possess crucial expertise (Heims, 2017) on the national legal and economic context and characteristics of domestic regulatees. They therefore carry important knowledge concerning the feasibility of proposed rules that EU agencies depends on. Also, EU agencies need national agencies for implementation and enforcement, as EU agencies often lack the necessary capacities or competencies (Groenleer, Kaeding and Versluis, 2010). Therefore, EU agencies depend on national agencies' crucial resources to devise feasible rules and to properly implement and enforce them. We expect that EU agencies' dependence on expertise and support during enforcement is similar for business and national regulators.

Further dependencies can, however, be found in bureaucratic politics theory. This theory assumes that bureaucratic actors are motivated to maintain or even expand their turf (Wilson, 1989). This tendency generally incentivises agencies to protect their mandate when interacting with other organisations (Wilson, 1989; Finke, 2020). Previous research on EU agencies has already demonstrated this dynamic (Bach *et al.*, 2016), but how this affects the interaction between EU and national level regulators depends on the context. Cooperating with regulators at the EU level may allow national regulators to expand their domestic authority (Busuioc, 2016; Heims, 2017).

Cooperation may also allow EU agencies to diminish domestic opposition, establish common EU regulation and thereby expand their authority over regulatory decisionmaking (Groenleer, 2014). However, there may also be conflict between these regulators over whether regulation should be established at the EU or at the national level, leading to turf protecting strategies from EU and national agencies (Busuioc, 2016; Heims, 2017).

EU agencies are expected to be more receptive to national agency input if accepting it expands their turf. National agencies have a say in the EU agencies' priorities and budget, and monitor the EU agencies' operation in their management board (Busuioc, 2012; Jordana, Pérez-Durán and Triviño-Salazar, 2021). EU agencies therefore depend on national agency support to function and may accept their consultation input to harness it. Furthermore, establishing common EU level regulatory rules expands EU agencies' turf as this is crucial to their competence. Accepting consultation comments from national agencies may allow regulatory rules to be adopted and implemented more easily by national agencies. As national agencies are in a unique position to expand the turf of EU agencies, we expect that this makes EU agencies more dependent on national agencies' input compared to that of business and diffuse interest groups. This leads us to expect that:

H4a: National agencies have a higher influence rate in EU agency consultations than business interest groups.

Contrastingly, if EU agencies and national agencies are actively competing over turf, we expect that national agencies are less successful in influencing EU agencies. The EU agency might want to protect its newly acquired turf of harmonising regulatory practices across member states and prevent national exemptions and fragmentation that national agency comments may ask for through consultations. The EU agency would therefore reject proposed changes by national

regulators aimed to protect the turf of the latter. We expect that the incentive to limit national exemptions is similar to rejecting proposals for exemptions by business interests to prevent regulatory capture. This argument informs our competing hypothesis:

H4b: National agencies and business interests have a similar influence rate level in EU agency consultations.

Research design and methods

Case selection

This article looks at consultations on EU agency's regulatory rules. Many agencies adopt regulatory rules to ensure harmonised implementation of standards across member states (Chiti (2013). Additionally, on top of regulatory rules, some consultations also cover opinions to the European Commission concerning implementing and delegated acts.

This article focuses in particular on the rulemaking of EASA. Its transparent approach to regulatory rulemaking (Chiti, 2013) allows us to collect the data required for our influence measurement. EASA regulates civil aviation safety and security and monitors compliance with related environmental and social standards (Pierre and Peters, 2009; Groenleer, Kaeding and Versluis, 2010). EASA is a relatively powerful and independent agency (Wonka and Rittberger, 2010; Scholten, 2017). As this makes all stakeholders particularly dependent on EASA, their participation in consultations is more likely compared to weaker agencies. Similar to EU agencies in banking, insurance, pharmaceuticals, and railways, EASA's competencies go beyond providing the European Commission with expertise, and include decisionmaking and rulemaking powers (Chiti, 2013; Chamon, 2016). These rulemaking powers make national regulators particularly dependent on EASA's consultations, making their participation more likely

compared to consultations of weaker EU agencies. Furthermore, as an independent decision-making competence increases the need for legitimacy, EASA is also a more likely case for diffuse interest group influence (H3b) compared to agencies that merely supply expertise to the European Commission.

In terms of bureaucratic politics, EASA is more likely to fit the assumptions in H4b than those in H4a. Before EASA's establishment, national agencies coordinated regulation informally in the Joint Aviation Authorities (JAA) coordination body (Pierre and Peters, 2009). National senior civil servants enjoyed much autonomy in developing aviation regulation together with key sectoral actors. EASA took over 'all regulatory authority in the European civil aviation sector' by 2010 (Pierre and Peters, 2009, p. 343), while still depending on national agencies for implementation (Groenleer, Kaeding and Versluis, 2010; Scholten, 2017). As national regulators lost the ability to informally coordinate regulation and reportedly aim to 'recover the power they have lost' (Pierre and Peters, 2009, p. 348), we expect a substantial level of competition over turf in EASA's case and therefore a similar influence level of national regulators and business interests (H4b).

Measurement of influence

Measuring influence is a major challenge in interest group research (Beyers, Eising and Maloney, 2008; Dür, 2008; Lowery, 2013). Oftentimes, interest groups' impact on public policy is inferred by looking at groups' preferences and whether changes in public policy reflect or go against these preferences and typically by reducing preferences and outcomes to one dimension from *more restrictive* to *more flexible* (Bunea, 2013; Bunea and Ibenskas, 2015; Yackee and Yackee, 2006). Influence attempts beyond this dimension remain unobserved. It is also rarely observed whether

policy changes in response to one particular attempt. Regulators often do not offer comment-level responses, but limit themselves to aggregate reports on how stakeholder input is dealt with.

This research is able to go further than previous approaches to measuring influence by employing an original dataset on EASA's regulatory rulemaking consultations. In these open consultations, stakeholders are asked to comment on (specific sections of) proposed regulatory rules through an online comment response tool. EASA publishes suggested changes submitted by stakeholders along with their separate response to each comment in a Comment Response Document (CRD). A response by EASA affirms or rejects the individual proposed change to the regulatory rule by stakeholders. The suggested changes to the regulatory rules are influence attempts. The responses by EASA indicate whether this influence attempt is successful; whether EASA agrees to amend a rule in line with the comment.

Using these CRDs as data provides three innovations. First, we can include suggestions that go beyond the single dimension of *more flexible* or *more restrictive* regulation. Second, our level of analysis is the individual comment, not the stakeholder. Disaggregating proposals to change regulation per comment in our analysis allows for a more fine-grained measurement of how successful stakeholders are. And finally, we are able to observe the direct link between individual influence attempts and the agencies' response as we look at explicit agreement or disagreement with individual comments.

As stated above, we distinguish between influence rate and total influence. The influence rate is the proportion of a stakeholder type's comments that EASA agrees to out of all the comments that type of stakeholder makes. The total influence is the proportion of the comments made by a type of stakeholder that EASA agrees to out of all comments EASA agrees to.

Data

At the time of our data collection, EASA's website listed 280 CRD PDF documents, spanning 14 years of EU regulatory rulemaking; from 2004 until 2017. The CRDs were downloaded automatically using a web scraper. Most documents have a standardised layout, allowing us to set up a rule-based extraction script that fetched individual observations from them and restructured them into a data frame.

Some consultations were excluded as they were not in a machine-readable format or provided only generic feedback to all comments instead of individual responses. This resulted in 203 consultations we could use (see Appendix I). After cleaning the dataset for automatic extraction errors and excluding comments we did not count as influence attempts (see below), the total number of analysed comments and responses was 26,468, spanning 11 years (2007-2017).

Influence attempts were made by 1,743 stakeholders².

The data are openly available on figshare at <http://doi.org/10.6084/m9.figshare.11860785>.

Operationalisation

[Table 1 near here]

Our influence measurement uses responses from the agency on the stakeholder comments (see Table 1). In these responses, the agency states whether it agrees with the stakeholders' suggestions and whether it will adopt their suggested changes. The agency responds with four standardised answers as established by the agency: (1) *accepted* (the comment is agreed to by the agency and is wholly adopted); (2) *partially accepted* (only partially agreed to, or fully agreed to but partially adopted); (3) *noted* (acknowledged but no change in text necessary); and (4) *not accepted*.

In our analysis, we focus on attempts to *change* proposed rules, hence we do not consider comments that endorse the rule. There are two reasons for this. First, the agency does not indicate whether it took support for the proposed rule into account when finalising the rule. Instead, the agency responds with *noted* to endorsements. Moreover, the agency also uses *noted* in the case of editorial remarks, when the comment does not require a change in regulation, or when rules have been misunderstood by stakeholders. An example of such a comment is : “[...]. *It seems hasty to issue an AMC [type of regulatory rule] without waiting for the output of the working group.*”. (see Appendix II for other examples). Likely because the comment is not on the rule itself but on its timing, EASA responded with *noted*. In line with other studies on consultations (Binderkrantz *et al.*, 2014) we exclude such comments from the analysis, although it makes up about one-third of our observations. We also excluded comments on editorial issues that received *accepted*, *partially accepted*, and *not accepted* as a response. We did so by excluding all observations with the words *typo**, *editorial* or *clarify** in the comment or response.

We acknowledge that issues raised in the comments are not of equal importance and impact. Appendix III provides 100 randomly selected accepted comments. These contain various substantively important suggestions but these differ from actor to actor. An issue raised with rules on pilot examiner conflict of interest is, for example, fundamental for these examiners, but less important for the sector as a whole. As it is not feasible to assess the impact of all comments for the actors that made them—due to both the high level of expertise needed and high volume of the data—we recognise this as a limitation of our approach.

[Table 2 near here]

Table 2 shows the influence attempt frequency. We only consider comments that received *accepted* as being of influence. In that instance, EASA agrees to amend the regulatory rule

accordingly. The agency defines the *accepted* answer category as ‘EASA agrees with the comment and any proposed amendment is wholly transferred to the revised text’ (European Aviation Safety Agency, 2017, p. 3). We assessed whether the agency commits to this when revising regulation by manually checking the adoption of *accepted* comments in final decisions. In 88 of 100 randomly selected cases, the suggested change was indeed adopted (Appendix III). We do not consider *partially accepted* as evidence for influence as the agency might not have changed the rule as suggested by the stakeholder and we would therefore overestimate the influence of a stakeholder if we included this category. In robustness checks, we tested whether including *partially accepted* as influence or whether operationalising influence as a scale with *partially accepted* as half the influence of *accepted* would lead to different results, but this was not the case (Appendix III).

Types of stakeholder were coded by using the codebook developed in the INTEREURO project (Berkhout *et al.*, 2015). Coding was done manually, using online resources to assess stakeholder classification. An intercoder reliability test with 100 stakeholders coded independently by two of the authors scored a Krippendorff’s alpha of 0.872. The codebook allows us to report results for national regulatory agencies and two separate types of business interests (firms & business associations). We merged comments from firms & business associations into one business interests category to fit our theoretical expectations. A robustness check shows that this decision does not shape the results (see Appendix III). We separated the citizen group category into citizen groups with a diffuse interest (such as environmental protection) and citizen groups with a private interest in aviation regulation (such as sport pilot associations). For completeness, we also present data for labour unions and professional associations. We merged other stakeholder types that represent various levels of government but are not regulatory agencies, appeared very

infrequently in the data, or—as in the case of *individuals*—were ambiguous as to whether they represented an organisation or not (see Appendix IV). For 98 stakeholders (5.6 per cent), we were unable to identify their type. These are excluded from our analysis.

We include two consultation-level control variables in our analysis: stakeholder density and rule type. Both are indicators of potential conflict and salience, which are often found to impact stakeholder behaviour (Gormley, 1986; Chalmers, 2015). Stakeholder density indicates how many stakeholders commented on a consultation, similarly used by Beyers *et al.* (2018). These counts are mean-centred and scaled. Rule type indicates whether the consultation merely covers regulatory rules or also EASA opinions to the European Commission on changes to implementing regulation. Altering implementing regulations allows for more far-reaching changes to the regulatory framework than EASA’s own regulatory rules and may therefore invite greater disagreement amongst stakeholders. See Appendix V for descriptive statistics of the control variables.

Method of analysis

We use cross-classified multilevel logistic regression with dummy variables for each stakeholder type to determine which is most influential (Steenbergen and Jones, 2002). Intercepts vary per consultation to account for differences between individual consultations, such as substantive content, that may make the agency more or less receptive to comments. Consultations are hierarchically nested per year to account for between-year variance (see Appendix VI for all ICC values). Appendix VII includes a robustness check with years as a variable instead of nesting level, but this does not lead to different results. Observations are nested per stakeholder as comments from the same stakeholder may be treated similarly by EASA. The stakeholder type *business interests* is the reference category for the *stakeholder type* dummy variables. We,

furthermore, estimated a multilevel Bayesian model as a robustness check and the results were in line with our frequentist model (see Appendix VIII).

Results

[Table 3 near here]

Starting with our descriptive analysis, we found that business groups frequently participate in consultations (see Table 3). Firms and business associations make up about half of all influence attempts. Within the business category, 85 per cent of comments come from firms (see Appendix IV). Looking at individual stakeholders, many comments come from only a few companies that are directly regulated by EASA (see Appendix IX). For instance, Boeing and Airbus make 4 and 2 per cent of all influence attempts respectively. Airlines like Lufthansa (1 per cent) and KLM (1 per cent), and air traffic controllers like NATS (2 per cent) also frequently participate. Citizen groups that promote diffuse interests, such as noise pollution reduction and disability rights, are virtually absent. They make only 0.04 per cent of all influence attempts. Groups representing the interests of recreational pilots or air sports clubs make 5 per cent of the influence attempts. Many of these are made by one interest group: Europe Air Sports with 1 per cent of all influence attempts. The large difference in participation between business interest groups and diffuse interest groups confirms H1.

Furthermore, the influence attempts of business stakeholders are relatively successful with 39 per cent of them resulting in influence. This differs per individual stakeholder, with NATS having an influence rate of 51 per cent and Lufthansa only 22 per cent (see Appendix IX). Sports pilots and diffuse interest groups have an influence rate of 18 and 19 per cent respectively. This provides support for H3a.

Lastly, national regulatory agencies are an active and influential group of stakeholders. They account for 25 per cent of all influence attempts. As is expected in H2, this is substantial but less than the participation of business interests. The two most frequently participating regulators are the UK civil aviation agency (6 per cent) and France's civil aviation regulator DGAC (4 per cent). Additionally, they are relatively successful in making their voices heard. Their influence rate of 42 per cent is roughly the same as that of business groups, providing support for H4b. Individual national agencies were observed to have influence rates as low as 37 per cent (Swiss regulator FOCA) and as high as 51 per cent (Norwegian Civil Aviation Authority).

Combining the number of influence attempts with the rate of influence, however, business interests score higher (54 per cent of all successful influence attempts) than regulatory agencies (30 per cent) in terms of total influence. Business interests are therefore most influential in absolute terms.

Our regression model reveals that five types of stakeholders are significantly different from the reference category (business) in terms of their rate of influence (see Table 4 and Figure 1).

Business interests have a 31 per cent predicted probability of having influence. Citizen groups are less influential. Their predicted probability of having influence is 21 per cent for citizen groups representing private air sports interests and 12 per cent for citizen groups representing diffuse interests. The large confidence intervals for the latter category are due to the low number of observations. This uncertainty prevents us from confirming H3a (or disconfirming H3b), although the previously discussed differences in participation make business interest dominance over diffuse interest indisputable in terms of total influence.

Furthermore, regulatory agencies have a 35 per cent predicted probability of having influence. This is statistically different from the influence of business interests at a 0.1 level. As sample

sizes as large as the one in this study deflate p-values (McCaskey and Rainey, 2015), this level of significance is weak evidence for an actual difference in influence. We, therefore, assess the substantive meaning of the range of predicted effects that is included in 90% confidence intervals (as suggested by (McCaskey and Rainey, 2015)). These contain odds ratios between 1.01 and 1.45. This is not substantially consistent with H4a as the differences in the odds of having influence between national regulators and business actors are nearly even (where odds ratio =1.00) at the lower end of the confidence interval. This lack of a substantive difference is consistent with H4b. Note that these findings reflect relative terms. The sheer size of the participation of business interests means that they do have a higher total influence compared to national regulators.

[Table 4 near here]

[Figure 1 near here]

Discussion

Our analysis leads to three relevant observations: (1) business groups are far more influential than groups representing diffuse interests; (2) regulatory agencies are not more influential than businesses; and (3) distinguishing between influence rates, participation and total influence when studying stakeholder engagement is informative.

Firstly, in line with previous studies on stakeholder participation with EU agencies (Chalmers, 2015; Beyers and Arras, 2019) and those looking at US federal agencies (Crow, Albright and Koebele, 2016; Golden, 1998; West, 2009; Yackee, 2006, 2019), business actors are much more active compared to diffuse interest groups. Looking at individual stakeholders, in line with Beyers and Arras' (2020) findings, it is mostly regulated industry that participates. Citizen groups

representing diffuse interests such as environmental protection and citizen rights represent only a small fraction of influence attempts in EASA's consultations. This finding implies that citizen groups find it hard to garner the expertise needed to contribute to consultations. We cannot be conclusive about the rate of diffuse interest group influence based on our regression models, given the low number of observations.

The near absence of participation of diffuse interest groups, however, makes their rate of influence unimportant in analysing their total influence. The high participation of business groups means that they overshadow diffuse interest groups in terms of total influence in any case.

Despite the agency's attempt to lower the threshold for diffuse interest groups (Bignami, 1999; Borrás, Koutalakis and Wendler, 2007; Arras and Braun, 2018), consultations actually reinforce the bias against these interests in favour of businesses. This finding also corroborates general research on EU lobbying. Dür, Marshall and Bernhagen (2019, p. 70) indicate that citizen groups often win in the EU legislative process, but business still has a major influence on implementation issues that do not receive broad attention. EASA's regulatory rules are seldom part of public debate. Similar results can be found for consultations conducted by the European Commission (Bunea, 2013) and national governments (Binderkrantz, Christiansen and Pedersen, 2014). While the large influence business has may appear worrisome in terms of agency capture, it is important to consider that businesses offer regulators many benefits. When thinking about how agencies should deal with (business) stakeholders and be kept accountable for their approach towards them, we must first democratically determine what the goal of that accountability should be (Nesti, 2018). If legislation would limit businesses from having a seat at the table, we must acknowledge that this may result in less information supply and find ways remedy this, for example by funding more independent research.

National regulatory agencies participate frequently and are relatively influential in consultations, although not substantially more than business interest groups. A certain degree of influence from national regulators is to be expected because of EASA's dependence on the expertise and implementation capacity they provide. However, if EASA would be taking a cooperative approach to national regulators, we would expect a higher influence rate from them compared to business interests (H4a). The lack of such a difference found in the analysis fits the assumption that national- and EU-level agencies actively compete over turf (Bach *et al.*, 2016; Busuioc, 2016; Heims, 2017) and that EU agencies protect their turf by preventing national agencies from shaping EU regulatory rulemaking (H4b). This finding is important as EU agencies do not only need to overcome functional coordination problems in order to act, but must also look for political consensus among national regulators (Jordana, Pérez-Durán and Triviño-Salazar, 2021), which are seen as 'key interlocuters' in EU agencies' day to day functioning (Egeberg and Trondal, 2011, p. 883). Due to competition over turf, seeking consensus may go beyond technical questions of how to best regulate a market and also reflect institutional conflict. The results imply that EASA does not rely on consultations to overcome these conflicts.

We recognise that the results on national agencies' influence may be shaped by EASA's institutional setup (Pierre and Peters, 2009) and that for other agencies there may be a more cooperative relationship with national agencies (Groenleer, 2014; Busuioc, 2016; Heims, 2017). Researchers should further investigate whether and how specific mechanisms of bureaucratic politics literature apply to how national agencies' comments in consultations are evaluated by EU agencies.

There is nevertheless still some influence from national agencies on regulatory rules and this has two possible implications for whose interests are being served. One would assume that, being

government organisations and therefore tasked to serve the public interest, the participation of regulatory agencies counteracts the influence of business in EASA's consultations. The influence of regulatory agencies might, however, also reinforce the bias towards business. In their research on EASA, Pierre and Peters (2009) indicate that industry actors found their interaction with the Joint Aviation Authorities—which was exclusively composed of national regulators—to be much more accommodating than the more bureaucratic procedures of EASA. This indicates that national regulators may be rather tightly linked to national industry. In the aviation sector, where referring to flag carrier airlines is still common and airports are of major importance to national economies, regulatory agencies protecting national industries through their interaction with EASA is not impossible. Future research should assess whose interests national agencies represent when engaging with EU agencies.

National authorities' active participation in consultations points to an interesting implication for EU regulatory governance literature. It often concludes that EU agencies see the European Commission rather than EU member state governments as their most important partner, adding to the increasing supranational nature of EU agencies (Egeberg and Trondal, 2017) and the centralisation of the EU regulatory space (Egeberg, Trondal and Vestlund, 2015). However, this research finds that national regulatory agencies have some influence on EU agencies through consultation procedures, beyond their role in EU agency boards and working groups (Busuioc, 2012; Egeberg and Trondal, 2017). Future research on the institutional embeddedness of EU agencies should therefore also consider such consultation procedures to get a more nuanced picture.

Lastly, our analysis shows the value of distinguishing participation, influence rate, and total influence when analysing lobbying success. This allowed us to assess whether EASA, in

evaluating influence attempts, alleviates biases caused by the abundant participation of business groups. In our research, the total influence of business interests and national regulatory agencies over diffuse interest groups is indisputable. There is such a gap in participation between these stakeholder types that differing influence rates cannot change this picture much. There is, however, within-type variation in the rate of influence. Future research should investigate what explains these differences, both in influence rate and total influence, on the level of specific stakeholders.

Conclusion

In this paper, we assessed whether stakeholders have influence on EU agency rulemaking and which type of group has the most influence. We conclude that stakeholders do indeed have influence. A total of 35 per cent of the 26,468 influence attempts in EASA's consultations were successful. In line with our expectations regarding EU agencies' need for expertise, business interest groups are more influential than diffuse interest groups. In absolute numbers, business interests have the highest level of influence in EASA's rulemaking consultations. Furthermore, national regulatory agencies have a substantive influence on EU agency rulemaking, although not substantially different from that of business. As about two-thirds of EU regulatory agencies use public consultations (Arras and Braun, 2017), these results are relevant to other contexts. EASA belongs to the more powerful regulatory EU agencies enforcing technically complex regulation. Comparable regulation, with concrete costs for businesses and for which businesses and national regulators own crucial informational and enforcement resources, is common in EU market regulation. We therefore also expect the rate of influence and total influence of businesses to be of similar magnitude for other (EU) regulatory agencies. Future research should, however, establish whether these results also hold for agencies without decision-making and enforcement

powers and how bureaucratic politics plays out in agencies with tasks other than market regulation such as the European Defence Agency and Frontex.

Using Comment Response Documents as data, we were able to get very close to measuring real influence. We, however, acknowledge that our sample is biased in measuring the concept.

Stakeholders might already have changed the agency's mind in the first stage of rulemaking when drafting the consultation paper, which has indeed been observed to be the case for EASA (Joosen, 2020). But influence might also be established through informal contact or membership in agency boards (Pérez Durán, 2018). Lowery has framed this dynamic as the 'behind the veil' hypothesis (2013, p. 9). To take the next step in lifting the veil, we suggest looking at influence originating from taking part in drafting regulatory rules as well as other venues.

Endnotes

¹ Influence attempts are regarded as participation in which the stakeholder aims to change the regulatory rule under consideration. This excludes participation in consultations for purposes such as expressing general discontent with the agency, asking for clarification, or endorsing the rule.

² Cleaning the data involved deleting all comments that were erroneously coded. When comments were unusually short or stakeholder names were unusually long, this implied that the data were not separated properly by our script. We assessed what these thresholds should be by investigating a table with the longest stakeholder names and shortest comments, where it became clear that the thresholds should be 10 and 3 respectively to filter out the mistakes and still include as much data as possible. Stakeholder names were cleaned using a Levenshtein coefficient analysis with a threshold of 0.5. Names with a similarity greater than that were manually checked to see if they could be merged.

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Tables and captions

Table 1: overview of operationalisation

<i>Concept</i>	<i>Operationalisation</i>	<i>Data Source</i>	<i>Unit of Measurement</i>
<i>Influence (Dependent Variable)</i>	Agency accepts the stakeholders' influence attempt	Comment response documents	Comment
<i>Stakeholder type (Independent Variable)</i>	As developed by INTEREURO project (Berkhout <i>et al.</i> , 2015)	Comment response document, web sites of stakeholder	Stakeholder
<i>Density (Control Variable)</i>	Number of stakeholders per consultation, mean centred and scaled	Comment response document	Consultation
<i>EC regulation (Control Variable)</i>	Whether consultation covers EASA opinions on EC regulation (1) or not (0)	Comment response document	Consultation

Table 2: different categories in influence measurement

<i>Response</i>	<i>Frequency</i>
Accepted (Influence)	9,338
Partially Accepted (No Influence)	7,035
Not Accepted (No Influence)	10,095
Total Influence Attempts	26,468

Table 3: frequency of participation, rate and total influence for stakeholder types

<i>Type of stakeholder</i>	<i>Rel. frequency of participation (%)</i>	<i>Influence rate (%)</i>	<i>Total influence (%)</i>
Business interests	49.24	38.84	54,21
Regulatory agency	25.45	42.29	30.50
Citizen group (Air sport)	5.19	19.42	2.86
Professional association	3.04	24.88	2.14
Labour union	1.36	22.50	0.87
Citizen group (diffuse)	0.04	18.18	0.02
Other	15.68	21.14	9.39
Total	100	35.28	100

Table 4: logistic regression results for influence, 3 models. Logit estimates with standard errors in brackets. Reference category for stakeholder type is *business interests*.

	<i>Dependent variable:</i>		
	Influence		
	(1)	(2)	(3)
<i>Stakeholder type</i>			
Citizen group (air sport)		-0.519*** (0.125)	-0.517*** (0.125)
Citizen group (diffuse)		-1.205 (0.904)	-1.214 (0.884)
Labour union		-0.671*** (0.209)	-0.670*** (0.209)
Professional association		-0.510*** (0.172)	-0.508*** (0.172)
Regulatory agency		0.190* (0.109)	0.191* (0.109)
Other		-0.467*** (0.077)	-0.465*** (0.077)
Density			-0.039 (0.119)
EC regulation			-0.064 (0.137)
Constant	-0.925*** (0.094)	-0.736*** (0.095)	-0.738*** (0.150)
Observations	26,468	26,468	26,468
Log Likelihood	-15,559.150	-15,526.450	-15,526.230
Akaike Inf. Crit.	31,126.300	31,072.900	31,076.460
Bayesian Inf. Crit.	31,159.030	31,154.740	31,174.660

Note: *p<0,1; **p<0,05; ***p<0.01

Figures

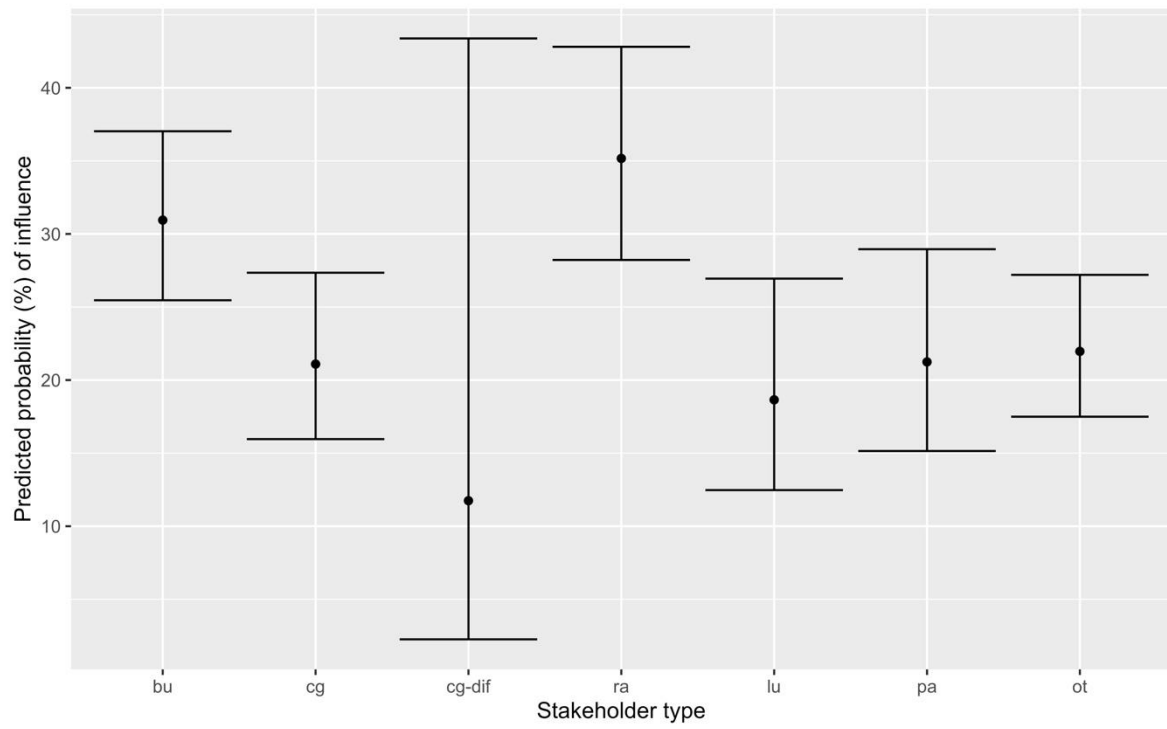


Figure captions

Figure 1: predicted probabilities of having influence for each stakeholder type based on model 1. (bu=business interests, cg=citizen group (air sport), cg-dif=citizen group (diffuse), ra=regulatory agency, lu=labour union, pa = professional association, ot=other)

Wordcount: 8,584

Date: 15-11-2021

Appendix

I: CRDs that are not in the analysis

Table A1: CRDs that are not in the analysis

2004-02	2004-13	2005-07	2005-22	2006-10	2008-02	2009-02g	2013-08
2004-04 0	2004-14	2005-08	2006-01	2006-11	2008-07 I	2009-02g1	2013-13
2004-04 1	2004-15	2005-09	2006-02	2006-12	2009-01	2009-2e	2013-16
2004-04 2	2004-16	2005-10	2006-03	2006-13	2010-14	2009-09	2013-21
2004-05	2005-01	2005-11	2006-04	2006-14	2013-08	2010-07	2014-01
2004-08	2005-02	2005-12	2006-05	2006-15	2009-01	2010-14	2014-04
2004-09	2005-03	2005-13	2006-06	2006-16	2009-02a	2011-06	2015-08
2004-10	2005-04	2005-16	2006-07	2006-17	2009-02b	2012-10	2016-05
2004-11	2005-05	2005-20	2006-08	2006-18	2009-02e	2012-12	
2004-12	2005-06	2005-21	2006-09	2006-19	2009-02f	2012-21	

II: Examples of comments that were ‘noted’

In CRD 2007-01, ART indicated. *‘AMC 25.1709 point 4 Compliance summary page 51
The intent is not to examine each individual wire and its relation to other wires. Rather, it
is to ensure that there are no hazardous combinations. In this sentence, please clarify if
hazardous means HAZARDOUS failure condition which must be demonstrated as
extremely remote. If not, change the word in order to avoid confusion.’*

In CRD 2008-18, IACA (International Air Carrier Association) indicated: *‘IACA agrees
with the conclusion and recommendation of the rulemaking group for EASA to discontinue
further rulemaking activity and terminate the 25.045 rulemaking task.’*

In CRD 2008-18, AEA (Association of European Airlines) indicated: *‘AEA would like to
stress its support the work performed by the rulemaking task 25.045, as well as share the
opinion delivered by this group.’*

In CRD 2011-20, Gatwick Airport indicated. *‘After discussions in the rulemaking groups
London Gatwick supports this proposal.’*

In CRD 2013-25, Air France indicated: *‘The rulemaking group has performed a great job.
The PBN integration in the European regulation was quite challenging.’*

In CRD 2013-09 , the Aerospace Industries Association indicated: *‘AIA would like to
request more detailed information on the assumptions within the EASA assessment in order
to provide substantive comments on the economic impact. It is very likely that a predictive*

alert as defined in this NPA, which fully accounts for all of the considerations mentioned, would cost much more than the estimated cost provided in the RIA.'

In CRD 2016-13, Airbus indicated: *Significant Latent Failure Airbus would like to remark that the word more in the definition of Significant Latent Failure may lead to confusion since it is always possible to combine a latent failure with multiple other failures or events to produce a Haz or Cat FC. A review of fault tree or dependence diagram will identify all latent failures and their contribution to the top event. Even those considered as having only a small influence will become significant latent failures with this definition since, combined with an unlimited number of other failure events a HazCat FC will occur.*

In CRD 2016-13, ENAV indicated: *'M1 Article 3x Provision of ATMANS, airspace structure and flight procedure design, and ATM network functions It s not clear what part of Article 3x the GM is referred to.'*

In CRD 2016-16, IAOPA Europe indicated: *'IAOPA Europe notes that the Agency considers that the scope of NPA 2016 16 is limited to the correction of editorial errors and the addressing of non controversial issues raised by EASA itself or stakeholders.*

Accordingly, no Impact Assessment has been included in the NPA. We consider that the Agency should clarify the intention of GM1 FCL.735.A and GM2 FCL to make it abundantly and unambiguously clear that this is an optional alternative for enhancing an MCC course to standards and levels appropriate for CAT operation and is not to be taken as a mandatory requirement for existing MCC course providers who elect not to choose this option.'

In CRD 2017-06, UK CAA indicated: *'Thank you for the opportunity to comment on NPA 2017 06, Loss of control or loss of flight path during go around or other flight phases.*

Please be advised there are no comments from the UK Civil Aviation Authority.'

III: Robustness check of operationalisation

The coded randomly selected observations, to check whether agreed changes do indeed lead to changes in regulation, are available on figshare at [http://doi.org/\[concealed for peer review\]](http://doi.org/[concealed for peer review]), reference number [concealed for peer review].

Table A2: regression results for influence, 3 models. Logit (model 1 and 2) and beta estimates (model 3) and standard errors. Reference category is firm. (DV=dependent variable, PA= partially accepted)

	<i>Dependent variable:</i>			
	Original	DV includes PA	DV includes PA	Original
	(1)	(2)	(3)	(4)
<i>Stakeholder type</i>				
Business association				-0.063 (0.123)
Citizen group (air sport)	-0.517*** (0.125)	-0.438*** (0.116)	-0.088*** (0.020)	-0.526*** (0.126)
Citizen group (diffuse)	-1.214 (0.884)	-0.194 (0.823)	-0.137 (0.147)	-1.223 (0.890)
Labour union	-0.670*** (0.209)	-0.711*** (0.203)	-0.138*** (0.035)	-0.680*** (0.209)
Professional association	-0.508*** (0.172)	-0.598*** (0.168)	-0.109*** (0.029)	-0.517*** (0.173)
Regulatory agency	0.191* (0.109)	0.055 (0.115)	0.025 (0.019)	0.181* (0.110)
Other	-0.465*** (0.077)	-0.317*** (0.073)	-0.071*** (0.013)	-0.474*** (0.079)
Density	-0.039 (0.119)	-0.027 (0.116)	-0.005 (0.020)	-0.039 (0.118)
EC Regulation	-0.064 (0.137)	-0.017 (0.139)	-0.008 (0.024)	-0.064 (0.137)
Constant	-0.738*** (0.150)	0.534*** (0.141)	0.479*** (0.026)	-0.729*** (0.151)
Observations	26,468	26,468	26,468	26,468
Log Likelihood	-15,526.230	-15,949.160	-13,325.860	-15,526.100
Akaike Inf. Crit.	31,076.460	31,922.310	26,677.720	31,078.200
Bayesian Inf. Crit.	31,174.660	32,020.520	26,784.110	31,184.580

Note:

*p<0.1; **p<0.05; ***p<0.01

Table A2 reports on a robustness check to see whether including *partially accepted* comments in our measurement would lead to different results.

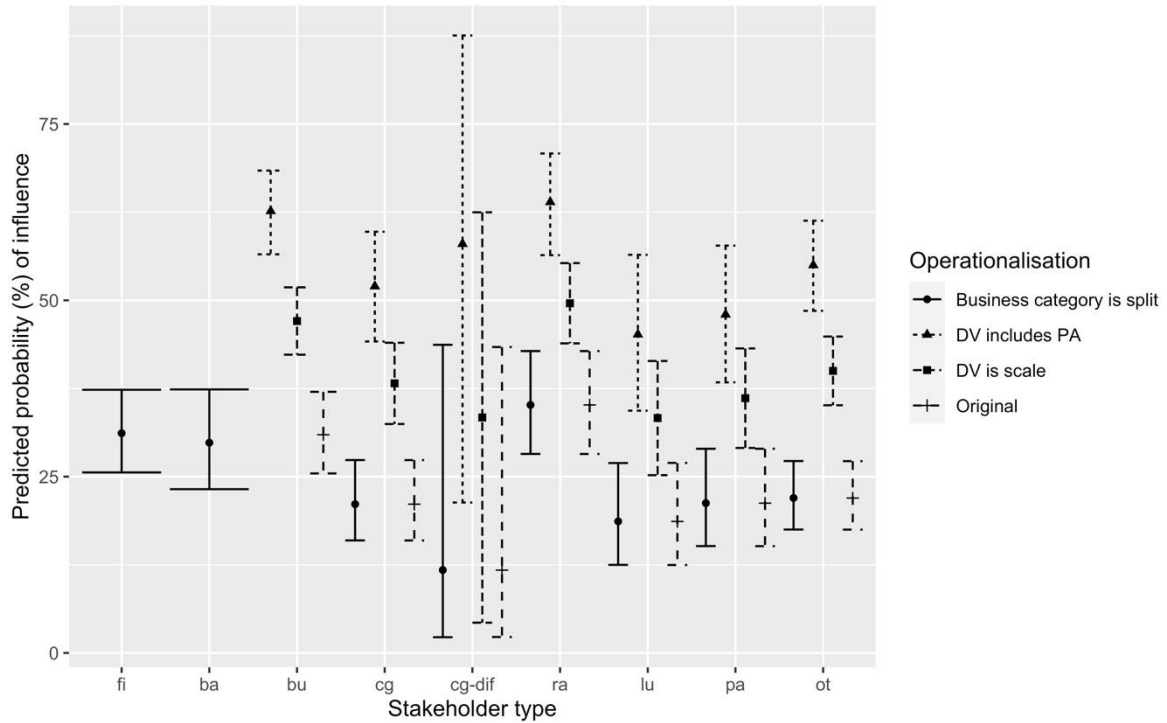
The first robustness check shows what the results would have looked like if *partially accepted* was also scored as influence in the dependent variable (model 2). A multilevel logistic regression model was used, as in the main analysis. The second robustness check was performed with influence as a scale variable (model 3). This variable ranges from 1 (high influence) to 0 (no influence). To calculate the score, accepted comments were scored with 1, partially accepted comments were scored with 0.5 and not accepted comments were scored with 0. A multilevel linear regression model was used to analyse the results. The results of both robustness checks are displayed in Table A2 and Figure A1.

Using the different ways to approach the influence variable does not change the substantive results of this paper. When the partially accepted category was included as influence, the only difference is the lack of significance of the regulatory agency category. However, this category was only significant at a 0.1 level. Approaching influence as a scale variable leads to the same change in significance of the regulatory agency type. The size of the effects does increase when adding partially accepted in the operationalisation of influence and again when the variable is operationalised as a scale variable (see Figure A1). This is the result of additional observations being counted as influence. The chance of having influence therefore becomes higher overall. But the different model specifications do not change the difference between types of stakeholder within each model specification, which

is key to the analysis. The results of these robustness checks are therefore that the results in the paper are robust against different operationalisations of influence.

Additionally, we show whether separating results for business associations and firms have an effect on the results (Table A2, model 4; Figure A1). The results in terms of predicated probability are nearly identical for all but the business interest group types.

Figure A1: predicted probabilities of having influence for each stakeholder type from four different operationalisations. (PA= partially accepted, fi=firm, ba=business association, bu=business interests, cg=citizen group (air sport), cg-dif=citizen group (diffuse), ra=regulatory agency, lu=labour union, pa = professional association, ot=other)



IV: Merging stakeholder types

The INTEREURO codebook was followed to code stakeholder types. To better fit the aim of our research, one category was split (see methods section). Furthermore, stakeholder types were compiled into an ‘other’ category. These stakeholders are EU agencies other than EASA, intergovernmental organisations, individuals, institutions and government or related. Individual refers to an actor that responded to the consultation with only their own name. It could not unambiguously be determined for these actors whether they represented their own personal interests or the interest of an organisation they were a member of or worked for. Individuals are therefore also part of the *other* category. Furthermore, we merged the two types of business interests; firms and business associations. The separate influence attempt rates of these groups are shown in table A3.

Table A3: influence attempt frequencies in ‘other’ category

<i>Stakeholder type</i>	<i>Participation</i>	<i>Influence rate (%)</i>
EU agency	12	8.33
Government or related	570	27.54
Individual	3,094	16.87
Institution	117	36.75
Intergovernmental organisation	356	43.25
Total in ‘other’ category	4,149	21.13
Firm	11,105	38.40
Business association	1,929	41.42
Total in ‘business interests’ category	13,034	38.84

V: Descriptive statistics of the control variables

Table A4: Descriptive statistics of (scaled) density variable

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min/Max</i>
<i>Density</i>	1060	958.51	3/6326
<i>Density (scaled)</i>	0	1	-1.103/5.494

Table A5: Frequency table of EC regulation variable

<i>Variable</i>	<i>No</i>	<i>Yes</i>	<i>Total</i>
<i>EC</i>	10,493	15,975	26,468
<i>Regulation</i>			

VI: Model fit statistics and random intercept statistics

Table A6: model fit statistics and random intercept of two models in main analysis.

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
<i>Model fit statistics</i>			
Degrees of freedom	4	10	12
Akaike information Criterion	31,126	31,073	31,076
Log-likelihood	-15,559	-15,526	-15,526
Deviance	31,118	31,053	31,052
χ^2		65.394	0,444
$\Pr(\chi^2)$		<0.001	0,8009
Intraclass correlation coefficient (Consultations)	0.144	0.142	0.141
Intraclass correlation coefficient (Stakeholder)	0.077	0.066	0.066
Intraclass correlation coefficient (Year)	0.008	0.008	0.007
N (observations)	26,468	26,468	26,468
<i>Random intercept</i>			
N (Consultations)	203	203	203
Variance (Consultations)	0.616	0.595	0,589
SD (Consultations)	0.785	0.771	0,767
N (Stakeholder)	1,743	1,743	1,743
Variance (Stakeholder)	0.331	0.277	0,278
SD (Stakeholder)	0.575	0.527	0,527
N (Year)	12	12	12
Variance (Year)	0,036	0,033	0,031
SD (Year)	0,189	0,181	0,177

Table A6 gives the model fit statistics of the two models presented in the paper. Two issues are noteworthy. As the χ^2 of model 2 is statistically significant, the addition of the dummy type stakeholder variables improves the model. This is however not the case for model 3, indicating that adding control variables did not lead to more explanatory power.

Additionally, the interclass correlation coefficient points out how much of the variation is accounted for by nesting the observations using the cross classified multilevel model. As the model can account for 14 per cent of the variation by nesting at the consultation level and for about 7 per cent of the variation by nesting at the stakeholder level, the use of

multilevel models is statistically supported. The variables that is accounted for by nesting at the year level is minimal (0,8 per cent). We however decided to still include it because this nesting structure accounts for the structure of the data.

VII: Robustness check with years as variable instead of nesting level

Table A7: models with different use of the year variable.

	Dependent variable:						
				Influence			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Stakeholder type</i>							
Citizen group			-0.519*** (0.125)	-0.517*** (0.125)		-0.516*** (0.125)	-0.515*** (0.125)
Citizen group diffuse			-1.205 (0.904)	-1.214 (0.884)		-1.211 (0.961)	-1.216 (0.906)
Labour union			-0.671*** (0.209)	-0.670*** (0.209)		-0.665*** (0.210)	-0.665*** (0.209)
Professional association			-0.510*** (0.172)	-0.508*** (0.172)		-0.505*** (0.172)	-0.504*** (0.172)
Regulatory agency			0.190* (0.109)	0.191* (0.109)		0.191* (0.109)	0.191* (0.109)
Other			-0.467*** (0.077)	-0.465*** (0.077)		-0.465*** (0.077)	-0.464*** (0.077)
Density				-0.039 (0.119)			-0.034 (0.113)
EC regulation				-0.064 (0.137)			-0.028 (0.132)
Year					0.085*** (0.021)	0.081*** (0.021)	0.080*** (0.021)
Constant	-0.924*** (0.074)	-0.925*** (0.094)	-0.736*** (0.095)	-0.738*** (0.150)	-1.575*** (0.180)	-1.359*** (0.181)	-1.362*** (0.208)
Observations	26,468	26,468	26,468	26,468	26,468	26,468	26,468
Log Likelihood	-	-	-	-	-	-	-
Akaike Inf. Crit.	15,560.360	15,559.150	15,526.450	15,526.230	15,552.670	15,520.250	15,520.160
Bayesian Inf. Crit.	31,126.710	31,126.300	31,072.900	31,076.460	31,113.340	31,060.510	31,064.320
	31,151.260	31,159.030	31,154.740	31,174.660	31,146.070	31,142.340	31,162.530

Note:

*p<0,1; **p<0,05; ***p<0.01

Model 1: Cross classified nesting at consultation and stakeholder level

Model 2: Cross classified nesting at consultation and stakeholder level, consultations nested in years

Model 3: Cross classified nesting at consultation and stakeholder level, consultations nested in years, includes independent variable

Model 4: Cross classified nesting at consultation and stakeholder level, consultations nested in years, includes independent variable and control variables

Model 5: Cross classified nesting at consultation and stakeholder level, year as control variable

Model 6: Cross classified nesting at consultation and stakeholder level, year as control variable, includes independent variable

Model 7: Cross classified nesting at consultation and stakeholder level, year as control variable, includes independent variable and control variables

VIII: Robustness check with Bayesian model

As a robustness check, we performed the analysis using a Bayesian model. We used naïve priors for all regression coefficients (normally distributed, with a mean of 0 and a precision of 0,01). The model ran for 9000 iterations with a burn-in period of 1000 iterations. The model does not nest per year in order to ease convergence.

As is evident from Figure A3, the results were very similar to our main results.

Table A8: Bayesian model estimates. Median, Standard deviations (SD), Lower and upper bounds of 95 per cent credible intervals of the posterior and probability (Pr) that there is an effect.

Variable	Median	SD	Lower	Upper	Pr
Citizen group (air sport)	-0.525	0.132	-0.781	-0.265	1.000
Citizen group (diffuse)	-1.328	1.009	-3.521	0.456	0.926
Labour union	-0.678	0.219	-1.100	-0.239	0.999
Professional association	-0.512	0.180	-0.869	-0.159	0,998
Other	-0.472	0.079	-0.630	-0.320	1.000
Regulatory agency	0.195	0.113	-0.030	0.411	0.955
Density	-0.077	0.118	-0.311	0.152	0.745
EC regulation	-0.042	0.141	-0.322	0.235	0.628

Figure A2: posterior estimates of the variables. Dotted line represents the lack of an effect

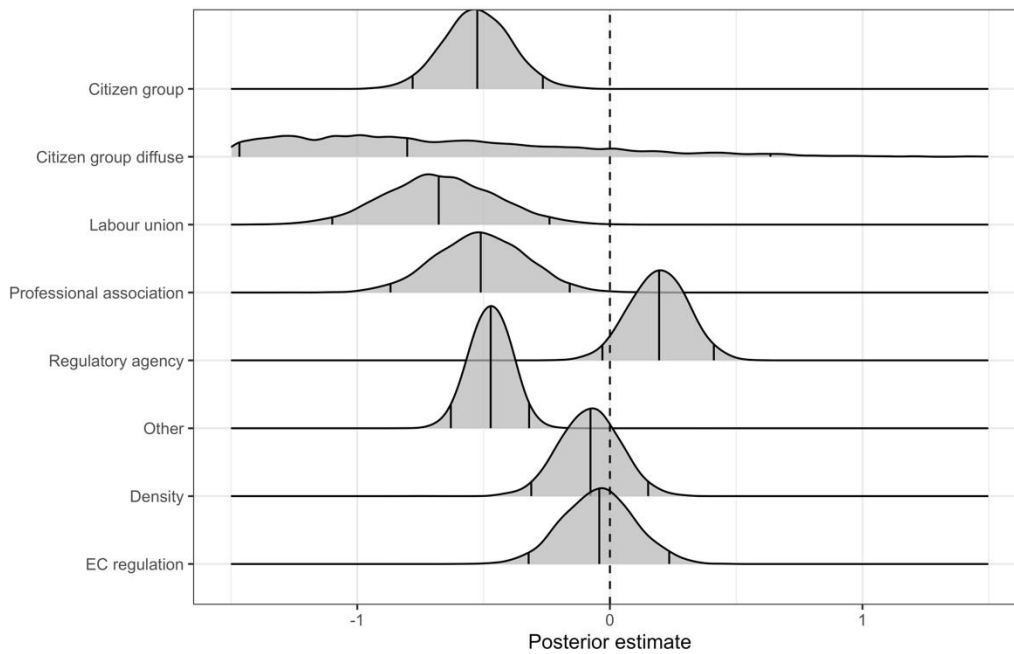
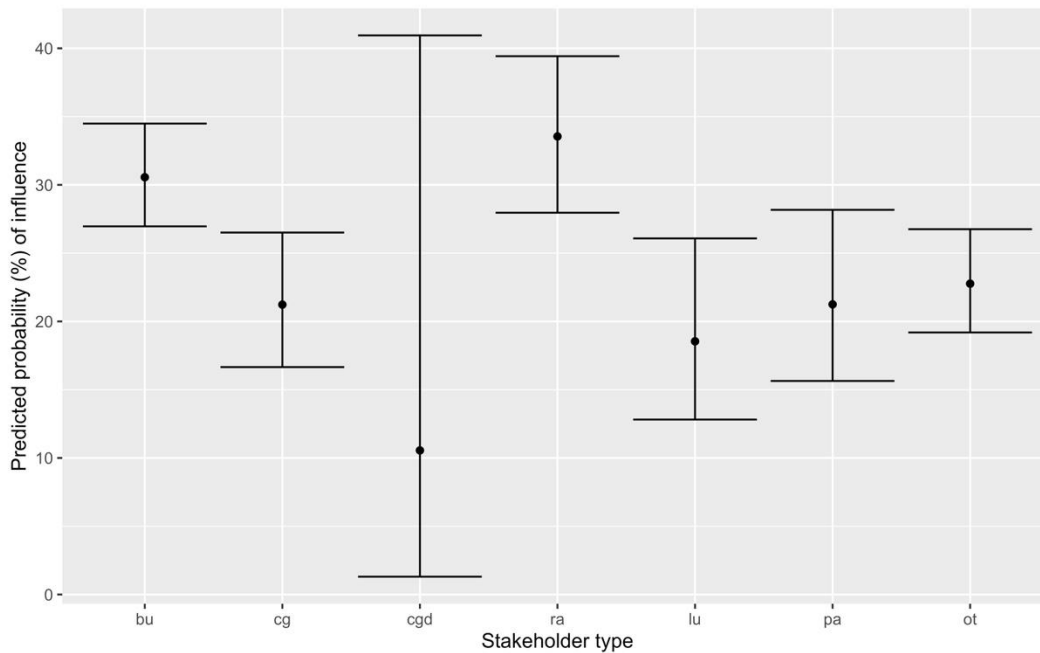


Figure A3: predicted probabilities of having influence for each stakeholder type based the Bayesian model. (bu=business interests, cg=citizen group (air sport), cg-dif=citizen group (diffuse), ra=regulatory agency, lu=labour union, pa = professional association, ot=other)



IX: Statistics for most frequent commenters

Table A9: participation, influence rate and total influence of the 20 most involved stakeholders. Firm and business association are reported elsewhere as ‘business interests’

<i>Stakeholder name</i>	<i>Stakeholder type</i>	<i>Rel. participation Frequency (%)</i>	<i>Influence rate (%)</i>	<i>Total influence (%)</i>
UK CAA	Regulatory agency	5.73	40.83	6.63
Airbus	Firm	4.06	37.21	4.28
DGAC France	Regulatory agency	3.88	39.01	4.29
NATS National Air Traffic Services Limited	Firm	2.45	51.39	3.57
Boeing	Firm	2.13	28.67	1.73
CAA NL	Regulatory agency	2.06	42.83	2.50
Swedish Transport Agency Civil Aviation Department	Regulatory agency	1.97	50.48	2.82
Federal Office of Civil Aviation FOCA	Regulatory agency	1.87	36.69	1.95
KLM	Firm	1.49	30.96	1.31
FAA	Regulatory agency	1.30	37.21	1.37
European Cockpit Association	Professional association	1.27	26.57	0.95
Garmin	Firm	1.14	47.85	1.55
Eurocontrol	Intergovernmental organisation	1.14	42.86	1.38
CAA Norway	Regulatory agency	1.12	50.51	1.61
ENAC France	Government or related	1.07	24.03	0.73
Dassault Aviation	Firm	1.04	32.73	0.96
CAA Belgium	Regulatory agency	0.98	47.31	1.32
CANSO	Business association	0.91	45.83	1.18
Deutsche Lufthansa	Firm	0.84	22.42	0.54
AESA	Regulatory agency	0.82	43.58	1.02