

The Unequal Effects of the COVID-19 Pandemic on Political Interest Representation[★]

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Pro-business bias in interest representation is often viewed as a persistent feature of policy-making. Yet, we know little about how these biases are magnified or reduced during crisis. Using the COVID-19 pandemic as a system-wide shock to the political agenda, we employ a difference-in-differences strategy to estimate its effect on differences in access to policy-makers and social media activity between business interests and NGOs. We show that the lobbying context strongly conditions the effects of crisis. With panel data from approximately 10,000 interest groups from over 100 countries registered in the European Union, we find that the pandemic caused substantial advantages in obtaining meetings with policy-makers for business interests, while NGOs increased social media prominence. The results suggest that business interests successfully capitalized on the crisis through increased political access at the expense of other interests. They have important implications for understanding how large-scale crises affect inequalities in political representation.

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One of the most famous quotes in political science is Schattschneider's observation that "the heavenly chorus in the pluralist heaven" of interest representation "typically sings with a strong upper class accent" (Schattschneider, 1960, pp. 34–35). Rather than a force to strengthen democracy, Schattschneider viewed the system of interest representation as a benefit to some interests at the expense of others. His prediction has been widely borne out by empirical research (Gray and Lowery, 2000; Schlozman and Tierney, 1986), and is often cited in reference to the dominance of business interests at the expense of actors representing societal interests, such as non-governmental organizations (NGOs). Political commentators and academics have thus often voiced concerns about these biases because business groups are typically seen as representing narrow interests (Flöthe and Rasmussen, 2018; Giger and Klüver, 2016; Olson, 1965). Moreover, they are frequently associated with the views of affluent citizens, and with ideologically conservative issue publics (Crosson, Furnas and Lorenz, 2020; Grossmann, Mahmood and Isaac, Forthcoming). Business dominance in interest representation thus creates the risk that policies informed by these interests will favor specific economic constituencies rather than the electorate as a whole. Representing the views of the latter is often seen as a yardstick for political representation (Dahl, 1971).

While researchers argue that bias favoring business interests may vary between, for instance, issues and policy domains (Berkhout et al., 2015; Rasmussen and Carroll, 2014), they also show that business bias is a remarkably stable feature of most political systems, persistent over time and across systems. Yet, research on biases in interest representation is often conducted during periods of relative stability. As a consequence, we know little about how large-scale crises can affect interest representation in general (Birkland, 1998) and interest group bias in particular. Indeed, it is reasonable to expect that the threats engendered by a crisis—and the resulting urgency of policy responses (Boin et al., 2006)—have the potential to greatly affect representation by changing the incentives and constraints faced by different types of interest groups with respect to lobbying.

In this article, we use the onset of the COVID-19 pandemic as a clear case of an exogenous

pan-societal shock to the political agenda to clarify the theoretical and empirical connections between the onset of a crisis and biases in interest representation. The COVID-19 pandemic is widely viewed as the largest crisis since World War II. It has threatened the interests and earnings of a wide range of actors, and profoundly affected the daily lives of citizens. Not surprisingly, considerable lobbying expenditures have therefore been directed toward influencing policy-making during the crisis. In the US, for example, substantial lobbying attention was directed toward the \$2.2 trillion Coronavirus Aid, Relief, and Economic Security (CARES) Act (Vogel, 2020)—the largest aid package in US history. In Europe, lobbying efforts were heavily directed toward the €750 billion European Union (EU) Recovery Plan for Europe (Council of the European Union, 2020). At the same time, lobbying during the COVID-19 pandemic has been widely criticized for its lack of transparency and its potential to reinforce existing inequalities and biases in interest representation. Business organizations and companies have been accused of exploiting the crisis for their own benefit (e.g. Carbon Market Watch, 2020; Corporate Europe Observatory, 2020).

This article documents the effects of the COVID-19 pandemic on differences between NGOs and business interests in (1) political access and (2) public communications. We leverage panel data that catalogue the population of meetings with the European Commission and the social media (Twitter) activity of 11,967 interest groups from 116 countries included in the European Union Transparency Register. Using these data, we examine both whether differences in access and social media activity between NGOs and business interests stay the same or change during the COVID-19 crisis, and whether the potential effects of the pandemic on these patterns of bias vary between different lobbying channels.

We argue that the lobbying context is an important factor to consider when seeking to understand how crisis affects bias in interest representation. Importantly, we expect that the COVID-19 crisis had differential effects on biases between business interests and NGOs in access to policy-makers and social media usage. The reason, we argue, is that business interests and NGOs face different incentives and constraints with respect to using these two different

lobbying channels. Business groups should have the strongest focus on obtaining direct access to policy-makers and simultaneously benefit from strong activity status. NGOs, on the other hand, likely face more obstacles to gaining similar access, and have stronger incentives than business interests to promote their cause by mobilizing the broader public through, for example, social media. As a result, we predict that the crisis should strengthen business groups at the expense of NGOs with respect to access to policy-makers, but weaken their online presence on social media relative to NGOs.

To estimate the effects of the crisis on interest representation, we employ a difference-in-differences strategy. Our analyses provide strong evidence in support of the empirical expectations. We find that the COVID-19 crisis substantially decreased the access of NGOs to EU policy-makers relative to business interests, but that the picture is reversed with respect to public outreach as measured by social media activity. Furthermore, leveraging textual information about the agenda of each meeting and the contents of each social media post, we provide evidence that the driver of these results is consistent with the COVID-19 pandemic as the mechanism. Finally, we show that differences in access to policy-makers and social media activity between business interests and NGOs are not simply driven by differences in the economics resources available to each interest group. NGOs increase their activity on social media relative to business interests both among those with low and high lobbying budgets. Moreover, while businesses with larger lobbying resources benefited from the crisis in political access, NGOs with similar resources did not.

Our findings demonstrate that, rather than bias in interest representation being constant over time, crises and abrupt agenda changes can cause substantial changes in the access and prominence of different types of interest groups. Yet, the results also emphasize the need to consider that the lobbying context conditions the effects of crisis on biases in interest representation. Due to variation in both the incentives and constraints that different groups face with respect to lobbying via different channels, a crisis can strengthen the prominence of some types of interests in one channel, but weaken them in another. The results serve as an important

stepping stone for further analysis of the implications of crisis on interest representation, with broad consequences for political governance and democratic legitimacy.

Theoretical framework

An important starting point for any discussion of the link between crisis and bias in interest representation is how to understand the concept of bias in interest representation. While scholars largely agree that no current system of interest representation is unbiased, they often emphasize different elements when defining bias in practice (Lowery et al., 2015). Indeed, if there were a million-dollar question in interest group research, it would likely concern what an unbiased system of interest representation looks like. It is clear that bias in interest representation can be considered in various ways, such as geographical coverage, the organizational structure of the interest groups represented, or the amounts of resources and the types of substantive interests represented (Carroll and Rasmussen, 2017; Lowery and Brasher, 2004). In this article, we focus on the latter by examining potential biases between two major categories of interest groups, i.e. business interests versus NGOs. Such biases have often been considered in both the academic literature (Gray and Lowery, 2000; Schlozman and Tierney, 1986) and among policy practitioners (Mulcahy, 2015). By “business interests” we refer to both firms and business associations, and by “NGOs” to the different types of organizations that represent societal and identity interests as opposed to economic interests.¹ Some NGOs are involved in providing diffuse public goods (e.g., environmental and consumer groups), whereas others promote the views of specific identity subgroups (e.g., LGBT support groups, women’s associations, or particular hobbies).

Bias between business interests and NGOs

Biases between business interests and NGOs often manifest themselves at different stages of what Lowery and Brasher (2004) call “the influence production process,” ranging from the mobilization of groups to the use of different lobbying channels and exertion of influence. Our

¹In our data (detailed below) business interests and NGOs constitute the vast majority of interest groups.

study is therefore explicitly designed to look at bias in different lobbying channels. Accordingly, we examine the relative representation of business interests and NGOs in two important lobbying channels: (a) activity access to meetings with policy-makers, and (b) outsider lobbying through public communications, as measured through social media activity. The former denotes a situation in which organized interests use activity strategies to approach policy-makers directly and where policy-makers grant those interests the opportunity to be heard (Binderkrantz, Pedersen and Beyers, 2017; Bouwen, 2004; Eising, 2007; McCrain, 2018). This channel is frequently viewed as important to gaining actual political influence. According to a Washington saying, “If you’re not at the table, you’re on the menu” (Schlozman, Verba and Brady, 2012, p. 309). Social media activity, by contrast, can instead be viewed as an increasingly important form of “outsider strategy” (Kollman, 1998; Van der Graaf, Otjes and Rasmussen, 2016), where organized interests aim at generating attention for their cause by appealing to the broader public (including citizens and other interest groups).

Regardless of whether one looks at activity access to policy-makers or outside social media activity, one challenge in assessing bias is that there is typically no established benchmark for what unbiased interest representation looks like (e.g. Lowery and Gray, 2004; Lowery et al., 2015; Schlozman, 1984). While scholars often rely on raw counts of different types of substantive interests, they also recognize that an unbalanced system may not be one with equal levels of activity from these different types of groups, since some groups may constitute a larger share of the interest group population to begin with (e.g. Gray and Lowery, 2000; Rasmussen and Carroll, 2014; Schattschneider, 1960; Schlozman and Tierney, 1986). In judging the prominence of NGOs versus business interests in both activity access and outsider Twitter activity, we thus use the population of these types of organized interests as a benchmark. This allows us to look at relative differences in the average levels of these activities for groups that belongs to these two categories of substantive interests. In this way, we acknowledge that the shares of business interests and NGOs in the EU population of organized interests vary to begin with, but that crises may potentially both magnify and minimize biases between groups.

Crisis and bias

While bias in interest representation is typically seen as one of the persistent features of modern policy-making across systems and time, the question is whether crises have the potential to cause changes in how prominent different types of groups are in different lobbying channels. According to [Boin et al. \(2006\)](#), a crisis is defined by the presence of three characteristics. First, it involves a threat to core values of society, such as safety and security or welfare and health. Second, it induces a sense of urgency: the need to act fast. Third, it is characterized by uncertainty both in the nature of the crisis and the actions necessary to tackle it. The COVID-19 pandemic captures all three of these elements by representing a pan-societal threat to a number values, with strong pressure on policy-makers to act in an environment with considerable uncertainty about how best to tackle the crisis. From the literature, we know that crises can lead to dramatic and radical shifts of political agendas. As noted above, we know less, however, about how they affect interest representation in general ([Birkland, 1998](#)) and interest group bias in particular.

According to pluralist interest group theory, we can see crisis as a major disturbance in society (e.g. [Bentley, 1908](#); [Dahl, 1961](#); [Truman, 1951](#)). In the case of the COVID-19 crisis, we witness a number of disturbances of a social, economic, demographic, and cultural character. Following pluralist theory, we can expect these disturbances to affect both mobilization of new groups and increased activity of existing interest groups. In the words of [Truman \(1951, p. 505\)](#), “[a] disturbance in established relationships anywhere in society may produce new patterns of interaction aiming at restricting or eliminating that disturbance.”

In line with such a logic, the shifts in the agenda caused by a crisis can be seen as triggering new patterns of interest representation: interests with large stakes might intensify lobbying efforts whereas other types of stakeholders whose interests are less disturbed might scale their efforts down. Similarly, policy-makers might respond to the new agenda by being more receptive to granting access to interests for whom the crisis reflects a major disturbance to the interests of their members and engage less with stakeholders that are deemed less affected. In this way, the

disturbance which a crisis represents has the potential to alter and lead to a new equilibrium in the prominence of businesses versus NGOs.

How the lobbying context moderates the impact of crisis on bias

Importantly, however, we expect that the context in which lobbying takes place modifies how the “disturbances” of a crisis affect patterns of bias between business interests and NGOs. We distinguish between two lobbying channels: “activity” access to policy-makers and “outsider” social media activity and argue the rules of the game guiding lobbying in these channels vary. This is important for business interests and NGOs, which typically distinguish themselves from each other in the type of constituencies they represent and the kinds of information they possess. As a result, these two types of interest groups are likely to face different incentives and constraints with respect to getting activity access and using outsider social media activity in practice. Ultimately, we therefore expect the crisis to have a differential impact on the prominence of business groups versus NGOs in “insider” and “outsider” lobbying channels.

Starting with insider access, we can see lobbying as an exchange relationship where policy-makers grant interest groups access in exchange for various kinds of goods that groups supply to them (Klüver, 2012; Pfeffer and Salancik, 2003; Witko, 2006). Policy-makers are often portrayed as being short of especially technical knowledge and expertise, because they are understaffed and do not necessarily have the resources to specialize in all of the topics on which they make decisions. A possible solution to this dilemma is for them to engage with interest groups. Policy-makers grant access to many different types of interest groups, including business interests and NGOs. However, when it comes to the possession of technical expertise, business groups are often seen as being particularly advantaged compared to other interest groups (Dür and Mateo, 2013; Yackee and Yackee, 2006, but see De Bruycker, 2016). They are more likely than other types of interest groups to hire revolvers with expertise and political connections (Baumgartner et al., 2009; Strickland, 2020). The fact that they represent concentrated constituencies should make it easier for them to acquire staff and other resources that help them to invest in and build up such

capacity in practice. Because of their relatively high knowledge of the scientific and political details of their policy sectors, they are typically seen as attractive partners for policy-makers when deciding whom to grant access to. Not surprisingly, they have therefore been shown to enjoy a comparative advantage over NGOs when it comes to using insider strategies and gaining access to policy-makers (e.g. [Dür and Mateo, 2013](#)). We may even expect that some crises—such as a pandemic—increase the value of the expertise possessed by business groups. Hence, their detailed knowledge of the operations of specific business sectors becomes an important good to offer to policy-makers having to adopt complex decisions to tackle the crisis, e.g. economic rescue packages and stimulus legislation. Faced with strong time pressures and obligations to provide solutions to, for example, bleeding economic sectors, policy-makers may thus increase the relative access of business interests compared to other interest groups to work out fast solutions and send a strong signal that they are committed to act.

At the same time, it is clear that firms and business associations themselves also face strong incentives to intensify their use of insider strategies and seek access to policy-makers during a crisis that affects them. For many business interests, the COVID-19 pandemic represents a vital threat to their earnings and, potentially, their survival. While most interest groups in modern advocacy clearly use both insider and outsider strategies, business interests are frequently seen as putting relatively more emphasis on communicating directly with policy-makers while putting lower emphasis on outside lobbying (e.g. [Gais and Walker Jr, 1991](#)). Such public strategies may be more costly to them, and potentially also less effective since many business interests may not push for issues of broad public appeal. The fact that business interests have a well-defined constituency also means that they are less dependent on using outsider strategies to engage with their (potential) members.

For NGOs, however, the situation is somewhat different. Similar to business interests, they have opportunities to engage directly with policy-makers. Their involvement in policy-making is often perceived as important for boosting the legitimacy of policy-making (e.g. [Mahoney and Beckstrand, 2011](#)). Yet, compared to business groups, NGOs are typically viewed as structurally

disadvantaged in terms of obtaining political access. As Mahoney (2004, p. 505) explains: “some types of groups are generally better endowed financially (i.e. the business groups) than others. Therefore, trade, professional and cross-sectoral business groups should be expected to have more income at their disposal than citizen or culture groups and thus be likely to have a higher probability of being included in the committee system.”

NGOs can be expected to respond to potential hurdles in obtaining insider access by resorting to outsider lobbying, for instance public communications through social media. Outsider strategies also offer a number of advantages for them. The fact that many NGOs represent broader societal interests and more fragmented constituencies can increase the need for them to go public and attempt to mobilize a broader audience in response to a crisis. Social media have the potential to help them reach a large audience relatively cheaply. Furthermore, NGOs are likely to use social media not only to gain the attention of policy-makers, but also to distribute information, to build up communities, and to interact with their supporters and members (e.g. Lovejoy and Saxton, 2012). Such public campaigns are important for NGOs to signal their commitment to their supporters and to help ensure the survival of their organization (e.g. Dür and Mateo, 2013; Kollman, 1998). In this way, NGOs may not only intensify outside strategies to compensate for difficulties in obtaining insider access to policy-makers. They may also put higher emphasis on outsider strategies in response to a crisis because such strategies are deemed efficient to reach their goals and their supporters.

Overall, we therefore expect that the lobbying context—i.e. the rules of the game guiding lobbying in a specific channel—modifies how the relative prominence of NGOs and business interests are affected by the COVID-19 pandemic. The fact that NGOs and business interests represent different constituencies and possess different types of information provide them with different incentives and capacities to exploit insider access to policy-makers and outsider lobbying on social media in response to crisis. As a result, we predict that the COVID-19 crisis has differential effects on the relative prominence of these two types of interests groups in the two lobbying channels, with our empirical expectations as follows:

Hypothesis 1: The COVID-19 pandemic increased political access for business interests relative to NGOs.

Hypothesis 2: The COVID-19 pandemic increased engagement on social media among NGOs relative to business interests.

Data and Research Design

We test our hypotheses using data on political interest representation from the population of interest groups registered as lobbyists in the European Union Transparency Register.² Although not a state, the EU adopts decisions that have substantial effects on the daily lives of its 450 million citizens (Hix and Hoyland, 2011). As a result of its large scale and scope of its decision-making powers, the roughly 12,000 interest groups that are registered include actors that are headquartered in not only the EU member states, but also roughly 90 non-EU countries around the world that have lobbying interests in the EU. In this way, we analyze information for interest groups that are active in a number different polities around the world beyond the EU political system. Although registration is voluntary, interest groups face strong incentives to register in order to participate in the European Commission's consultations and meetings, and to serve on its advisory committees. The Register is continuously updated and has a Secretariat, which undertakes data quality checks and adjudicates complaints.

Data

To document the effects of the COVID-19 pandemic on differences in political access and communication patterns among business interests and NGOs, we combine interest group data from the Transparency Register with two datasets measuring political access and social media usage by interest groups. First, we use data compiled by Transparency International of the population of meetings between registered interest groups and EU politicians and bureaucrats

²These data were collected on October 28, 2020.

(Commissioners and high-level Commission civil servants). The data catalogue the number of meetings that each registered interest group has with these policy-makers, and a text description of the meeting agenda. They allow us to create a panel dataset, in which each observation indicates the number of meetings a given interest group had with politicians or civil servants in a given month.

For our purposes herein, we use data from January 1, 2019 to September 30, 2020, a time period equivalent to our social media data (described below). In total, these data catalogue 3,129 times that interest groups met with EU politicians and bureaucrats prior to the pandemic, and 2,009 times during the pandemic period. Our panel data include the full set of lobbyists registered with the EU, and contain all lobbyists regardless of whether they had any meetings during the time period of interest. Because the Transparency Register data include each actor's date of registration, the panel data cover the period during which each actors was registered with the EU. Finally, we classify these actors by their substantive interest. Our analysis focuses on differences in political access between the two largest categories of interest groups (77% of all groups): those classified as (1) "Companies and businesses," which include companies, consultancies, trade and business associations, and law firms, and (2) "NGOs and identity groups," which include NGOs, platforms, networks, and organizations representing religious communities. The complete coding scheme to classify interest groups into each category is provided in the Appendix B.

Second, we examine the activity of interest groups on social media. To do so, we use data from Twitter, constituting all posts since the beginning of 2019 from all EU-registered lobbyists that maintain a Twitter account. To collect these data, we first scraped website data from all registered interest groups as indicated by the group itself within the registry. From these data, we identify and record any Twitter account name that is listed on each interest group's official website. We then manually validated each account name and conducted a manual search of the Twitter account names of interest groups that did not list a Twitter account on their website. In total, our Twitter account list contains the names of 7,846 out of 11,967 registered lobbyists.

Finally, we collected all tweets that were sent by each lobbyist between January 1, 2019 and

September 30, 2020. To do so, we first collected the most recent 3,200 tweets sent by each actor (as limited by Twitter), and then used Twitter’s (Premium) search API to fill in the remaining tweets for accounts that sent more than 3,200 posts in the period of study. In total, this social media dataset contains 3.6 million tweets from the 14 months prior to the pandemic, and 2 million tweets from the 9 months from the wide-scale lock-downs in March, 2020. From these data, we create a panel dataset analogous to our political meetings dataset such that we measure the number of tweets sent by each interest group within a given month. In total, the interest groups in the Twitter data span a wide range of businesses and NGOs from 95 of the 116 countries represented in the Transparency Register.

Research design

To estimate the differential effects of the COVID-19 pandemic on interest groups’ access to policy-makers and social media communication patterns, we use a difference-in-differences strategy. Our goals are twofold. First, we test whether the pandemic had differential effects on access to policy-makers among NGOs relative to business interests. In other words, we test whether the onset of the pandemic favored business interests over NGOs with respect to access to meetings with EU policy-makers, or vice versa. Second, we test whether the pandemic affected the social media communications activities of business interests relative to NGOs.

Our baseline difference-in-differences model is specified as follows:³

$$y_{it} = \delta_i + \phi_t + \beta \text{Pandemic}_{it} \times \text{NGO}_{it} + \epsilon_{it}, \quad (1)$$

where y_{it} denotes the outcome variable (i.e. the number of meetings, or number of tweets) for interest group i in month t , and δ_i and ϕ_t denote interest group and month fixed effects. The interest group fixed effects, δ_i , allow us to examine *within*-interest group variation. This allows us to account for any unobserved heterogeneity among interest groups that does not

³Our approach is similar methodologically to recent work by Kim and Patterson Jr. (2020), who investigate the differential effects of the COVID-19 pandemic on gender inequalities in academia.

vary with time.⁴ The month fixed effects, ϕ_t , then account for time-varying shocks that affect all groups at once within a given month. Finally, our parameter of interest, β , captures the differential effect of the COVID-19 pandemic on NGOs relative to business interest groups. In all models that we present, standard errors are clustered at the level of each interest group. The variable Pandemic_{it} denotes an indicator variable that is coded 0 for any month before the onset of pandemic lock-downs across the EU (prior to March, 2020) and is coded 1 for any month thereafter.⁵ The variable NGO_{it} denotes an indicator variable coded 1 if an interest group is an NGO and 0 if the group is a business interest.⁶ We note that this model is designed to estimate the effects of the pandemic on *differences* between business interests and NGOs in political access and social media communications rather than the effect of the pandemic on interest groups generally.

The model specified above captures the causal effect of the pandemic on differences between NGOs and business interests in political access and social media communications under the key assumption that trends in the difference between business interests and NGOs in access to political meetings and social media communications prior to the pandemic are parallel and would have tracked similarly were it not for the pandemic (Angrist and Pischke, 2009). Although this latter counterfactual is fundamentally unknowable, we can nevertheless test for parallel trends by fitting a flexible difference-in-differences (event study) model that calculates per-month differences between business interests and NGOs *prior* to the pandemic. If the differences in political access and in social media posting frequency between NGOs and business interests are effectively equivalent across time, then there is reasonably strong evidence that trends between both sets of interest groups are similar in the pre-pandemic period. In Appendix D, we

⁴Recent work on difference-in-differences approaches has shown that alternative methods produce more interpretable estimates for data in which the timing of an intervention varies across units (Goodman-Bacon, 2019). Because we examine differences in the effect of an interventions that occurs (effectively) simultaneously across all units, this is not the case here.

⁵On March 11, 2020, the World Health Organization declared the coronavirus outbreak a pandemic, and data from the Oxford COVID-19 Government Response Tracker show clearly that strict regulations concerning the crisis began in earnest in the EU in March, 2020 (Hale et al., 2020). See Appendix C.

⁶In Equation 1, the component terms of the interaction are not included because they are absorbed by the interest group and time period fixed effects, as is the case in generalized difference-in-differences models.

detail this examination of pre-treatment parallel trends. The results suggest that pre-pandemic trends in the frequency of social media posting by NGOs and business interests are parallel, but that NGOs have increasingly made up the difference in access to policy-makers over time. To adjust for this, we use a more flexible difference-in-differences model that includes interest-group time trends (Angrist and Pischke, 2009), specified as follows:

$$y_{it} = \delta_i + \phi_t + \lambda_i t + \beta \text{Pandemic}_{it} \times \text{NGO}_{it} + \epsilon_{it}, \quad (2)$$

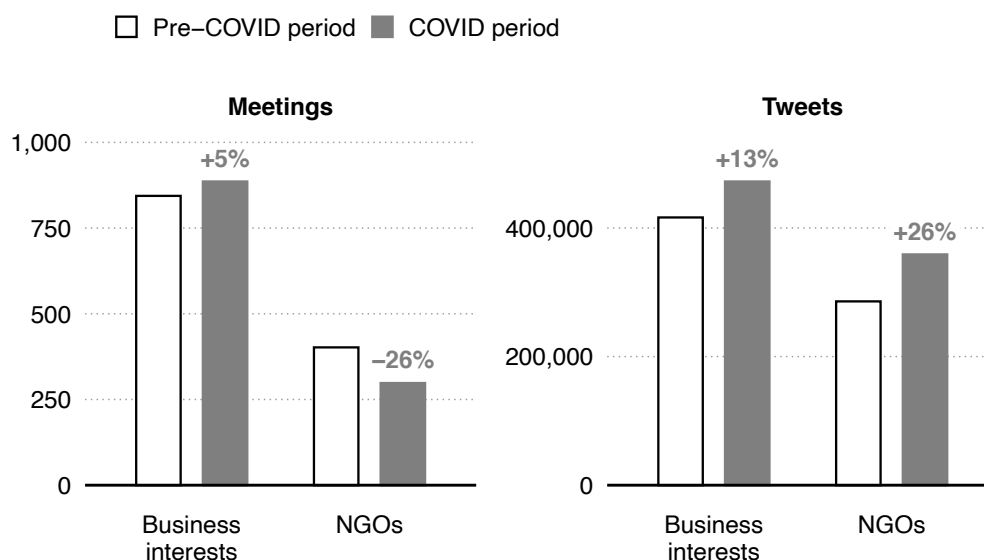
where the additional parameter λ_i captures a separate time trend for each interest group i . When this more flexible model is fit to data from the pre-pandemic period, differences between business interests and NGOs track similarly across time (see Appendix D for details). As a robustness check, we also fit all models in the Results section to the log number of meetings and social media posts, which do not substantively change the results (see Appendix I).

In addition to this standard difference-in-differences setup, we also use a model that allows us to capture the *dynamics* of the effect of the pandemic on differences in NGOs' and business interests' access to policy-makers and social media posting frequency across time. To do so, we use a difference-in-differences (event study) model that estimates the per-month effect of the pandemic relative to the pre-pandemic baseline. We do this by fitting the following model:

$$y_{it} = \delta_i + \phi_t + \lambda_i t + \sum_{t=1}^7 \beta_t \mathbb{1}_t \times \text{NGO}_{it} + \epsilon_{it}, \quad (3)$$

where y_{it} denotes the outcome variable for group i in month t ; δ_i and ϕ_t are interest group and month fixed effects; and λ_i are interest group-level time trends. In this model, rather than a single parameter to measure the effect of the pandemic on differences between NGOs and business interests (as in Equation 1), we use a set of parameters, β_t , that capture differences in the outcome variable per month after onset of the pandemic ($t \in \{1, 2, \dots, 7\}$) relative to the time period prior to the pandemic ($t \in \{-13, -12, \dots, 0\}$). This allows us to investigate the dynamics and duration of the effect by documenting per month differences between business interests'

Figure 1: Number of meetings with policy-makers and number of Tweets sent in the three months before and after the pandemic lock-downs by business interests and NGOs



This figure presents the total number of meetings with policy-makers and total number of tweets for both business interests and NGOs in the three months immediately prior to and after the March, 2020 pandemic lock-downs in the EU.

and NGOs' political access and social media activity before and after the onset of the pandemic.

Results

We begin by presenting basic descriptive summaries of the number of meetings that NGOs and business interests had with policy-makers and the number of tweets that they sent close to the onset of the pandemic: from three months prior to the pandemic, and three months afterward. As the data in the first panel of [Figure 1](#) show, business interests saw a 5% increase in the number of meetings with policy-makers when comparing the three months immediately prior to the pandemic to the three months afterward. NGOs, by contrast, witnessed a 26% decrease. In the second panel, we see a reversal in these relative differences: NGOs substantially increased the frequency of their social media posts (by 26%) compared to a relatively smaller increase (13%) among business interests. These data provide prima facie evidence for the hypotheses, which we now investigate more rigorously below.

The differential effects on meeting access and social media activity

To estimate the effect of the pandemic on the difference between NGOs and business interests in political access and social media activity, we use the panel data to exploit within-interest group variation over time in our difference-in-differences models. To start, we present in [Figure 2](#) a visual comparison of the average number of meetings with policy-makers among NGOs and business interests over time. As the figure shows, prior to the pandemic, there was a decreasing gap in the average number of meetings with policy-makers among NGOs and business interests. Indeed, in the month immediately prior to the pandemic lock-downs, NGOs had more meetings with policy-makers on average than did business interest groups. One reason for this secular decrease in the gap in the average number of meetings between NGOs and business interests is that the number of meetings did not keep pace with the growing number of registered business interest groups over time: more business interests register with the EU per month on average than do NGOs (see Appendix A), driving down the average number of meetings.⁷

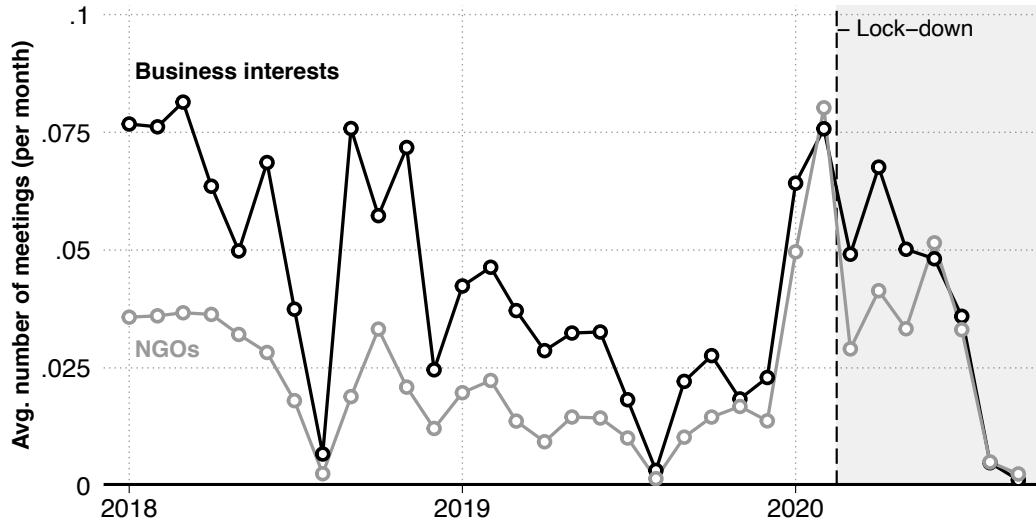
We estimate the effect of the onset of the pandemic on relative access to meetings with policy-makers by fitting a difference-in-differences model as specified in [Equation 2](#), where the outcome is measured as the number of meetings for a given type of interest group in a given month.

Consistent with our expectations from the first hypothesis, the results in Model (1) of [Table 1](#) indicate that the pandemic caused a decrease in NGOs' access to meetings with EU policy-makers (relative to business interests). On average, the pandemic caused a 0.017 decrease in the number of meetings that NGOs had with policy-makers relative to business interests.⁸ The magnitude of this effect, on its face, may appear small. It is not. As one can see in [Figure 2](#), the baseline number of meetings that any interest group has with policy-makers in a given month is low to begin with, a consequence of the large number of interest groups. After onset of the

⁷In Appendix D, we show that the inclusion of interest group-specific time trends successfully accounts for any absence of parallel trends that results from such changes in the differences in political access between NGOs and business interests over time.

⁸In Appendix I, we present models using the log number of meetings, which show effectively equivalent results.

Figure 2: Average number of meetings with EU policy-makers among registered NGOs and business interests over time



This figure presents the average number of meetings that EU Commissioners and Commission civil servants took with business interests and NGOs across time, from January 1, 2018 to September 30, 2020. The dashed line indicates the onset of the COVID-19 pandemic, as announced by the WHO in March, 2020.

pandemic, for example, NGOs had, on average, 0.0275 meetings with policy-makers per month. Therefore, the pandemic caused a substantial decline in political representation for the interests represented by NGOs relative to business interests.

We now investigate the effect of the pandemic on differences between NGOs and business interests in Twitter activity. To begin, we present the average frequency of tweets sent by NGOs and business interests per month from January 1, 2019 to September 30, 2020 in [Figure 3](#). Unlike the data cataloguing interest groups' meetings with policy-makers, we observe no clear trends in the differences in frequency of social media posts between NGOs and business interests. On average, NGOs post to social media more frequently than business interests, although given that more business interests are registered with the EU in total, the aggregate number of tweets sent by business interests (3.4 million) is substantially larger than that from NGOs (2.3 million).

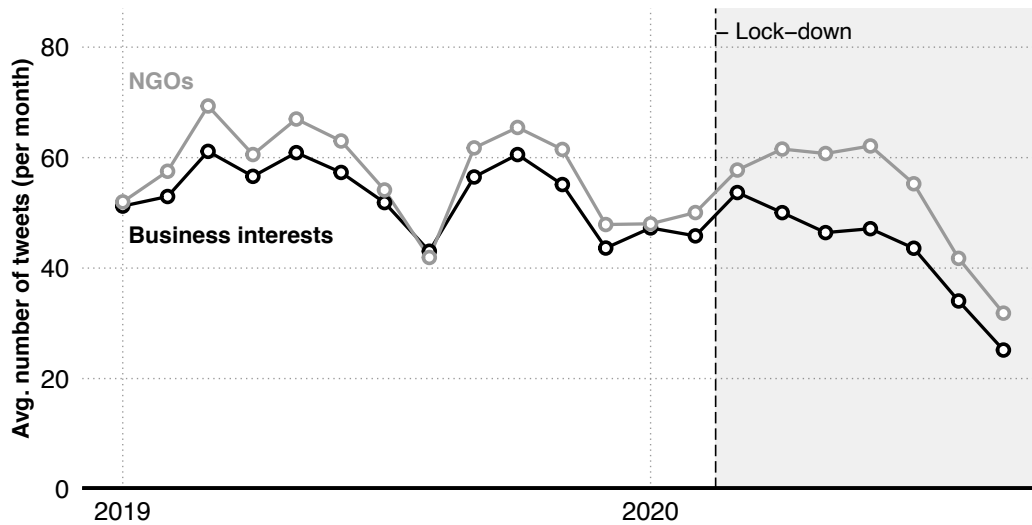
To estimate the effect of the pandemic on differences in social media posting by NGOs and business interests, we fit the model specified in [Equation 2](#), where the outcome is the

Table 1: Regression results of the effect of the COVID-19 pandemic on meeting access and social media activity

	Outcome variable	
	Number of meetings	Number of tweets
	(1)	(2)
Lock-down \times NGO interest group	-0.017*** (0.005)	8.486** (2.842)
Month fixed effect	✓	✓
Interest group fixed effect	✓	✓
Interest group time trends	✓	✓
Observations	163,631	104,770
R ²	0.288	0.862

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the number of meetings or tweets from each interest group aggregated at the month level, with data from January 1, 2019 to September 30, 2020.

Figure 3: Average number of tweets sent by interest groups representing business interests and NGOs over time



This figure presents the average number of tweets sent by business interests and NGO across time, from January 1, 2019 to September 30, 2020. The dashed vertical line indicates the onset of the COVID-19 pandemic, as announced by the WHO in March, 2020.

number of Twitter posts sent per interest group per month. Results are presented in Model (2) of Table 1. As the model shows, the pandemic is estimated to have resulted in an increase in

the frequency of posting on social media by NGOs relative to business interests. On average, the pandemic is estimated to have caused an 8.5 tweets increase in social media posts by NGOs relative to business interests. Similar to the effect on meetings, the effect on social media posting is substantial. To put this result in context, the average number of tweets sent by NGOs in the aftermath of the pandemic was 56.

The dynamic effects of the pandemic on interest group bias

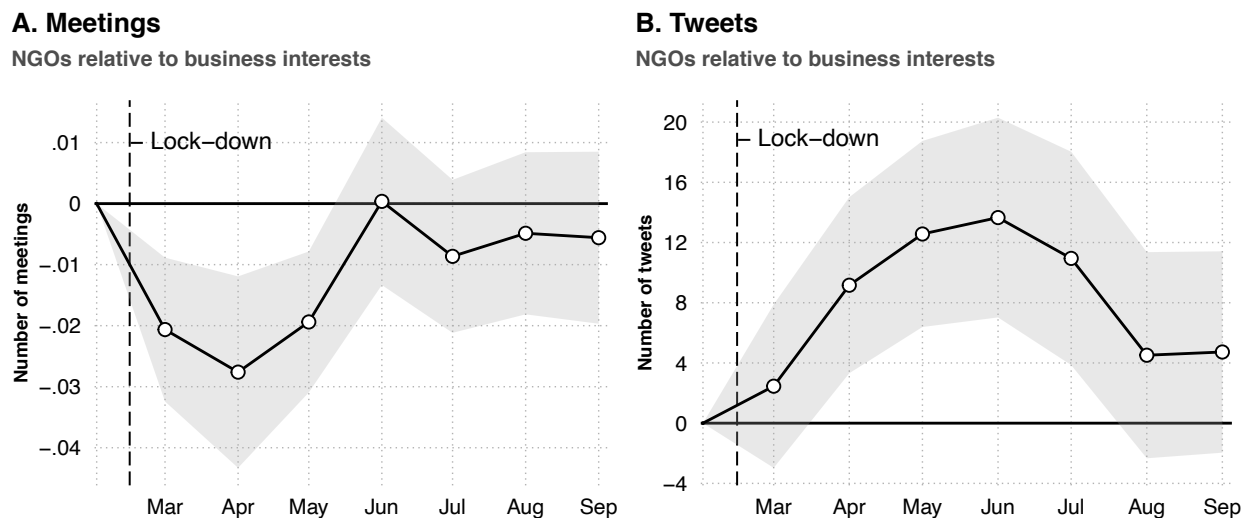
We complement these results with an investigation of *the dynamics* of the effect of the pandemic on political access and social media activity. To do so, we use an event study model: a more flexible difference-in-differences model that estimates changes over time through the inclusion of per-month lags (as specified in [Equation 3](#)).⁹ This model allows us to estimate the magnitude of the effect of the pandemic as it changes over time by comparing per-month differences between businesses and NGOs in meetings and social media posts relative to the pre-pandemic baseline.

Results from the model with meeting data are visualized in the Panel A of [Figure 4](#) (for complete regression table, see Appendix E). The pre-pandemic baseline difference is centered on zero, and each point (and 95% CI) indicates the difference in the number of meetings for NGOs relative to business interests for each month after onset of the pandemic. As we can see, in the three months after onset of the pandemic, we observe an immediate drop in the number of meetings for NGOs relative to businesses. These differences rebound after roughly four months. In other words, for political access to policy-makers, the advantage of business interests is confined to the early period of—likely highly consequential—policy-making.

The results from an equivalent model with Twitter data are presented visually in Panel B of [Figure 4](#). As the figure shows, the effect of the pandemic on differences in the frequency of posting to social media by NGOs relative to business interests is roughly analogous, but in the

⁹Event study models are common in economics, and are increasingly used in political science to capture changes in the effect of an intervention over time. (e.g. [Grumbach and Hill, Forthcoming](#); [Hainmueller and Hangartner, 2019](#); [Paglayan, 2019](#)).

Figure 4: Dynamic effects of the COVID-19 pandemic on the difference in access to meetings with policy-makers and the number of social media posts sent by NGOs and business interests



This figure presents results from a flexible difference-in-differences (event study) model that estimates the difference in the number of meetings with EU policy-makers (Panel A), and the number of tweets sent (Panel B) after onset of the COVID pandemic by NGOs relative to business interests. The shaded area represents 95% confidence intervals.

opposite direction: we see an increase in social media activity by NGOs relative to business interests in the first months after the onset of the pandemic, but with a sharp decline thereafter.

Evidence from COVID-specific meetings and tweets

Our results provide strong evidence that the onset of the pandemic caused an increase in inequality in access to political meetings between NGOs and business interests, and similarly strong evidence that NGOs increased their efforts on social media relative to business interests. To scrutinize the causal impact of the pandemic further, we leverage information about the purpose of each meeting and the contents of each Twitter post. This allows us to investigate whether differences in meeting access and Twitter activity are driven by issues concerning the pandemic itself. To this end, we classify political meetings and tweets as being explicitly related to the pandemic by creating a multi-lingual dictionary across 24 languages to code any meeting or social media post concerning the pandemic itself or related terms (e.g. “corona”, “lockdown”, “pandemic”). Applying this dictionary to the data demonstrates that the pandemic resulted

Table 2: Regression results of the effect of the COVID-19 pandemic on meeting access and social media activity (COVID-related meeting and tweet removed)

	Outcome variable	
	Number of meetings	Number of tweets
	(1)	(2)
Lock-down × NGO interest group	−0.007 (0.004)	3.797 (2.772)
Month fixed effect	✓	✓
Interest group fixed effect	✓	✓
Interest group time trends	✓	✓
Observations	163,631	104,770
R ²	0.272	0.664

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the number of meetings or tweets from each interest group aggregated at the month level, with data from January 1, 2019 to September 30, 2020. Data included are those meetings and tweets that are not classified as being related to the COVID-19 pandemic.

in relatively large numbers of meetings related to the issue, with 819 observations during the March-September period of our data (out of a total of 2009 entries). Among tweets, we identify 357,473 tweets from interest groups that contain terms related to the pandemic during the relevant period (out of 2,028,318).

Because meetings related to the pandemic do not occur in the pre-pandemic period, we cannot directly compare differences in COVID-related meetings before and after the onset of the pandemic. Instead, we indirectly document the extent to which the increase in inequality in political access among NGOs relative to business interests is the result of pandemic-specific meetings by excluding them from the dataset and re-estimating the models. Excluding COVID-related meetings from the data allows us to provide evidence in the spirit of a placebo check to the extent that these meetings drive the main results: if COVID-specific meetings are the cause of the increased inequality in political access, then their exclusion should result in a smaller (or no) increase in meetings for business interests relative to NGOs in the pandemic period. A natural caveat of our keyword search is that meetings indirectly related to the pandemic might

not be classified as such, even if they are partially linked. Nevertheless, observing a smaller or no increase in the gap in political access between NGOs and business interests is suggestive that the mechanism driving the observed effects is due to inequalities concerning access to COVID-related meetings themselves.

To begin, we present the results of a difference-in-differences model in Table 2 where the outcome variable is the number of meetings with EU policy-makers, and all meetings are included except those classified as concerning the pandemic. The results are presented in Model (1) of Table 2. We find no strong evidence that the pandemic widened the gap in political access between NGOs and business interests when meetings specifically concerning are removed from the data. The effect size is less than half in Model (1) of Table 2 compared to what it was in Model (1) of Table 1 where the COVID-19 Tweets were included.

We then conduct a similar analysis for differences in social media activity between NGOs and business interests. As with the meetings data, we exclude all tweets related to the pandemic and re-fit the model. Results are presented in Model (2) of Table 2. Analogous to the results with political meetings, we find no strong evidence that the pandemic differentially affected the frequency of social media posts between NGOs and business interests when COVID-related posts are excluded.

In sum, these results suggest that the decrease in access to political meetings among NGOs relative to business interests was the result of inequalities in access to meetings concerning policies linked to the pandemic itself. Similarly, social media results suggest that the relative increase in the frequency of posts by NGOs was driven by an increased social prominence of these groups in content concerning the pandemic.

Access to lobbying resources

We lastly address a key question concerning the extent to which differences in political access and social media activity between NGOs and business interests are driven by existing differences in resources available to interest groups. As noted earlier, scholars have frequently linked

interest group type to differences in background characteristics, e.g. financial and informational resources (e.g. [Bouwen, 2002, 2004](#); [Mahoney, 2004](#)). Moreover, while there is no general agreement whether money buys influence, resource advantages for business interests are frequently mentioned in the study of political influence (e.g. [Dür, Bernhagen and Marshall, 2015](#); [Grossmann, 2012](#)) and bias (e.g. [Baumgartner and Leech, 2001](#); [Schlozman, 1984](#)).

To measure resource availability, we use data on lobbying resources for each registered interest group as documented in the EU's Transparency Register itself. Each interest group is classified as having a “high” level of resources if they are in the upper tercile of lobbying expenditures, as compared to interest groups in the bottom terciles (“low”). Because the upper tercile as a cutoff is relatively arbitrary, we run a large set of robustness checks for the results presented below using a wide array of cutoff values (Appendix F and G); make comparisons between only the most resource rich (upper quartile) and least resource rich (lower quartile) interest groups (Appendix F); and examine interest group staff size as an alternative measure of resources (Appendix H). The results regarding resources are not substantively different across any of these robustness checks.

We begin by investigating whether the finding that business interest gained preferential access to policy-makers at the expense of NGOs differed among high-resource and low-resource interest groups. To do this, we first estimate the effect of the pandemic on political access to meetings among high-resource NGOs relative to high-resource business interests. Results are presented in Model (1) in [Table 3](#). Consistent with our main findings, when we confine the data to interest groups with large lobbying budgets, we still observe that the pandemic caused a decrease in (high-resource) NGOs’ access to meetings with policy-makers relative to business interests with similarly large lobbying budgets. We then fit the model to meetings data from interest groups with low lobbying resource budgets. The results, presented in Model (2) of [Table 3](#), show no strong evidence ($p = 0.30$) that the pandemic caused such a decrease among low-resource interest groups. In sum, when the data are stratified by resources, we see that it is largely well-resourced businesses that benefited from political access as a result of the pandemic

Table 3: Regression results of the effect of the COVID-19 pandemic on meeting access and social media activity, stratified by interest group resource levels

	Outcome variable			
	Number of meetings (1)	Number of meetings (2)	Number of tweets (3)	Number of tweets (4)
Lock-down × NGO interest group	−0.067*** (0.019)	−0.003 (0.003)	7.430* (3.453)	9.354* (3.945)
Month fixed effect	✓	✓	✓	✓
Interest group fixed effect	✓	✓	✓	✓
Interest group time trends	✓	✓	✓	✓
Data	High resource groups	Low resource groups	High resource groups	Low resource groups
Observations	37,503	123,850	29,988	73,557
R ²	0.316	0.182	0.626	0.680

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the number of meetings or tweets from each interest group aggregated at the month level from January 1, 2019 to September 30, 2020. High- and low-resource interest groups are defined as those being in the upper tercile of lobbying resources and the lower two terciles of respectively.

at the expense of well-resourced NGOs.

We examine data from the social media posts of NGOs and business interests similarly by stratifying by resource levels. We fit a model first to data from NGOs and business interests with high levels of resources, and second to data from those interest groups with low resource levels. The results are presented in Models (3) and (4) in [Table 3](#). Consistent with our main findings, NGOs with both high and low levels of resources increased the frequency of their communications on social media relative to that of high-resource and low-resource business interests respectively. In other words, the hypothesized difference between NGOs and business interests generally do not change when stratifying by resource level.

We supplement these analyses by testing whether the pandemic increased political access among interest groups with higher resources relative to those with lower resources, regardless of whether they are NGOs or business interests. The results (presented in Appendix F) do not indicate that this is the case. We also estimate the effect of the pandemic for high-resource

relative to low-resource interest groups separately among NGOs and among business interests in Appendix F. Among NGOs, the results suggest that high-resource NGOs became more like their low-resource counterparts in terms of access to policy-makers. Among business interests, however, we find that the pandemic resulted in an increase in access to policy-makers among business interests with larger resources compared to business interests with fewer resources. Finally, when examining differences in social media posting activity, we find no evidence that the pandemic caused any differential effects among high-resource and low-resource groups, either among business interests or NGOs (for complete regression tables, see Appendix F).

In sum, there is little evidence that the pandemic's effect on differences between business interests and NGOs in Twitter activity and meeting access are driven by differences in the economic resources available to these types of interest groups *in general*. If anything, the pandemic's differential effect on access to meetings with policy-makers benefited well-resourced business interests at the expense of well-resourced NGOs. Similarly, we found a net gain in social media prominence for NGOs among both low- and high-resourced groups. When resources matter, it is primarily for understanding differences in activity for *a given group type*, such as the effect found for access to meetings among business interests.

Conclusion

Bias toward business groups in interest representation has long worried political observers and academics. These biases have frequently been viewed as a persistent feature of policy-making, both across political systems and across time. As a result, we have remained in the relative dark about whether large-scale exogenous shocks to the political agenda can magnify or reduce biases in interest representation. The COVID-19 pandemic—the largest and most wide-reaching crisis since World War II—provides a unique opportunity to shed light on this question.

In this article, we document the effects of the pandemic on two important channels of interest representation: direct lobbying through interest groups' meetings with policy-makers, and indirect lobbying through public communications on social media. We argue that the

abrupt agenda changes induced by crisis are likely to have a differential impact on biases in interest representation in these channels, because interest groups face different incentives and constraints to using them. To examine this, we apply difference-in-differences models to panel data on meetings with EU policy-makers and tweets from the approximately ten thousand interest groups from over 100 countries that are registered as lobbyists with the EU.

Our results demonstrate that the COVID-19 crisis caused substantial increases in direct access to policy-makers among business interests at the expense of NGOs. By contrast, the pandemic caused large increases in the social media prominence of NGOs relative to business interests. With information about the subject of meetings and the text of tweets, we show that these findings were likely driven by changes in political access and communications specific to the crisis. Overall, our results suggest that, despite the persistence of biases across time and political systems, exogenous shocks to the political agenda can greatly affect how biases operate among important economic and social interests.

From a normative point of view, these results can be seen as offering both good and bad news. On the one hand, those concerned about bias in the heavenly chorus might be pleased to learn that what looks like a strengthening of business bias in insider lobbying in access to policy-makers is not replicated in outside lobbying on social media. In this way, the COVID-19 crisis might be viewed as both exacerbating and mitigating bias in business representation depending on which lobbying channel one focuses on. The fact that our findings are unlikely to be driven by differences in economic resources between NGOs and business interests can also be seen as positive news. Among NGOs and business interests with large resource endowments, we find that business interests gain substantial access to policy-makers relative to NGOs. Moreover, for social media activity, we find that NGOs increase their activities relative to business interests both among low-resource and high-resource interest groups. That there are also no differences in how the crisis affected political access and Twitter usage among high- and low-resourced groups in general might also be viewed as painting a less pessimistic picture of lobbying during the pandemic than some might have feared.

On the other hand, our results also raise important concerns. First, the two lobbying channels that we examine are likely not equally important for affecting the decisions made by policy-makers on, for instance, emergency legislation, rescue packages, or regulations regarding the reopening of society. Direct access to policy-makers, on its face, gives some organized interests privileged access to over others. While access to policy-makers is no guarantee for actual influence, it is not unreasonable to expect that such access is a more straightforward way to influence decisions than through increased public communication on, for example, social media. It is thus far from trivial that biases toward business interest end up being strengthened exactly in the lobbying channel where organized interests can be expected to make the greatest difference for policy-making.

Finally, while the pandemic did not benefit wealthy interest groups in general, we do find evidence that wealthy business interests benefited from economic resources relative to business interests with fewer resources. This is not irrelevant given that business interests are often viewed as representing special interests and affluent citizens rather than those of the population as a whole (e.g. [Flöthe and Rasmussen, 2018](#); [Grossmann, Mahmood and Isaac, Forthcoming](#); [Klüver and Pickup, 2019](#)). Ultimately, the picture of the effect of the pandemic is therefore one where especially large business interests benefited at the expense of smaller business interests and NGOs.

Future research should explore whether these patterns persist in the long run. Our results indicate that the effects on bias operated most prominently during the crucial first months of intensive policy-making after the onset of the pandemic. As our event study analyses demonstrate, the effect of the pandemic on interest group bias gradually reverted to levels of bias that would be expected between business interests and NGOs prior to the pandemic. Whether there are longer term consequences of the crisis on interest group bias is therefore an important question for future research. Furthermore, although the EU shares similarities with other political systems, there is room for further comparative research to test the external validity of our findings regarding insider access. Finally, scholars should examine whether the observed effects on bias

ultimately affected policy in favor of some interests at the expense of others. What is clear, however, is that a large-scale crisis that affects the political agenda can have substantial effects on how strongly different types of interests are positioned vis-a-vis both policy-makers and the public.

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The Unequal Effects of the COVID-19 Pandemic on Political Interest Representation

Online Appendix

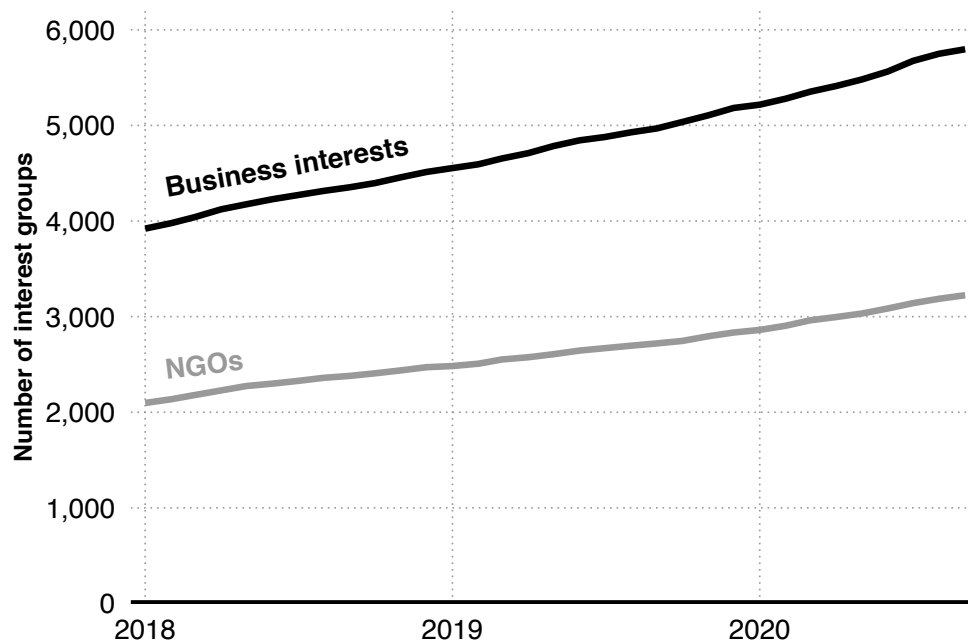
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A The composition of registered interest groups over time

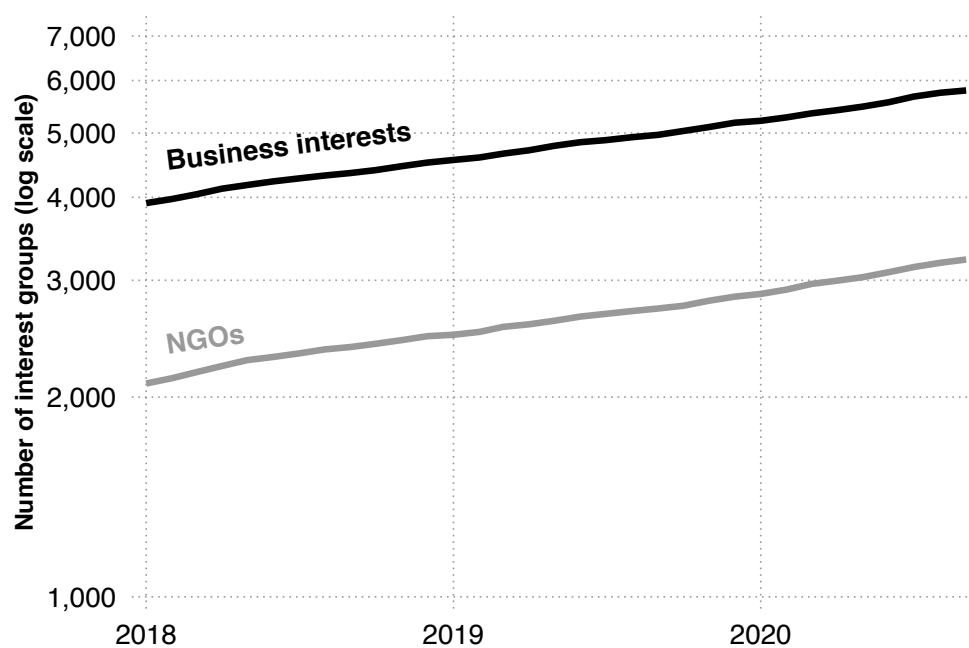
As noted in the main article, the number of business interests registered in the EU Transparency Register is larger than that of NGOs. Furthermore, in general, there are more business interests added each month to the registry than there are NGOs. To show this, we present in [Figure A1](#) the number of interest groups from each group type registered with the EU over time. As the figure shows, the growth in the number of registered companies and businesses is outpacing that of its NGO counterpart. Growth in the number of business interests and NGOs is roughly proportional to size, as suggested by the parallel lines when these data presented on the log scale in [Figure A2](#). These differences in growth likely partly explain why there is a decreasing gap over time in the *average* number of meetings that business interests have with EU policy-makers over time relative to NGOs in Figure 2 in the article. The number of meetings that policy-makers have with business interests, in other words, has not kept pace with the growth in the number that register as lobbyists with the EU.

Figure A1: Change in the composition of registered interest groups over time



This figure shows the number of business and NGO interest groups that are registered with the EU over time.

Figure A2: Change in the composition of registered interest groups over time (log scale)



This figure shows the number of business and NGO interest groups that are registered with the EU over time, as graphed on the log scale on the horizontal axis.

B Interest group type definitions

In the main article, we examine interest groups defined as “Business interests” and “NGOs”. In the Transparency Register, each interest group is classified internally as belonging to one of fifteen sub-groups. These sub-groups classifications are themselves selected by each interest group when they register as a lobbyist with the EU. The classification of each interest group, therefore, is defined by the group itself, although subject to checks by the Registry secretariat. To examine differences in business interests and NGOs, we therefore collapse the relevant smaller categories into larger ones that define “Business interests” and “NGOs”. Our definition, based on these sub-categories, is presented in [Table A1](#).

Table A1: Definition of interest group types

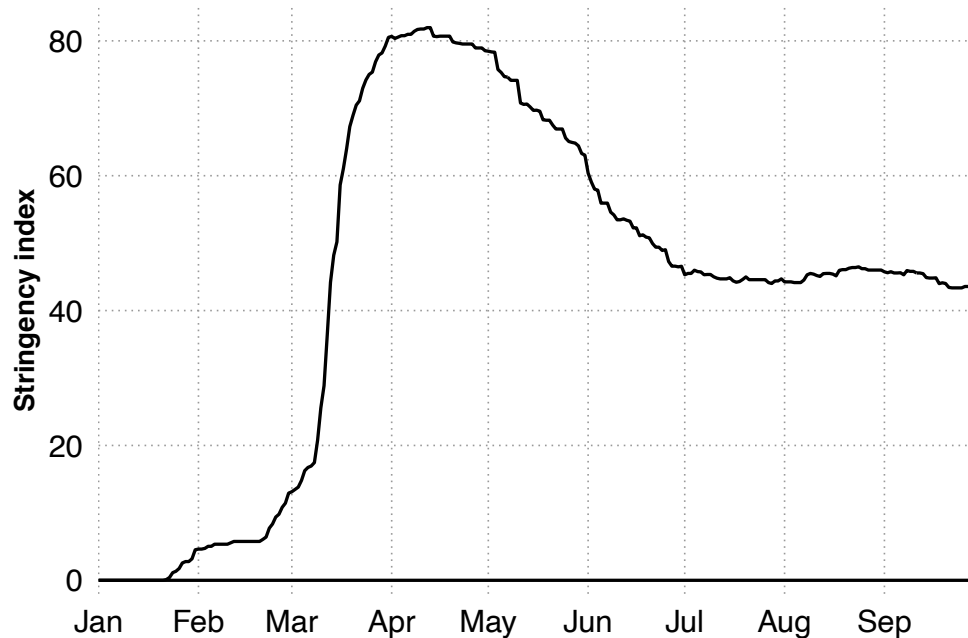
Category	Sub-categories
Companies & business associations	Companies & groups Professional consultancies Self-employed consultants Law firms Trade and business associations
NGOs & identity groups	Non-governmental organisations, platforms and networks and similar Organisations representing churches and religious communities

Interest group sub-categories not included in these larger groups are “Academic institutions”, “Other public or mixed entities created by law whose purpose is to act in the public interest”, “Trade unions and professional associations”, “Other sub-national public authorities”, “Regional structures”, “Think tanks and research institutions”, “Transnational associations and networks of public regional or other sub-national authorities”, and “Other organisations”.

C Timing of the pandemic

In the article, we code March, 2020 as the beginning of the pandemic. We do so because, first, March is the month in which the World Health Organization declared the pandemic as such (March 11) and, second, March clearly marks the start of widespread governmental responses to the pandemic across the EU, with restrictions on social and economic activities. To show the latter empirically, we use data from the Oxford University Blavatnik School of Government’s “Coronavirus Government Response Tracker” (Blavatnik School of Government, 2021). We aggregate the Tracker’s “Stringency Index”—a measure of the intensity of government regulations to combat the pandemic—at the level of the EU, and present this measure graphically in Figure A3. As the figure makes clear, widespread governmental responses within the EU ramped up heavily in March, close to the WHO’s declaration of the crisis as a pandemic.

Figure A3: COVID-19 Stringency Index across time in the EU



This figure presents a measure of the intensiveness of EU member states’ COVID-19 regulations (“stringency index”) over time from the Oxford University Blavatnik School of Government’s “Coronavirus Government Response Tracker.” (Blavatnik School of Government, 2021). Data presented are the average stringency index across all EU member states.

D Examination of pre-treatment parallel trends

Difference-in-differences models rely on an assumption of parallel trends: that prior to an intervention, the outcome variable for the groups of interest move in sync and that, counterfactually, these trends would continue in parallel were it not for the intervention of interest. This counterfactual is, by definition, unknowable. However, it is useful to examine whether there are parallel trends in the pre-intervention period: doing so does not provide direct evidence that trends in outcomes would have evolved similarly between groups in the absence of an intervention, but it provides indirect evidence that this assumption is likely reasonable (Cunningham, 2021).

To examine this empirically, we fit difference-in-differences models that include time period leads, such that we calculate separate difference-in-difference estimates for each month *prior* to the pandemic (Angrist and Pischke, 2009; Cunningham, 2021). If the assumption of parallel trends holds, we should observe no systematic difference in the differences between NGOs and business interests month-over-month prior to the pandemic.

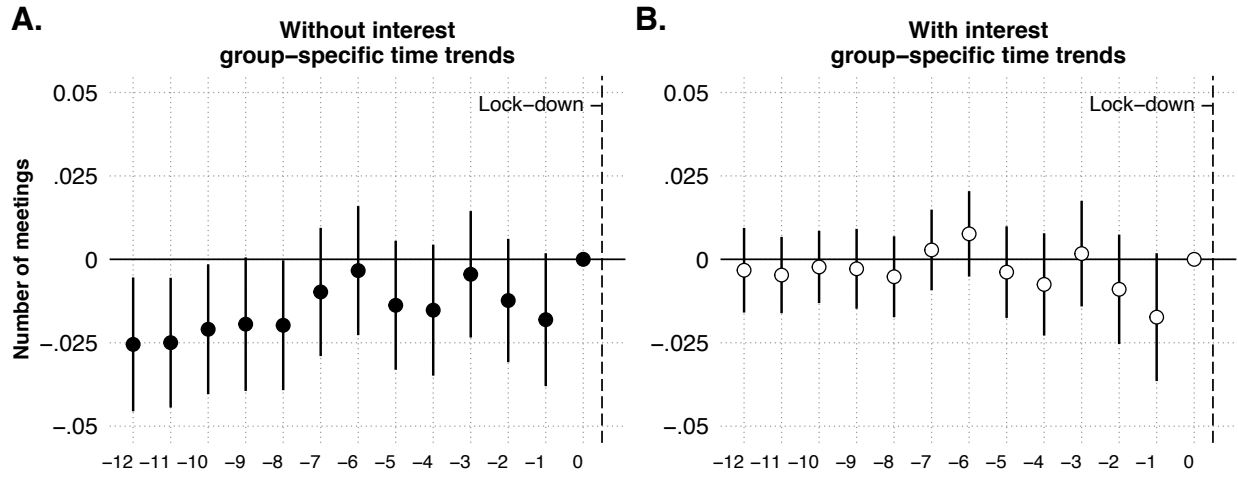
We include leads in a baseline difference-in-differences model, and one that is more flexible with respect to time trends through the inclusion of additional interest group-level time trends. More formally, our estimating equations are the following:

$$y_{it} = \delta_i + \phi_t + \sum_{t=-13}^0 \beta_t \text{NGO}_{it} + \epsilon_{it} \quad (\text{A1})$$

$$y_{it} = \delta_i + \phi_t + \lambda_i t + \sum_{t=-13}^0 \beta_t \text{NGO}_{it} + \epsilon_{it} \quad (\text{A2})$$

where y_{it} is the outcome variable for group i in month t ; δ_i and ϕ_t are interest group and month fixed effects; and λ_i (Equation A2) are interest group-level time trends. In these models, our parameters of interest are β_t , which capture the differences in differences between NGOs and business interests *per month* prior to the pandemic. Estimating separate β_t per month

Figure A4: Parallel trends test for differences in the average number of meetings with policy-makers among NGOs and business interests prior to pandemic

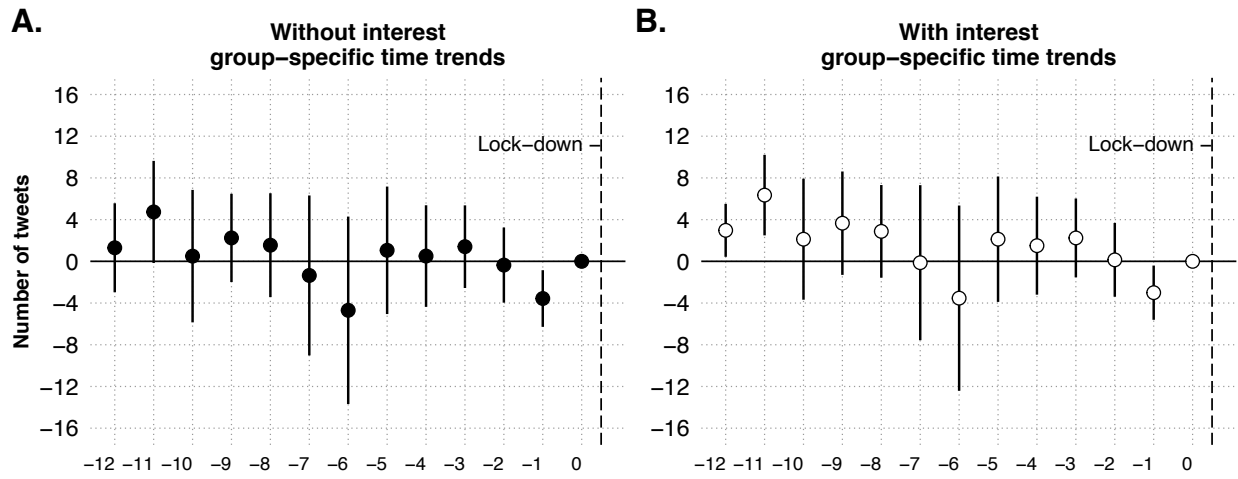


This figure presents estimates of per-month differences between the number of meeting with policy-makers among NGOs relative to business interests prior to the pandemic, where the baseline for comparison is $t = 0$ (i.e. February, 2020)

prior to the pandemic allows us to compare whether the per-month differences between NGOs and business interests differ from each other relative to a baseline month, chosen here as the month immediately prior to the pandemic. If trends between NGOs and business interests are parallel, we should observe no meaningful differences across the range of the estimates of β_t . As noted above and as shown in [Equation A1](#) and [Equation A2](#), we fit these models both with and without group-level time trends, the latter of which flexibly accounts for trends among each interest group in the number of meetings or social media posts over time.

Results from the model for the number of meetings with policy-makers are presented in [Figure A4](#). As Panel A shows, there is evidence that, in the pre-pandemic period, NGOs had less access to meetings with policy-makers (relative to business interests) as compared to later months. Estimates from the first months of the data, for example, show significant differences in access to policy-makers of NGOs relative to business interests that were larger relative to the baseline month immediately prior to the onset of the pandemic. This is also observable descriptively in Figure 1 from the main article, in which the gap between the average number of meetings between NGOs and business interests is decreasing over time. In other words,

Figure A5: Parallel trends test for differences in the average number of tweets sent by NGOs and business interests prior to pandemic



This figure presents estimates of per-month differences between the number of tweets sent by NGOs relative to business interests prior to the pandemic, where the baseline for comparison is $t = 0$ (i.e. February, 2020).

there appear to be deviations from parallel trends. We can adjust for this, however, by including interest group-specific time trends (Angrist and Pischke, 2009; Cunningham, 2021), as in the model specified in Equation A2. Accordingly, Panel B of Figure A4 presents results for pre-pandemic difference-in-differences from the model with interest group-specific time trends. As Panel B shows, the inclusion of these time trends results in pre-pandemic differences that show no clear changes month-over-month. As we note in the main article, we therefore use as our model for the political meetings data one that includes interest group-specific time trends to flexibly adjust for these differences over time.

We conducted similar tests for the model fit to the data on the number of tweets sent by NGOs and business interests in the pre-pandemic period. Results from these models are presented in Figure A5. Unlike with the political meetings data, in Panel A of Figure A5, we see no systematic differences in trends that suggest an absence of parallel trends. In Panel B, which presents estimates for a model with interest group-specific time trends, we also observe no clear pattern. Indeed, estimates in both panels are extremely similar. The more flexible model that includes interest group-level trends, in other words, is performing minimal adjustment. In

the main article we include interest group-level time trends when investigating the effect of the pandemic on differences in posting behavior about NGOs and business interests. However, as is consistent with the results in both panels of [Figure A5](#), the results are effectively equivalent in models that do not include interest group-level time trends (not shown).

E Regression results from event study model

In Figure 4 in the main article, we show graphically the results of an event study model specified as follows:

$$y_{it} = \delta_i + \phi_t + \lambda_i t + \sum_{t=1}^7 \beta_t \mathbb{1}_t \times \text{NGO}_{it} + \epsilon_{it}, \quad (\text{A3})$$

where y_{it} denotes the outcome variable for group i in month t ; δ_i and ϕ_t are interest group and month fixed effects; and λ_i are interest group-level time trends. As we note in the Research Design section of the article, the set of parameters, β_t , capture differences in the outcome variable per month after onset of the pandemic ($t \in \{1, 2, \dots, 7\}$) relative to the time period prior to the pandemic ($t \in \{-13, -12, \dots, 0\}$). In [Table A2](#), we present the relevant regression table, where each parameter represents the difference-in-differences for NGOs relative to business interests in a given month. As shown in Figure 4 in the main article, these parameters demonstrate the dynamics of the effect over time.

Table A2: Event study regression results

	DV	
	In Number of meetings	In Number of tweets
	(1)	(2)
March, 2020 × NGO interest group	−0.021*** (0.006)	2.457 (2.768)
April, 2020 × NGO interest group	−0.028*** (0.008)	9.164** (2.983)
May, 2020 × NGO interest group	−0.019** (0.006)	12.567*** (3.152)
June, 2020 × NGO interest group	0.0004 (0.007)	13.657*** (3.384)
July, 2020 × NGO interest group	−0.009 (0.006)	10.946** (3.614)
August, 2020 × NGO interest group	−0.005 (0.007)	4.514 (3.493)
September, 2020 × NGO interest group	−0.006 (0.007)	4.728 (3.412)
Observations	164,541	103,778
R ²	0.295	0.669

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group.

F Differential effect of the pandemic on high- and low-resource interest groups

In the main article, we discuss findings concerning the pandemic's differential effects on access to policy-makers and social media among interest groups with 'high' resources (upper tercile) and 'low' resources (lower terciles). We present the complete regression tables in [Table A3](#). As shown in Model (1), we find no evidence of a differential effect of resources on interest groups' access to policy-makers in general ($p = 0.48$). In other words, when pooling data from NGOs and business interests, we find no difference in access to policy-makers among interest groups with low and high levels of resources in general.

In Models (2) and (3), we examine the role of resources *within* interest group types (NGOs and business interests). In Model (2), we find that the pandemic caused an increase in access to policy-makers among business interests with higher resources relative to business interests with lower resources. In Model (3), we find that among NGOs, the pandemic caused a decrease in access to policy-makers among high-resource interest groups relative to low-resource interest groups. This result can be viewed in light of the fact that low-resource NGOs obtain very few meetings with policy-makers to begin with. High-resource NGOs, in other words, became more similar to low-resource NGOs; high-resource business interests, by contrast, gained even greater access relative to their low-resource counterparts.

Finally, we examine the overall role of resources on social media activity in Models 4-6. We find no evidence that the pandemic differentially caused differences in the frequency of posting among business interests and NGOs collectively (Model (1)), or whether comparing high-resource and low-resource interest groups among business interests (Model (2)) and NGOs separately (Model (3)).

Table A3: Regression results of the differential effect of the pandemic on high-resource and low-resource interest groups

	Outcome variable					
	Number of meetings			Number of tweets		
	(1)	(2)	(3)	(4)	(5)	(6)
Lock-down × Resources	0.005 (0.007)	0.017* (0.008)	−0.024* (0.010)	1.448 (3.053)	3.198 (4.733)	1.301 (2.348)
Month fixed effect	✓	✓	✓	✓	✓	✓
Interest group fixed effect	✓	✓	✓	✓	✓	✓
Interest group time trends	✓	✓	✓	✓	✓	✓
Data	Businesses & NGOs	Businesses	NGOs	Businesses & NGOs	Businesses	NGOs
Observations	162,623	105,188	57,435	104,152	63,511	40,641
R ²	0.296	0.297	0.291	0.668	0.648	0.742

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the number of meetings or tweets from each interest group aggregated at the month level from January 1, 2019 to September 30, 2020.

Sensitivity to alternative codings of ‘high’ and ‘low’ resources

As noted in the article and above, we define interest groups with ‘high’ resources as those in the upper tercile (above the 66.6th percentile) of all business interests and NGOs, and those with ‘low’ resources, those interest groups in the bottom two terciles. This choice, however, is nevertheless relatively arbitrary. To test the extent to which the results concerning resources above are sensitive to the coding of groups with ‘high’ and ‘low’ resources, we recode these ‘high’ and ‘low’ resource groups at different cut-offs and re-estimate the models in [Table A3](#). We first code ‘high’ resource group as those above the median (in the upper 50th percentile), and those in the ‘low’ resource group as those below the median. We then fit each of the six models shown in [Table A3](#) with ‘high’ and ‘low’ resources defined as such. These models estimate the differential effect of the pandemic on access to EU policy-makers and tweet frequency between ‘high’ and ‘low’ resource group among (1) all interest groups, (2) businesses specifically, and (3) NGOs specifically. We then recode ‘high’ and ‘low’ resources at the 51st percentile, and refit the models. We estimate these models with resources defined from the median to 90th percentile

by 1 percentile increments, to capture an wide range of possible codings.

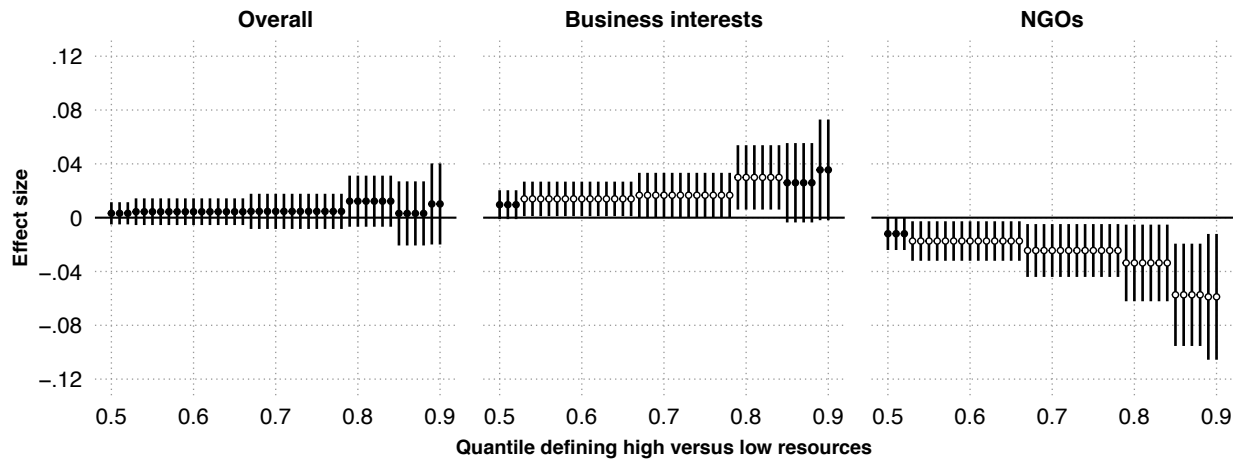
The results are presented in [Figure A6](#). Each panel presents point estimates and 95% confidence intervals for difference-in-differences models fit to the two main outcomes for the full dataset and data from businesses and NGOs specifically. The top panels correspond to the Models (1), (2), and (3) in [Table A3](#) respectively; the bottom panels, Models (4), (5), and (6). As the figure shows, the results from [Table A3](#) are generally insensitive to how ‘high’ and ‘low’ resources are coded. For estimates from [Table A3](#) that are not significantly different from zero, the estimates are also not different from zero for estimates for any coding of resources across the full range of cut-offs (top-left panel of [Figure A6](#), and bottom row). For the estimates of the pandemic’s effect on differential access to policy-makers within business interests and within NGOs, the estimates are significantly different from zero across nearly the full range of resource codings (second and third panels in Panel A), as consistent with Models (2) and (3) in [Table A3](#). In sum, the results in [Table A3](#) are not an artifact of how interest groups are coded as having ‘high’ and ‘low’ resources.

Sensitivity analysis of results to comparison of the richest (upper quartile) and poorest (lower quartile) interest groups

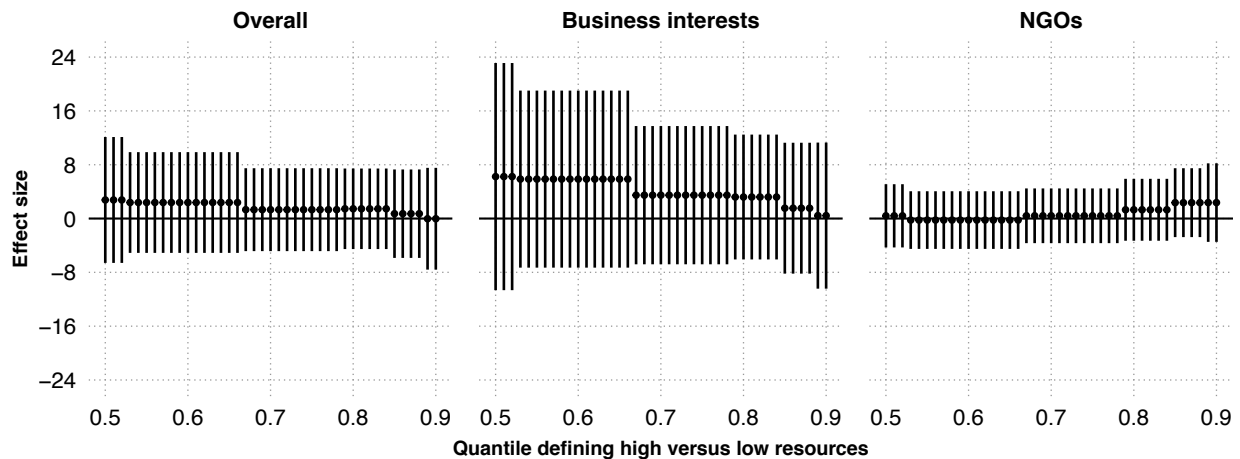
Above, we examined the sensitivity of the results concerning resources to differences codings of ‘high’ and ‘low’ resources across a wide range of cut-offs. Here, we also test whether the pandemic affected interest group access to policy-makers and social media behavior when comparing the highest-resource interest groups to the lower-resource interest groups. To do so, we subset the data to include only interest groups in the lower quartile of resources (defined as ‘low’) and those in the upper quartile (defined as ‘high’). Using these data, we then fit the same models as included in [Table A3](#). Results are presented in [Table A4](#) and are effectively equivalent to those in [Table A3](#): all point estimates are similar and are similarly statistically (in)significant to those in [Table A3](#).

Figure A6: Sensitivity analysis of differences in the number of meetings with policy-makers and tweets by resource group

A. Meetings



B. Social media posts



This figure shows the estimated effect of the pandemic on differences in access to meetings with policy-makers and differences in the number of tweets sent by interest groups depending on their access to resources. Each point estimate and 95% CI represents the estimated effect of the pandemic on the difference in meetings and tweets between “high” and “low” resource interest groups by defining “high” and “low” resources at different cutoffs. Points in white indicate confidence intervals that do not cross zero.

Table A4: Regression results of the differential effect of the pandemic on high-resource and low-resource interest groups (*lowest quartile* versus *upper quartile*)

	Outcome variable					
	Number of meetings			Number of tweets		
	(1)	(2)	(3)	(4)	(5)	(6)
Lock-down × Resources	0.005 (0.007)	0.017* (0.009)	−0.024* (0.010)	−1.024 (2.047)	−1.048 (2.473)	1.327 (2.935)
Month fixed effect	✓	✓	✓	✓	✓	✓
Interest group fixed effect	✓	✓	✓	✓	✓	✓
Interest group time trends	✓	✓	✓	✓	✓	✓
Data	Businesses & NGOs	Businesses	NGOs	Businesses & NGOs	Businesses	NGOs
Observations	100,309	64,450	35,859	67,126	41,712	25,414
R ²	0.308	0.307	0.309	0.702	0.670	0.776

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the number of meetings or tweets from each interest group aggregated at the month level from January 1, 2019 to September 30, 2020.

G Sensitivity of results stratified by resources (Table 3) to alternative codings of ‘high’ and ‘low’ resources

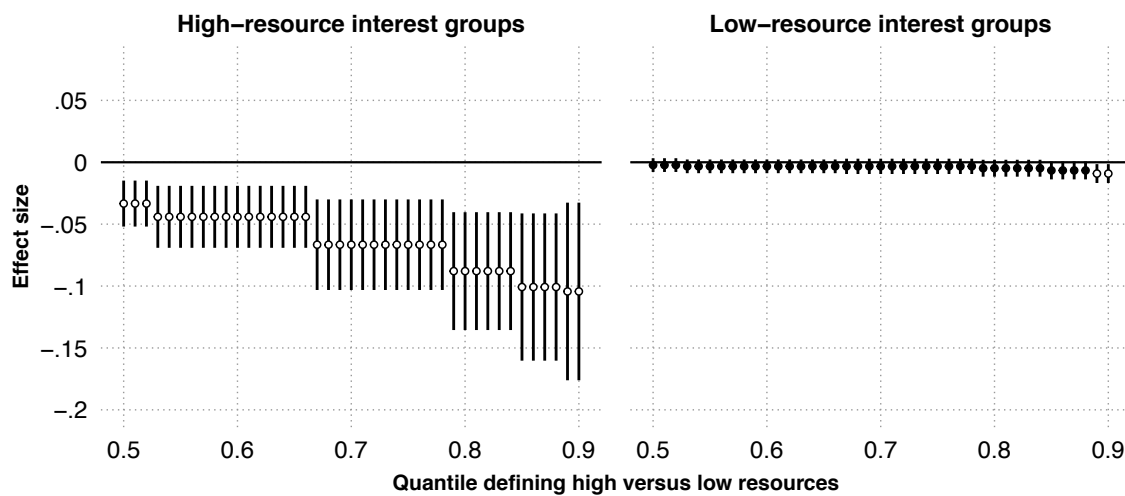
In Table 3 of the main article, we examine whether the resources that are available to NGOs and business interests drive the results. We do so by examining the differential effect of the pandemic on access to policy-makers and social media behavior by stratifying interest groups by their available resources. In Table 3 of the main article, interest groups with ‘high’ resources are defined as those in the upper tercile (upper 67th percentile) of lobbying resources, and interest groups with ‘low’ resources are defined by those in the lower two terciles. These definitions of ‘high’ and ‘low’ resources, however, are relatively arbitrary. We thus test whether the results in Table 3 are sensitive to how high-resource and low-resource groups are coded. To do so, we recode ‘high’ and ‘low’ groups at a wide range of cut-offs—from the median thru the 90th percentile—and refit the models from Table 3 for each potential cut-off.

Estimates of the differential effect of the pandemic on access to meetings with policy-makers and social media posts among NGOs and business interests among high- and low-resource groups are presented in [Figure A7](#). Panel A corresponds to Models (1) and (2) in Table 3 in the main article; Panel B, Models (3) and (4). The figure demonstrates that the results in Table 3 are insensitive to how ‘low’ and ‘high’ resource interest groups are coded. The left figure of Panel A shows that the pandemic caused a decrease in NGOs’ access to meetings with policy-makers relative to business interests among high-resource groups, regardless of how ‘high’ resources is coded (all estimates are significantly different from zero). By contrast, the right figure of Panel A shows very little evidence that the pandemic caused a similar decrease in NGOs’s access to meetings with policy-makers about low-resource groups, regardless of how ‘low’ resources is coded (all but two estimates are no significantly different from zero).

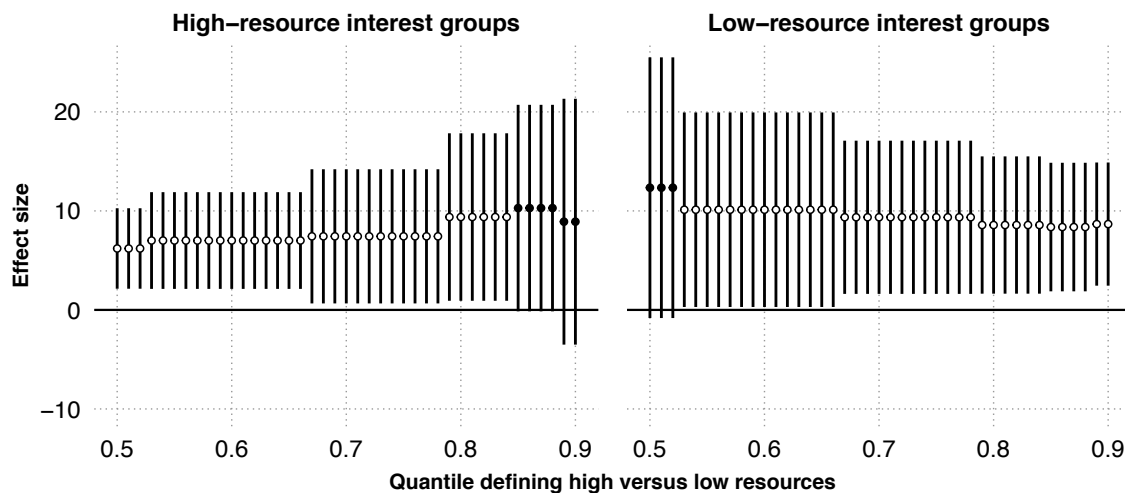
In Panel B of [Figure A7](#), we see similarly that the results from Table 3 in the main article are insensitive to the coding of resources. In both figures of Panel B, the pandemic is estimated to have caused an increase in the frequency of social media behavior by NGOs relative to

Figure A7: Sensitivity analysis of differences in the number of meetings with policy-makers and tweets, stratified by resource group

A. Meetings



B. Social media posts



This figure shows the estimated effect of the pandemic on differences in access to policy-makers and differences in the number of tweets sent by interest groups, among NGOs relative to business interests stratified by lobbying resources. Each point estimate and 95% CI represents the estimated effect of the pandemic on differences in meetings and tweets for NGOs relative to business interests when subsetting the data at different codings of “low” and “high” resources. Points in white indicate confidence intervals that do not cross zero.

businesses, both among high- and low-resource groups, regardless of how 'high' and 'low' resources are coded.

H Interest group staff size as an alternative measure of resources

In Table 3 in the main article and Table A3, we measure the resources available to interest groups by their lobbying budget, as defined in the EU Transparency Register. As a robustness check, we also replicate these two tables using an alternative measure from the EU Transparency Register: the full-time staff size of each interest group dedicated to lobbying activities. As with the lobbying budget, we define ‘high’ and ‘low’ resource interest groups as those in the upper tercile (‘high’) and lower two terciles (‘low’) of staff sizes.

Results are presented in Table A5 and Table A6. The results in each table using staff size as an alternative measure of resource availability are substantively equivalent to those using interest groups’ lobbying budget. Table A5 presents estimates of the effect of pandemic on NGO’s access to policy-makers, and social media behavior relative to business interests, stratifying by resources. The results are nearly exactly equivalent to those from Table 3 in the main article. The only notable difference is that although the point estimate on the effect of the pandemic on NGOs’ tweeting behavior relative to business interests in Model (3) is nearly identical, its level of statistical significance is somewhat lower ($p = 0.11$) than when stratifying by lobbying budget. In Table A6, the estimated effects are substantively equivalent, and there are no differences in statistical significance across all six models relative to estimates using lobbying budget as a measure of resources in Table A3.

Table A5: Regression results of the effect of the COVID-19 pandemic on differences in access to policy-makers, and social media communications, among NGOs relative to business, stratified by resources (as measured by *staff size*)

	Outcome variable			
	Number of meetings		Number of tweets	
	(1)	(2)	(3)	(4)
Lock-down × NGO interest group	−0.041*** (0.011)	−0.001 (0.003)	8.811 (5.609)	8.285** (2.612)
Month fixed effect	✓	✓	✓	✓
Interest group fixed effect	✓	✓	✓	✓
Interest group time trends	✓	✓	✓	✓
Data	High resource groups	Low resource groups	High resource groups	Low resource groups
Observations	65,163	98,468	47,352	57,418
R ²	0.312	0.164	0.671	0.666

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the number of meetings or tweets from each interest group aggregated at the month level from January 1, 2019 to September 30, 2020.

Table A6: Regression results of the effect of the COVID-19 pandemic on access to policy-makers, and social media communications, among high-resource groups relative low-resource groups (as measured by *staff size*)

	Outcome variable					
	Number of meetings			Number of tweets		
	(1)	(2)	(3)	(4)	(5)	(6)
Lock-down × Resources	0.006 (0.006)	0.022* (0.009)	−0.019** (0.007)	−0.371 (3.483)	−1.047 (5.757)	−0.453 (2.150)
Month fixed effect	✓	✓	✓	✓	✓	✓
Interest group fixed effect	✓	✓	✓	✓	✓	✓
Interest group time trends	✓	✓	✓	✓	✓	✓
Data	Businesses & NGOs	Businesses	NGOs	Businesses & NGOs	Businesses	NGOs
Observations	163,631	105,699	57,932	104,770	63,749	41,021
R ²	0.295	0.297	0.289	0.669	0.649	0.743

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the number of meetings or tweets from each interest group aggregated at the month level from January 1, 2019 to September 30, 2020.

I Regression results for the log number of meetings and tweets

In the main article, we present difference-in-differences regression models for the outcomes defined as (1) the number of meetings that each interest group has with EU policy-makers, and (2) the number of tweets sent by each interest group. As a robustness check, we also fit the main regression models to the log number of meetings and tweets.

We begin by investigating the effect of the pandemic on differences in the number of meetings that businesses and NGOs have with policy-makers and the number tweets sent by each interest group. Results for the log count of meetings and tweets (analogous to Table 1 in the main article) are presented in [Table A7](#). The results are effectively equivalent to those in the article. Onset of the pandemic is associated with a decrease in the number meetings that NGOs had with EU policy-makers relative to business interests ($p < 0.001$). By contrast, the pandemic is associated with an increase in the frequency of tweets sent by NGOs relative to business interests ($p < 0.01$).

Table A7: Regression results of the effect of the COVID-19 pandemic on meeting access and social media behavior (log number of meetings and tweets)

	Outcome variable	
	ln Number of meetings (1)	ln Number of tweets (2)
Lock-down \times NGO interest group	-0.008** (0.002)	0.065** (0.022)
Month fixed effect	✓	✓
Interest group fixed effect	✓	✓
Interest group time trends	✓	✓
Observations	163,631	104,770
R ²	0.288	0.862

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the log number of meetings or tweets from each interest group aggregated at the month level from January 1, 2019 to October 1, 2020.

Table A8: Regression results of the effect of the COVID-19 pandemic on meeting access and social media behavior (COVID-related meeting and tweet removed) (log number of meetings and tweets)

	Outcome variable	
	In Number of meetings	In Number of tweets
	(1)	(2)
Lock-down × NGO interest group	−0.003 (0.002)	0.028 (0.022)
Month fixed effect	✓	✓
Interest group fixed effect	✓	✓
Interest group time trends	✓	✓
Observations	163,631	104,770
R ²	0.266	0.859

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the log number of meetings or tweets from each interest group aggregated at the month level from January 1, 2019 to October 1, 2020. Data included are those meetings and tweets that are not classified as being related to the COVID-19 pandemic.

We then fit difference-in-differences models equivalent to those in Table 2 in the main article, where the outcome is the log number of meetings and tweets for meetings and tweets that are not classified as being related to COVID-19. Results are presented in Table A8. Similar to the results presented in Table 2 of the main article, we find no strong evidence that onset of the pandemic is associated with differences in the log number of meetings that NGOs or business interests had with EU policy-makers, or the frequency of tweets sent by each class of interest group when explicitly COVID-related meetings and tweets are removed.

Finally, we stratify by the resources available to each interest group and fit models to estimate the effect of the pandemic on the log number of meetings that interest groups have with EU policy-makers and the number of tweets they send. We fit a difference-in-differences model equivalent to that used in the main article (Table 3) to the logged outcomes. Results are presented in Table A9. Compared to the analogous table in the main article (Table 3), the results are effectively equivalent. Among high-resource interest groups, the pandemic caused

Table A9: Regression results of the effect of the COVID-19 pandemic on meeting access and social media behavior, stratified by interest group resource levels (log number of meetings and tweets)

	Outcome variable			
	ln Number of meetings (1)	ln Number of meetings (2)	ln Number of tweets (3)	ln Number of tweets (4)
Lock-down × NGO interest group	−0.027** (0.009)	−0.002 (0.002)	0.097* (0.041)	0.062* (0.026)
Month fixed effect	✓	✓	✓	✓
Interest group fixed effect	✓	✓	✓	✓
Interest group time trends	✓	✓	✓	✓
Data	High resource groups	Low resource groups	High resource groups	Low resource groups
Observations	37,503	123,850	29,988	73,557
R ²	0.316	0.178	0.858	0.860

*p<0.05; **p<0.01; ***p<0.001. Standard errors, in parentheses, are clustered at the level of the interest group. The outcome variable is defined as the log number of meetings or tweets from each interest group aggregated at the month level from January 1, 2019 to September 30, 2020.

a decrease in political access to policy-makers among NGOs relative to business interests (Model (1)), an effect that is not observed among low-resource interest groups (Model (2)). Finally, similar to the results presented in the main article, we find that the pandemic caused an increase in the social media frequency of NGOs relative to business interests, both among low-resource and high-resource interest groups.

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