Making Supply Meet Demand: Gender Representation and Lobbying

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Abstract

Gender equality in political representation is crucial in contemporary democracies. While scholars have addressed gender inequality in government, less is known about gender representation in civil society. We argue that interest groups use gender representation to gain access and influence the decision-making process. We employ a unique dataset with the gender composition for the entire population of government officials and interest group representatives, as well as information on more than 4000 consultation meetings, in the European Union. We use a fixed effects approach, validated by instrumental variable designs. We find that interest groups are more likely to employ female lobbyists where they deal with more diverse legislators. Moreover, this effect is stronger where interest groups are 'outsiders' and hence have to compensate their lack of access. This provides further evidence for our main argument that interest groups use gender mainstreaming as a lobbying strategy. Conceptually, we contribute to the discussion on political representation and gender mainstreaming. Empirically, we provide the first analysis on gender representation in civil society.

Wordcount:

Introduction

Interest groups play a key role as organizations that contribute to policy-making and political representation. Nevertheless, from a plethora of competing organizations, only a select few lobbyists gain access to policymakers and can potentially influence policy outcomes (Austen-Smith 1993; Baumgartner, Berry, Hojnacki, Leech and Kimball 2009).

Despite a notable body of work assessing the interaction between policymaker characteristics and lobbyists' access (Mahoney 2004; Baumgartner et al. 2009; Getz 1997; Hillman, Zardkoohi and Bierman 1999), the gender dimension remain largely out of focus. In so doing, research downplays whether and why gender impacts interest groups political strategies (Hillman, Zardkoohi and Bierman 1999; Oliver and Holzinger 2008). Moreover, it leaves unaddressed theoretical discussions on interest group representation, gender mainstreaming, and political inequality (Pitkin 1967; Mansbridge 1999; Weldon 2002).

In this paper, we ask whether gender impacts interest groups' access to policymakers. To answer this question, we extend the resource dependence theory (Pfeffer and Salancik 2003), commonly used in political science and management to study business and government relations, by shifting attention to the lobbyists' individual characteristics. More specifically, we test whether gender mainstreaming is strategically used by interest groups to lobby the government.

We expect that interest groups will employ lobbyists with certain individual characteristics, including gender, that will improve their chances to access legislators in key positions. We also expect that this effect is stronger in those situations where the group needs to compensate its lack of access. Some interest groups are given less access to some institutions due to their relatively limited relevance for the policymakers there. We expect that these 'outsiders' are more likely to use gender strategically, to compensate this lack of access.

To test our argument, we focus on the European Union (EU). This political system consists of a complex institutional setting, with a very diverse interest group population. Moreover, the EU literature provides some clear expectations on the logic whereby interest

groups access the different institutions that make this an ideal case to test our hypotheses. Furthermore, the EU has supported gender mainstreaming since the mid-1990s, making it one of the European Commission's longest horizontal agendas.

We rely on a unique dataset that we construct, containing information on the staff of all EU Commission European Commission Directorate Generals (DGs), as well as on the lobbyists these legislators interact with (from the Joint Transparency Register (JTR). This dataset is complemented with information on the meetings that take place between these policymakers and lobbyists. We use information from the censuses of various countries and employ machine learning techniques to extract legislators' and lobbyists' gender. The result is a unique dataset with the gender composition of government officials and lobbyists in the EU, along with information on roughly 4000 meetings between them.

First, we match the interest groups registered in the JTR with the relevant DGs through their policy areas of interest (interest groups need to specify in the JTR their policy areas of interest), and test whether the DG's gender composition affects the interest group representatives' gender. We find a statistically significant and positive effect, using with a battery of fixed effects. We validate our results by using a Bartik shift-share instrument, where we interact the gender composition of a DG in 2010 with the increase in the number of female staff in the other DGs over time. Moreover, we find that the effect is stronger for Non-governmental Organizations (NGOs). This provides evidence for the hypothesised mechanism at work, namely that the lobbyists' gender is impacted by policymakers' demands and the organizations' strategic choices.

Second, we focus on the meetings between lobbyists and legislators, testing whether the lobbyist's gender depends on the gender of the legislator in charge of a specific dossier. We use an instrumental variable approach, instrumenting the gender of the legislators in a meeting with the likelihood of participating to that meeting in the first place, in a Heckman selection model. We find that interest groups employ female lobbyists to engage in a meeting when a female legislator is in charge of a dossier.

The findings from these two analyses provide evidence that gender mainstreaming is used strategically by interest groups to obtain access to decision-makers. This shows that the resources dependence theory offers superior explanation for the findings in this paper, which cannot be explained by other theories such as transaction cost theory. Moreover, these findings broadly speak to the literature in political science and management that looks at lobbyists' individual characteristics and gender mainstreaming policies.

This paper contributes to two interlinked discussions. It provides a nuanced bridge for work addressing political equality, strategic behaviour, and policy-makers from a gender perspective (Schlozman 1990; Squires 2008; Waylen 2014; Weldon 2002). Simultaneously, we offer a valuable empirical clarification to conceptual debates on the relationship between group mobilization, participation and the legitimacy of political systems (Schmidt 2013; Rothstein 2018; Klein 2021; Squires 2008).

Moreover, this discussion contributes to work on organized interests' political activity focusing on staff's individual level characteristics (Hillman, Zardkoohi and Bierman 1999; Lawton, McGuire and Rajwani 2013; Barreto 2010), while it offers insight to public management research focusing on policy-makers' characteristics (Christiansen 1997; Egeberg, Gornitzka, Trondal and Johannessen 2013; **?**; Kassim, Peterson, Bauer, Connolly, Dehousse, Hooghe and Thompson 2013).

Finally, this paper elicits interesting practical implications. The findings suggest that the real glass ceiling in political representation is demand-side led. We are likelier to observe civil society organizations employing male lobbyists when the Directorate General's office is headed by a male legislator. Simultaneously, the greater the balance of the legislator's office, the likelier we are to observe female lobbyists mobilizing.

The paper develops as follows. The first part outlines its theoretical context and hypotheses. The paper proceeds with a discussion on methodology, and is followed by the results and analysis. In the final part, we offer a discussion where we assess the paper's implications and offer some potential avenues for future research.

Gender Mainstreaming and Organized Interests

In this section, we divide the literature in two parts: the demand side, which looks at the government side, and the supply side, which looks at the interest group side. There is a vast literature in political science and public/private management that looks at the organizational and institutional/procedural features of the government and the interest groups that affect who is hired, who is promoted and why, which is at the basis of discussions surrounding the glass-ceiling. In this section, we see that although a glass ceiling is present both in government and civil society, there is variation in gender representation. Factors such as the type of government department (DG in the EU case), the issue/policy area at stake, the interest group type, its resources and nationality affect gender representation. The next section will 'make the supply meet the demand', bridging the two previous parts. By relying on the resource dependence theory, we argue that interest groups use gender representation strategically, in order to get access to decision-makers. In so doing, we provide an explanation for gender representation in interest groups that goes beyond the demand and supply factors seen above.

Demand Side

In most contemporary democracies, institutions were set up at a time when politics was male dominated (Chappell and Waylen 2013; Hartlapp and Blome 2021). This applies to institutions, as well as organized interests. In the public administration, staff tend to serve long-term tenure, leading to path dependencies, namely decisions or preferences linked to an individual or department that follow the institution over time (Bulmer 2009).

On the one hand, the policy networks established at the time were (and remain in part) gender imbalanced, with more men in higher-ranking positions and often more men overall. On the other hand, the government affairs managers and lobbyists that were hired initially and developed trust and access to key policymakers were also male. These organizations

have little incentive to hire new lobbyists since inter-personal relationships are a key aspect of the trade.

As such, despite increasing concerns and policy responses to improve gender equality in the workforce, path dependency created a time-bubble where older and more senior staff are predominantly male. The EU has been aware of gender inequality at its doorstep discussing policies and measures since the mid-90s. However, it is since the Lisbon Treaty (2009) that gender mainstreaming policy, one of its longest standing horizontal policies, saw additional active measures take place encouraging greater inclusiveness of gender concerns in policy, hiring practices, and policy-making procedures (Minto and Mergaert 2018). That is to say, there is a clear and outspoken institutional demand to increase female staff, female representation, and female participation in EU policy-making.

We observe this pattern in the European Commission (EC). Figure 1 and Figure 2 shows the gender distribution for directors (AD) and for administrative assistants (AST), respectively across DGs. The horizontal axis shows the share of female staff in AD and AST positions. First, we notice a huge difference between directors and assistants. No DG has more than 50 per cent female director staff, whereas most of the DGs have more than 50 percent female assistants. We can clearly see the glass ceiling here at work, with director roles being filled mostly by male staff and assistant roles by female staff.

The literature expects some variation across government departments. First, the government department matters for two reasons. The networks that have managed to see more women hired in key positions, lead the organization to a positive spiral that allows more women to be hired (Cook and Glass 2014; Tolbert and Hall 2015). Moreover, the issues managed by some DGs are more closely linked to issues impacting women, leading to higher interest from women to work in the specific DG (Connolly and Kassim 2017).

We find variation across DGs, providing support for these expectations. We find that in DGs such as Migration, Regional, Environment, and Education, female directors are most prevalent. Conversely, DGs like Financial and Budget are strongly male dominated. It

should be noticed that, although variation in administrative assistants across DGs is overall lower than that in directors, the two distributions mirror each other.

Relatedly, the nature of the policy good also has a bearing on gender balance, according to the literature. Some policy areas require expertise based on a science-technology-engineering-mathematics (STEM) educational background, all of which tend to be male dominated at university level (Beede, Julian, Langdon, McKittrick, Khan and Doms 2011; Kahn and Ginther 2017). Conversely, policy areas linked to social sciences and law may observe greater. So called 'caregiving issues', such as education, tend to attract more female legislators (Winter 2010).

Figure 3 and Figure 4 look at gender balance across policy areas (as defined by the interest group as policy areas of interest in the JTR). It should be noted that DGs and policy areas differ as the same DG can work on different policy areas and the same policy areas can competence of different DGs. [1] Overall, we see more gender balance for administrative assistants than managers, but that balance varies strongly across policy areas, as above with DGs. Yet, in some areas such as Digital Economy and Society, Business and Industry, and Research and Innovation Energy, the number of female staff is high, whereas other areas like Banking and financial services, Energy, and Research and Technology are strongly male dominated.

In conclusion, from a demand side perspective, the literature suggests that there are gender imbalances in political institutions. Yet, there is variation across government departments (DGs, in this case) and issues/policy areas. We provide some descriptive evidence that this applies to the EU.

Supply Side

The glass ceiling permeates interest organisations, as much as government (Junk, Romeijn and Rasmussen 2021; LaPira, Marchetti and Thomas 2020). We find some descriptive ev-

[1] We discuss this in detail below.

idence in Figure 5, Figure 6 and Figure 7, where we show the share of female lobbyists across interest group types, the DGs these groups deal with and the policy areas they work on. We can see that overall male lobbyists are the majority across the whole interest group population.

The extant literature provides a list of potential sources of variation, which we will take into consideration in the analysis below. First, research suggests that business interests are likelier to have a glass ceiling, reflected in more male government affairs managers, as well as key staff. Indeed, although all interest groups aim to gain access and influence legislators (Sell and Prakash 2004; Pattberg 2005), there is some variation. Business lobbies to improve market share and hence it may be keen to adjust its lobbyists to be as effective as possible, for instance by relying on outsider strategies (Binderkrantz 2005). Instead, NGOs lobby mainly to represent its constituencies and may improve staff gender balance due to funding and broader representation concerns. Our unique data confirms the presence of a glass ceiling in the interest group population, particularly pronounced for business and consultancies and less pronounced for think tanks (see Figure 5, where the horizontal axis shows the number of interest groups with a male or female EU affairs representative).

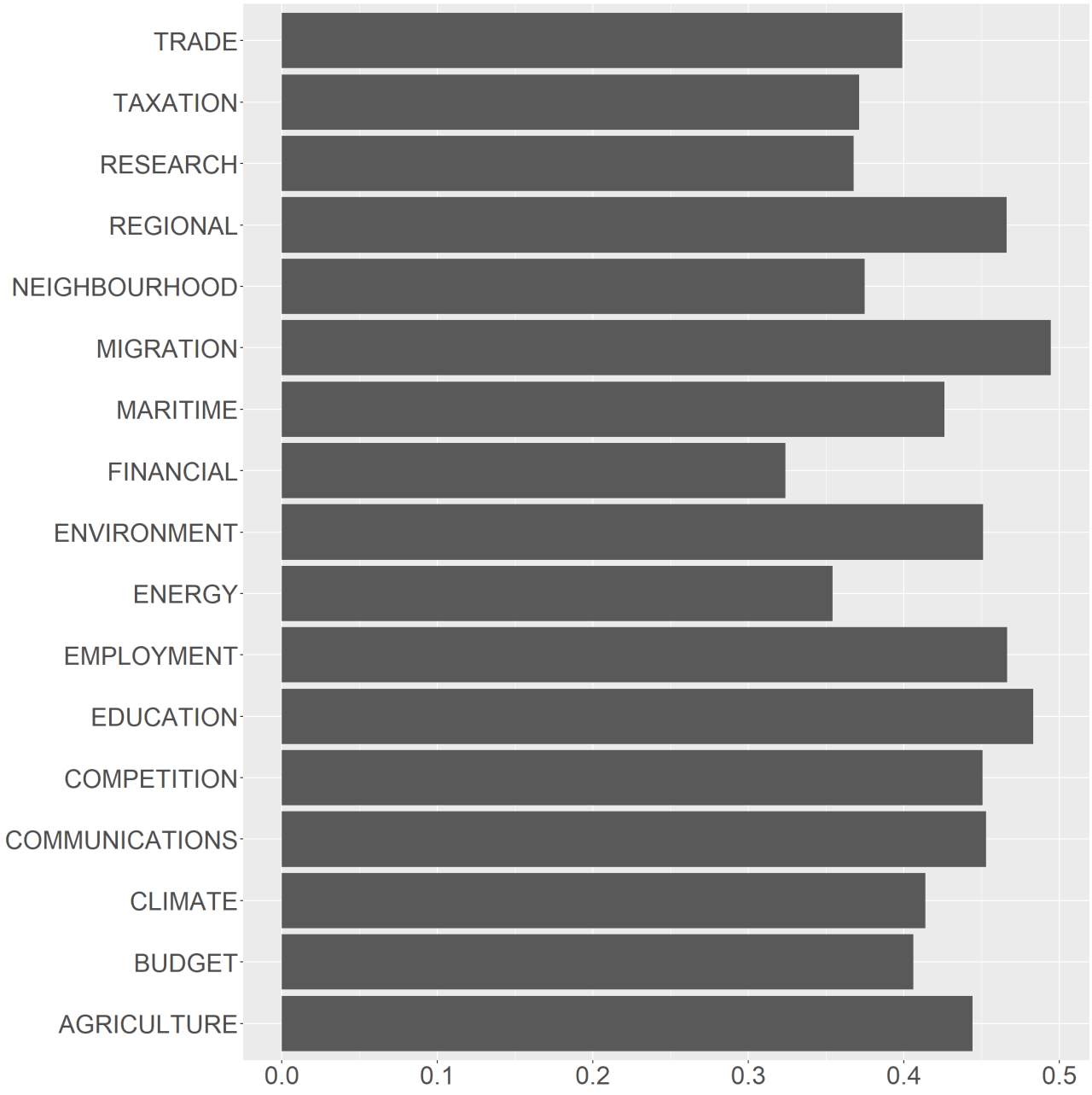
Second, the literature notes a potential correlation between resources and gender. Business organisations with greater numbers of staff have a clearer incentive to consider their workforce's gender distribution. Conversely, because CSOs/ NGOs are likelier to have female managers and likelier to receive EU funding that comes with specific notifications on staff. Hence, there is better gender balance in NGOs than in business.

Third, the interest groups' organisational culture matters. Scholars highlight how the national domain influences gender balance within organisations (Lewis 1997; Lyness and Kropf 2005; Nazarian, Atkinson and Foroudi 2017), with implications for lobbying strategies. Offices whose head is based in national polities where the workforce is more gender balanced, and/ or have a tradition in successful work equality policies are likelier to have better balance of lobbying staff. For instance, interests based in the Scandinavian organisational culture

will have better gender balance than interests based in the Southern European organisational culture.

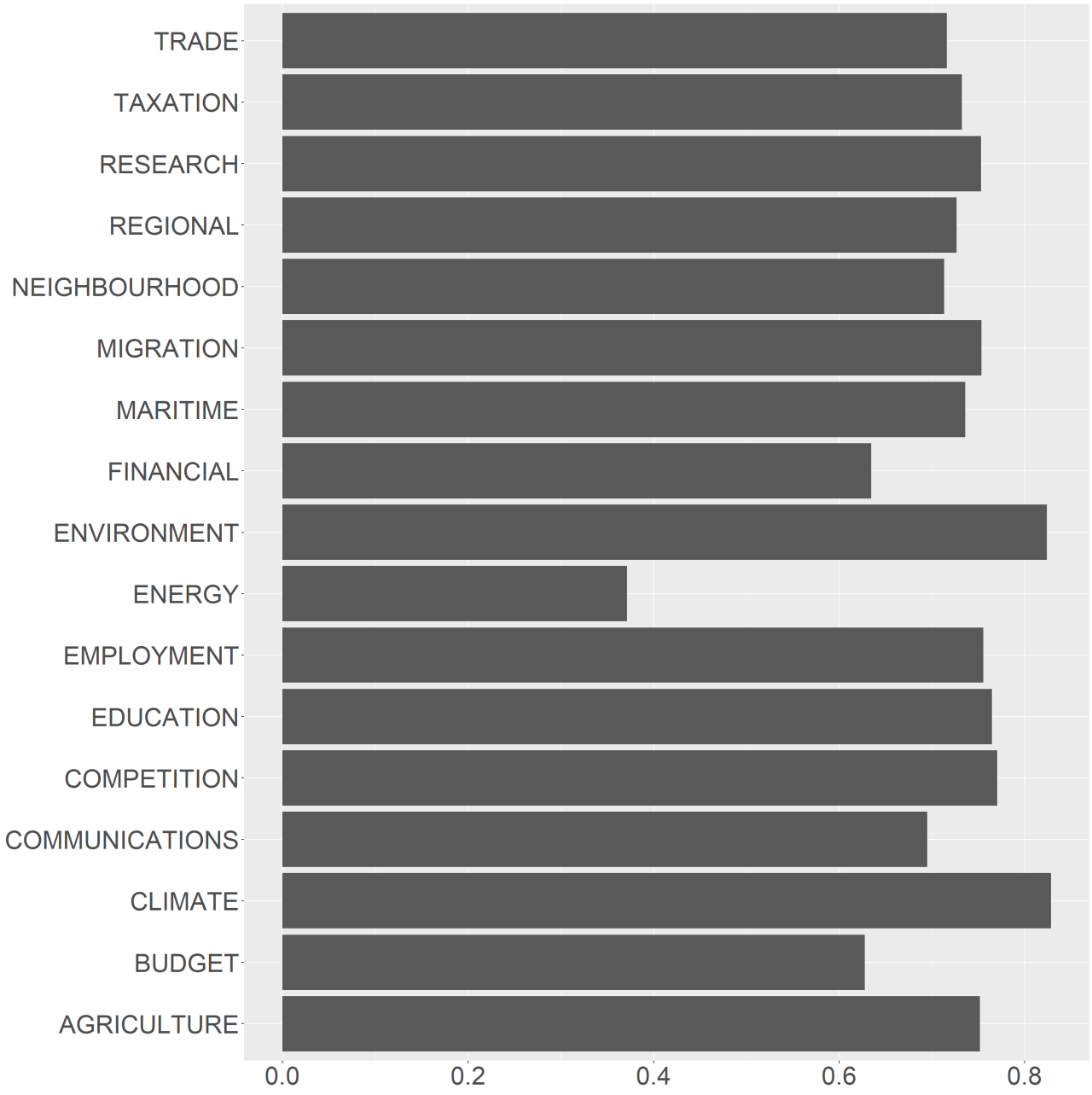
Forth, there is variation across policy areas. As with the government side above, more technical issues are dealt with male lobbyists, whereas more 'caregiving issues' attract more female lobbyists. We find descriptive evidence for this with our data. Figure 6 and Figure 7 show the gender distribution in lobbyists across DGs and policy areas, respectively. We find that DGs such as Trade, Taxation and Energy are strongly male dominated. By looking at the policy areas, we find that in areas such as Environment, Education and Climate, more female lobbyists are present than in areas such as Competition and Energy, which remain male dominated.

Figure 1: Gender Distribution across DGs for AD



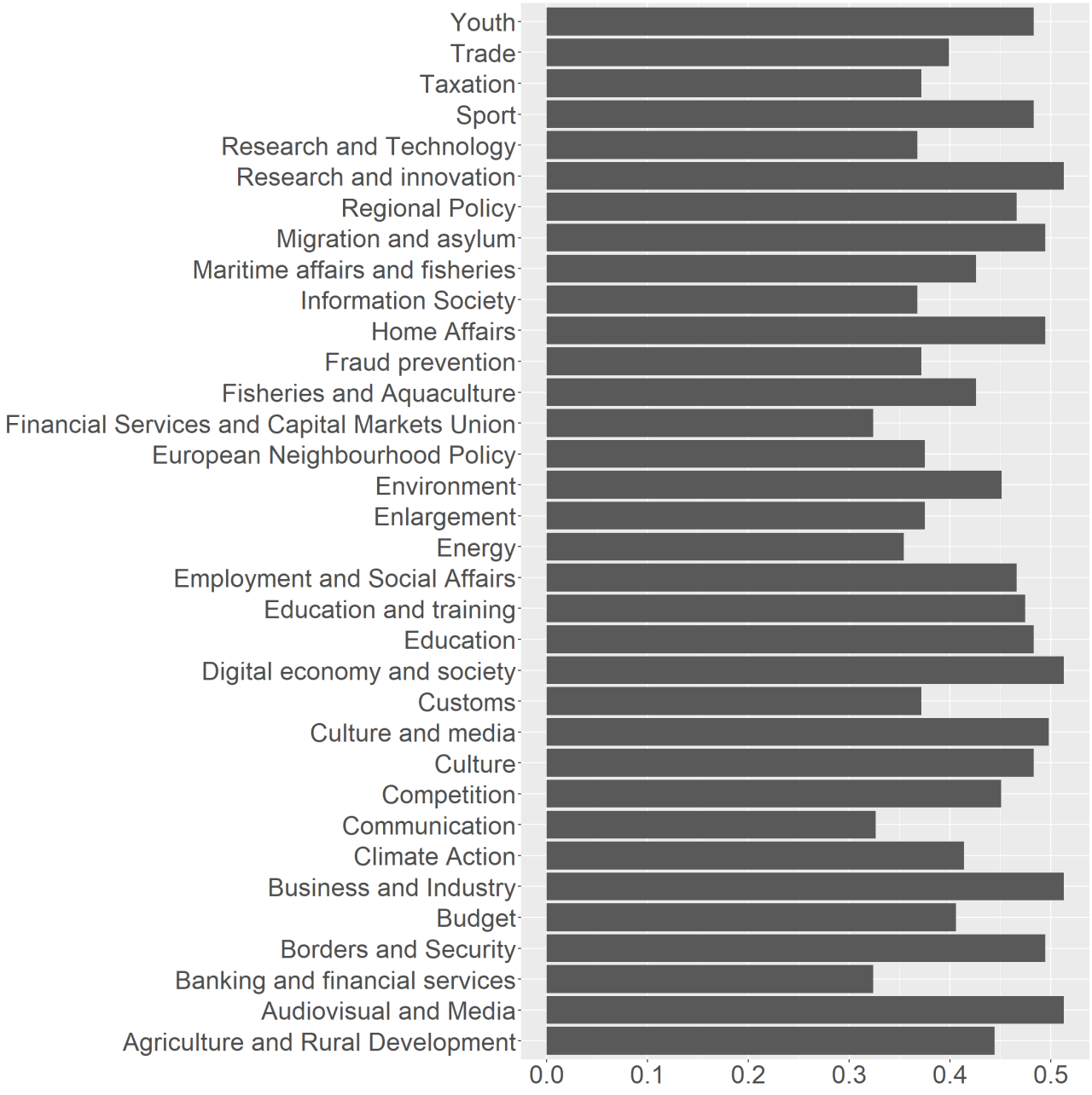
The figure shows the share of female directors (AD) in the different DGs.

Figure 2: Gender Distribution across DGs for AST



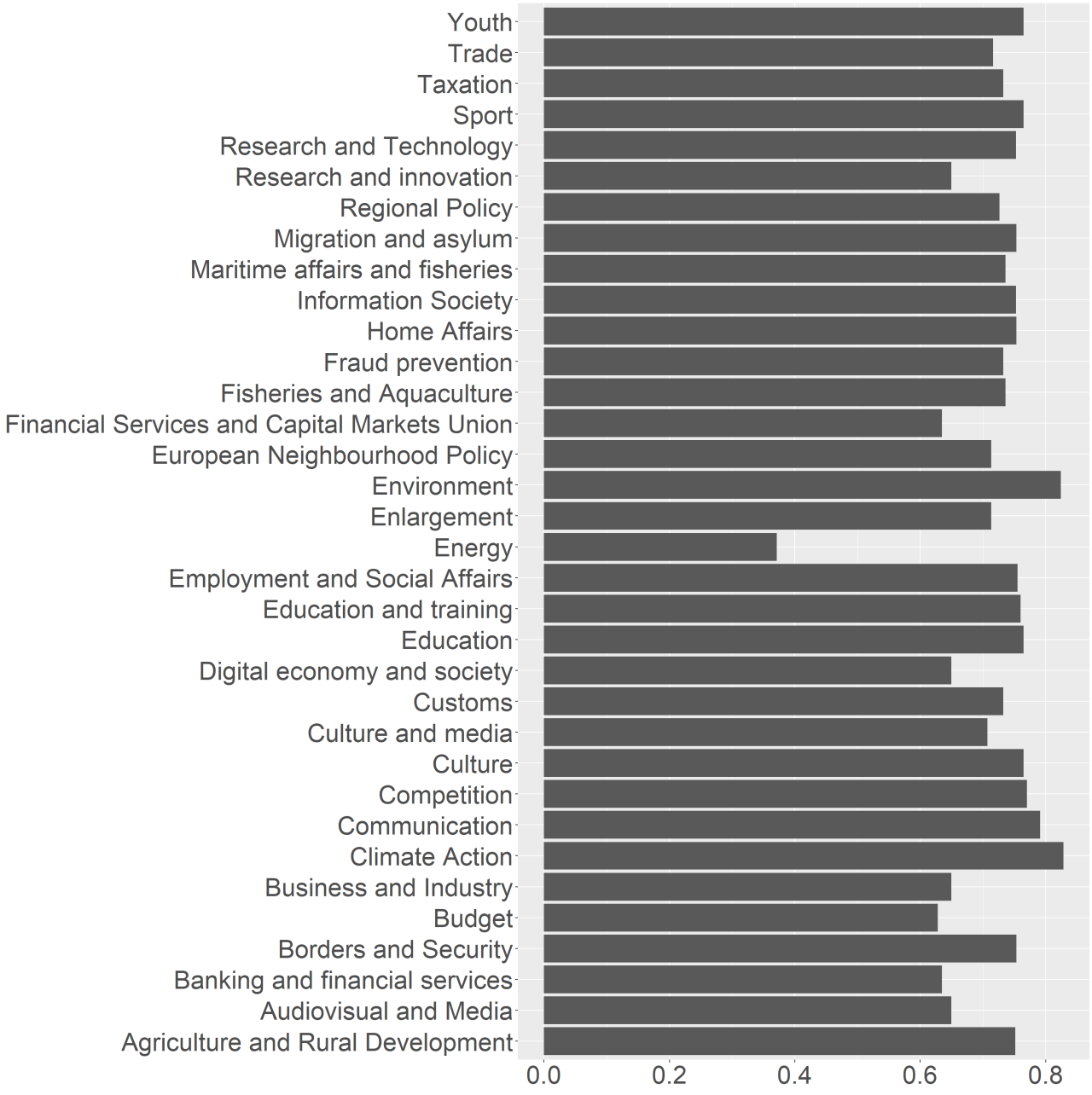
The figure shows the share of female administrative assistants (AST) in the different DGs.

Figure 3: Gender Distribution across Policy Areas for AD



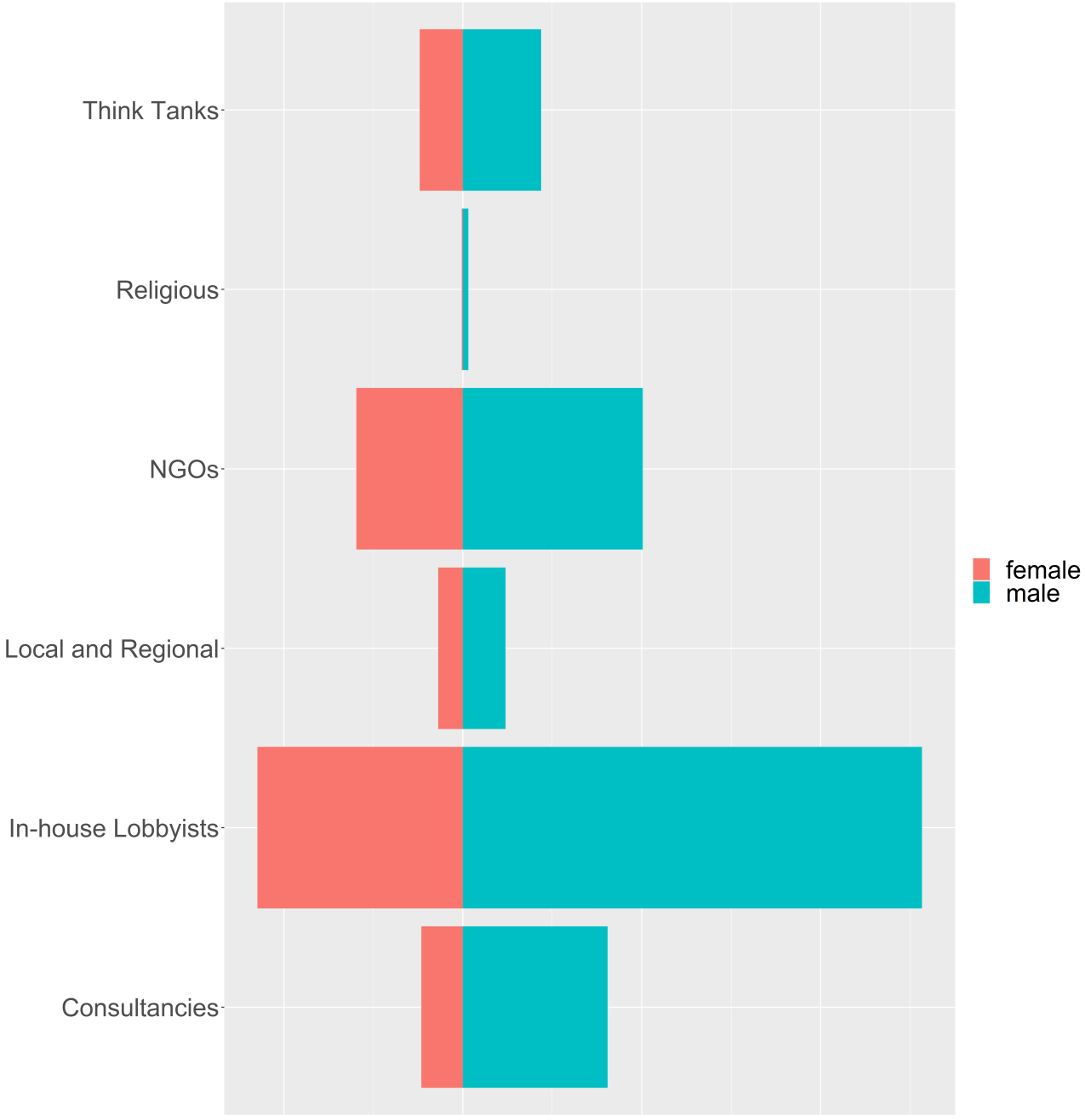
The figure shows the share of female directors (AD) in the different policy areas (as listed in the JTR by the interest groups).

Figure 4: Gender Distribution across Policy Areas for AST



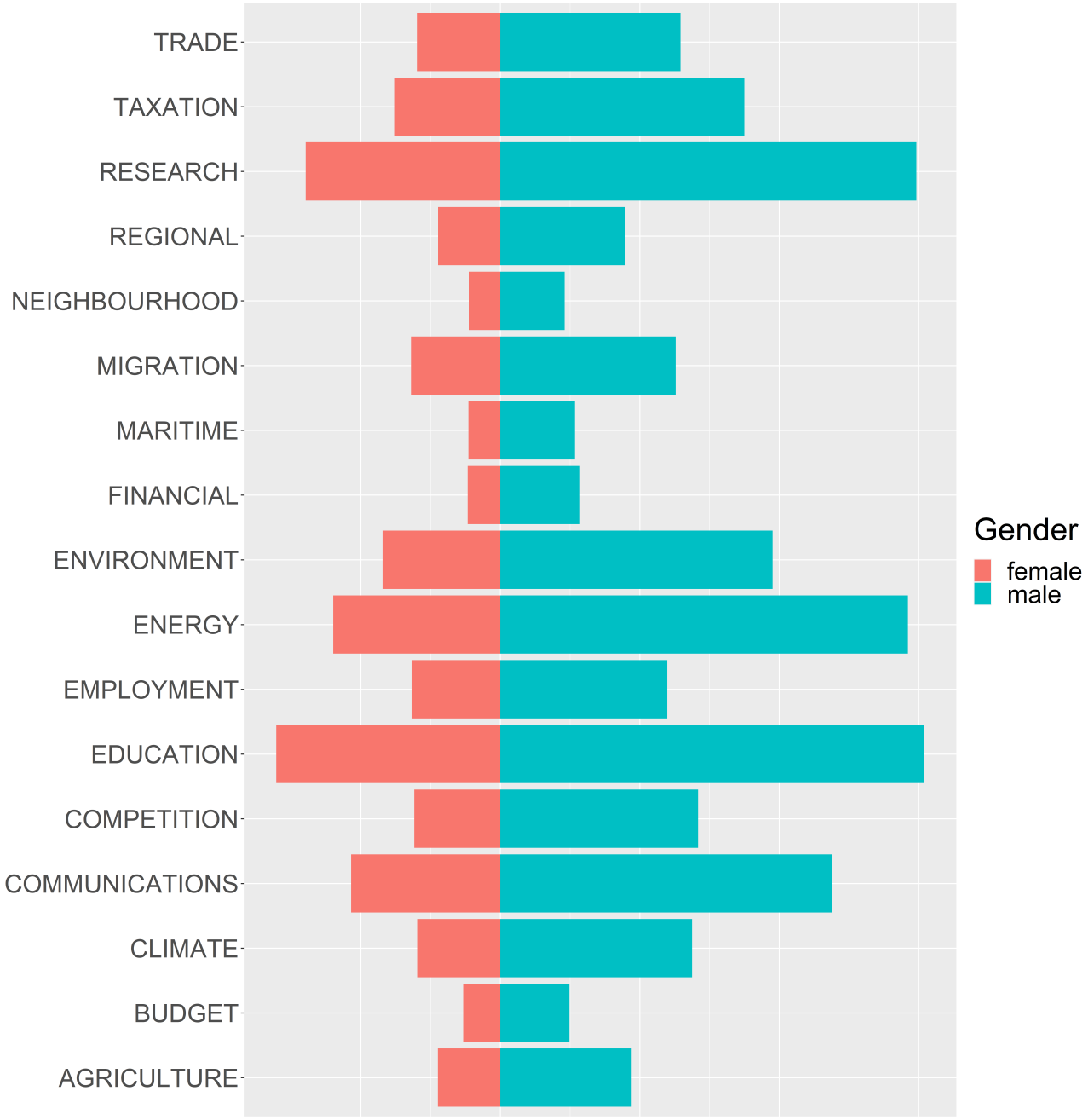
The figure shows the share of female administrative assistants (AST) in the different policy areas (as listed in the JTR by the interest groups).

Figure 5: Gender Distribution across Interest Group Types



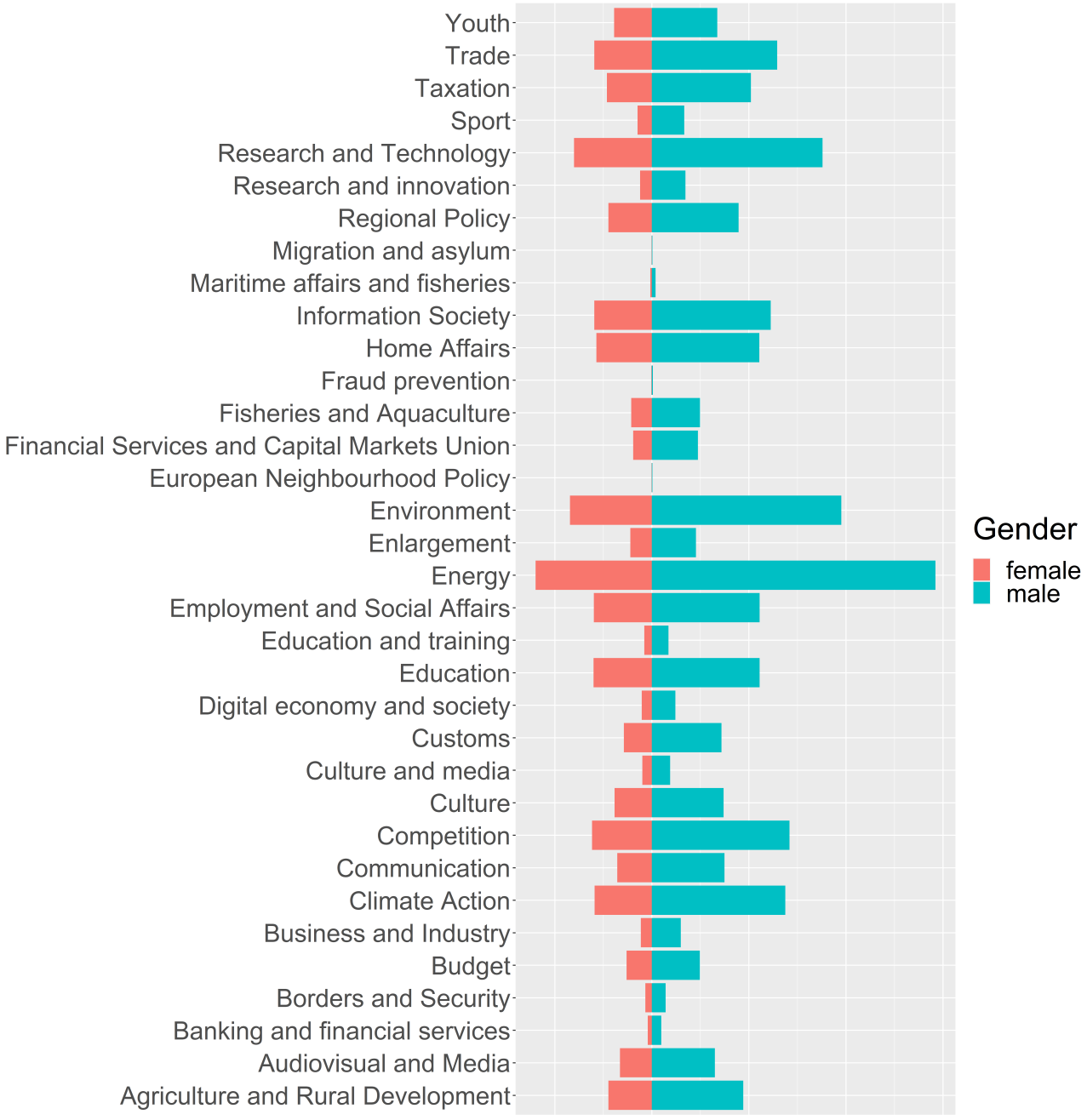
The figure shows the number of male and female lobbyists for the different interest group types. It should be noticed that the absolute values are not important in this graph. The important information is the difference between male and female lobbyists for interest group types.

Figure 6: Gender Distribution across DGs



The figure shows the number of male and female lobbyists for the different DGs. It should be noticed that the absolute values are not important in this graph. The important information is the difference between male and female lobbyists for interest group types.

Figure 7: Gender Distribution across Policy Areas



The figure shows the number of male and female lobbyists for the different policy areas. It should be noticed that the absolute values are not important in this graph. The important information is the difference between male and female lobbyists for interest group types.

In conclusion, also from a supply side perspective, there is a glass ceiling in place. Yet, the literature suggests variation in gender representation across interest group types, resources, nationalities and policy areas/issues.

Making Supply Meet Demand

The literature puts forward a series of supply and demand characteristics that are important in determining how gender representation: the relevant government department (DG in the EU case), the issue/policy area at stake, the interest group type, its resources and nationality.

Yet, by looking at the figures on gender representation in government and in the interest group population above, we can see that the situation in the interest group population mirrors closely that in the European Commission. Moreover, some findings cannot be only explained by either supply or demand factors alone. For instance, we find that in Research and technology, many female Commission staff are present and the same is true for interest group representatives. These similarities go beyond the organizational and policy area related factors. We need a more dynamic approach that looks at the interaction between demand and supply, building on the resource dependence theory. In this paper, we argue that interest groups employ gender as an information strategy to improve access to decision-makers.

The interface between lobbyists and policymakers is motivated by information asymmetry on the side of government (March and Olsen 1983; Suchman 1995) and the need to obtain favourable regulation on the side of interest groups (Vogel 1996; Reimann 2006).

Due to resource constraints, the public administration and elected policymakers have neither sufficient expertise about policy issues nor the time to meet all relevant actors who can supply it (Mitchell 1990). In need for timely expertise, policymakers designate relevant and reliable interests as 'insiders', which have privileged access to key policymakers and the opportunity of supplying relevant expertise/information (Streeck and Schmttter 1991; Austen-Smith 1993). These meetings do not necessarily have a strict protocol but may

lead to substantial policy impact (Farrel and Rabin 1996). The remaining organizations are 'outsiders', surrounding policymakers, but with restricted access to them or the policy process, and by implication limited influence.

From the interest group perspective, public policy creates uncertainty over the market for private interests (Vogel 1996; Getz 1997) and the community for public interests (Reimann 2006). To reduce this uncertainty, interest groups set up government affairs offices and hire external lobbyists/consultants, competing for access to policymakers.

For business interests in particular, political activities can provide a non-market advantage over competitors (Shaffer and Hillman 2000; Schuler, Rehbein and Cramer 2002), they can influence policy outcomes, delay implementation, earmark resources. This has meant the development of corporate political strategy and activities (CPA) in response and anticipation of government demands (Yoffie and Bergenstein 1985; Vogel 1996).

For public interests, political activities are a necessary activity linked with constituency preferences. Nevertheless, competition for influence has also meant the development strategic behaviour (Mahoney 2004; Colli and Adriaensen 2020) including alliance formation with business interests (Levy and Egan 2003).

By building on these premises, the resource dependence theory posits that interest groups and government exchange goods: in the European Union, technical information and political legitimacy are exchanged for access and influence. This theory has recently been extended to the individual level, often referred to as the micro-level. Policymakers' individual qualities, such as education, experience, and position, impact resource demands (Christiansen 1997; Baumgartner and Leech 2001; Egeberg et al. 2013), influencing which organizations receive access. In turn, because access is dependent on trusted relationships between key individuals, interest groups adapt their strategies adjusting staff depending on their characteristics (Walker and Rea 2014). Moreover, the features of the lobbyists are important: interest groups' lobbying capabilities are directly linked to the individuals hired (Pisano and Teece 1994). In summary, new developments in the resource dependence theory has shifted the

attention to the individual level.

This is true also for the EU where, for instance, companies tend to promote diversity in their lobbying team in terms of skill-set (Coen and Vannoni 2016). The same applies for the individual lobbyist: companies tend to prefer individuals with work experience in the private sector that can easily relate with decision-makers on technical issues (Coen and Vannoni 2020*a*,*b*).

In conclusion, according to the resource dependence theory access is a form of equilibrium where organizational demands meet interest groups' supply, an equilibrium traceable down also to specific individuals.

The main hypothesis put forward here is that the legislator's gender will affect the lobbyist's gender. Put simply, we expect that comparing two similar interest groups, with similar resources and from similar countries, when they deal with legislators in a similar policy area, they will employ lobbyists with different gender depending on the gender of those legislators. Recent work has found evidence of this in the US: Strickland and Stauffer (2021) find that interest groups hire female lobbyists when working on more diverse legislatures.

Formally:

Hypothesis 1 (H1): *Interest groups are more likely to use female lobbyists when dealing with female legislators*

The mechanism at work here is that gender representation is used strategically by interest groups. Female lobbyists are mobilized to address more diverse legislators. If that is true, outsiders are likelier to employ this strategy, to compensate for their lack of access.

The political science literature on EU lobbying provides some insights on the logic of access of interest groups to EU institutions that are helpful to isolate the mechanism at play.

The theory of access (Bouwen 2002; Eising 2007) represents an attempt by the political science literature to apply the resource dependence theory to EU lobbying. The main argument is that, due to their structural and functional role, different EU institutions will demand

different goods, which in turn will be provided by different actors. This will determined to access these actors have to the EU institutions.

As a quasi-executive legislator, the European Commission is concerned primarily with its output legitimacy, i.e. the production of high quality outputs. As a result, the Commission receives notable attention from business interests that supply expertise deemed more relevant for its day-to-day informational needs (Vannoni 2015). Hence, business interests enjoy an insider status in the Commission.

As mentioned above, the mechanism at work is that interest groups use the lobbyist's gender to improve access to policymakers. As seen above, interest groups hire lobbyists whom they believe can gain access to key policy-makers. As seen above, in the EU, interest groups tend to hire people from the private sector, with the idea that they get more access to EU institutions (Coen, Katsaitis and Vannoni 2021). We argue that interest groups also use gender as a heuristic to choose which individuals get more access (Strickland and Stauffer 2021).

Expanding the resource dependence theory (and its derivation, the theory of access), we argue that female lobbyists provide informational goods that are more appealing to diverse legislatures/governments. Lobbyists regularly achieve influence by providing relevant information to lawmakers and performing ancillary services (Hall and Lamont 2013). Because there is overlap in the types of issues women frequently lobby for and legislate on, interest groups may see women legislators as natural allies to women lobbyists and their interests. Gender diversity in the legislature may therefore produce an environment more conducive to the emergence of women lobbyists and women's issue groups (Wiener 2021). Also the form and not only the content of information provided by female lobbyists is relevant. Not only do female lobbyists work on similar topics as female legislators, but they also provide a more diverse perspective to any topic, which is valuable to a diverse legislative environment.

We expect that the effect of the legislator's gender on that of the lobbyist is stronger where the interest group has limited access to the decision-making process and attempts to

compensate with gender representation. In the case of the EU, this means that we expect NGOs to employ gender mainstreaming strategically more often when dealing with the EC, where they do not enjoy an insider status.

Hypothesis 2 (H2): *NGOs are more likely to use female lobbyists when dealing with female EC legislators*

There are other possible explanations for female legislators to be more likely to collaborate more with female lobbyists. First, legislators are likelier to give access to lobbyists with whom they share previous professional linkages (e.g. a lobbyist who interned at a legislator's office) or issue based connections (e.g. being part of a common advocacy coalition) (Strickland and Stauffer 2021). Moreover, female legislators are more likely to share this links with female lobbyists. Hence, we might see that female legislators are more likely to work with female lobbyists, regardless of the policy area/issue, the government department and the other demand/supply factors discussed above. Second, female legislators may work more with female lobbyists because gender alignment may reduce information and search transaction costs that DG staff use to identify credible lobbyists to provide reliable information and expertise. Third, considering EU institutions commitment to gender mainstreaming policy outcomes and procedures, the inclusion of female lobbyists in the decision-making process may simply be part of positive agenda setting practices. This dynamic can work through procedural or substantive representation: legislators can just give more access to female lobbyists or they can give them more access because they are in turn more likely to represent different perspectives.

All these explanations suggest that female legislators to be more likely to collaborate more with female lobbyists, even when controlling for the demand and supply factors seen above. We acknowledge that all these alternative explanations are not mutually exclusive and it is hard to disentangle their test empirically. Yet, as a proof of concept, if we find empirical evidence for Hypothesis 2, we will be able to preliminary exclude these alternative explanations. Indeed, only if we take the resource dependence perspective and see gender

as an individual feature crucial to the supply of information, we expect a difference between those groups that have an insider status in the EC due to their organizational nature and the information they already provide because of that.

In other words, if we find evidence for Hypothesis 2, we will show that the resources dependence theory offers superior explanation for the findings in this paper, which cannot be explained by other theories such as transaction cost theory.

Data and Measurement

We test our argument on the EU for theoretical and practical reasons. Theoretically, the EU represents a complex multi-level political system: high variation in structure and functions is present across political institutions. This in turn has an effect on the interest group population and its lobbying strategies. The EU literature, indeed, provides clear-cut expectations on the logic that drives the relationship between interest groups and EU institutions. Specifically, we can build on the extant literature to know which interest groups are given more access to which EU institutions and why. This is important as it allows formulating and testing Hypothesis 2, which in turn allows isolating the causal mechanism at play.

To test our argument, we focus on the European Union (EU). This political system consists of a complex institutional setting, with a very diverse interest group population. Moreover, the EU literature provides some clear expectations on the logic whereby interest groups access the different institutions that make this an ideal case to test our hypotheses. Furthermore, the EU has supported gender mainstreaming since the mid-1990s, making it one of the European Commission's longest horizontal agendas.

To test our hypotheses, we need information on the gender distribution of staff in the different DGs in the European Commission and on the meetings between those staff members and lobbyists. [2] Significantly, we require information on the specific characteristics of

[2] In the context of the EU, especially the Commission, words like EU staff, policy-makers and legislators can be used interchangeably.

individual policymakers and lobbyists including their gender and position. Furthermore, we require information on interest group type, budget, and overall staff.

For the policymakers, we collect data on the gender composition of each Commission DG from 2010 to 2018 from its official website. We collect information on meetings that took place between EC staff and interest groups from November 2014 to February 2021. A total 30881 meetings were recorded. We collect information on: the decision-maker involved; their policy portfolio; the subject of the meeting; the organization that participates in the meeting. [3]

We then match all this information with the data from the Joint Transparency Register (JTR) across different years. The JTR is the EU's mandatory lobbying register: any organization that aims to lobby or meet any EU official must be registered on the JTR. The JTR contains detailed information on each interest group: the organization's budget; the number of full time employed lobbyists; the details of the government's affairs representative; the legal representative; the lobbyists with accreditation to enter the EP; the headquarters' address; the type of organization; the policy fields they are interested in.

In order to allocate a gender (male or female) to the lobbyists (i.e. the EU affairs representative and the lobbyists with accreditation to enter the EP from the JTR) and legislators, we employed the genderize R package. The latter guesses the first name's gender (and assigns a probability to that guess) based on a database of first names from different censuses around the world. [4]

We validate the results from the genderize R package by comparing these results with the

[3] We acknowledge that it is possible that not all the meetings are recorded, but we assume that whether a meeting is recorded or not is not related to the individual characteristics of the lobbyist or some covariates related to that. Also, we also note that meeting registration is becoming increasingly the norm since 2015 following notable scrutiny of EU officials from internal and external observers.

[4] The algorithm takes into consideration variation within and across countries in the use of first names. Take the example of the first name 'Nicola'. This name is usually associated with female individuals in the UK but to both male and female individuals in Italy. Hence, the algorithm will guess that 'Nicola' is a male individual but the probability will be lower than that for other names that are consistently used for male individuals. For more information, please see https://genderize.io/. We highlight that in this work, we use sex as a proxy for gender, but we are aware that biological sex is not a perfect measure, especially in relation to gender and political behaviour (Bittner and Goodyear-Grant 2017).

aggregated data on the gender distribution of DGs provided by the Commission's HR team. The two measures are strongly correlated. Moreover, we use Natural Language Process (NLP) techniques to extract the gender of individuals. [5]. Results are strongly correlated with those from the genderize R package.

From this procedure, we derive two measures of the gender of the interest group representative: the gender of the EU representative; the gender of the EP accredited lobbyists (lobbyists that have access to the EP premises). The former is the main lobbyist employed by the company, usually in charge of EU affairs as a whole. The latter represent those lobbyists that are accredited to enter the EP. Usually, the entire lobbyist team is registered there. This means that most organizations list more than one individual. Hence, we take an average. For our analysis, we employ data on individuals from the Joint Transparency Register for the year 2018. The sample is limited because information on individual lobbyists' characteristics, including their name, was recently removed from their website so that the public can no longer access it, in line with the General Data Protection Regulation (GDPR).

Analysis

We run two analyses. The first analysis takes the 'interest group-policy area-DG' as unit. We start from the interest groups registered in the JTR and we link them to the relevant DGs through their fields of interest (as registered in the JTR). It should be noticed that most of the interest groups list more than one field of interest and that a DG can work on different policy areas. Moreover, a policy area can be the competence of two or more DGs. The following is the baseline model:

$$GenderInterest_{idp} = \alpha GenderLeg_{idp} + \beta X' + \delta_d + \phi_p + \varepsilon_{idp} \quad (1)$$

[5] We divide the sample of individuals in two sets. For the training set, we identify the features of female and male names, associated with some covariates, such as nationality. For instance, in some countries, if an individual's first name ends with the letter 'a', it will be likely that this individual is female. We then train the algorithm on this set of observations and apply it to the whole set.

where $GenderInterest$ is the gender of the representative of the interest group i dealing with the DG d in the policy area p. $GenderLeg$ is the average gender of the DG d in the policy area p working with interest group i. We use fixed effects for: the DG (δ_d) and the policy area (ϕ_p). We also include a vector of control variables related to the interest group (X'): the budget of the organization, the number of lobbyists, its country of origin and the type. The inclusion of fixed effects is very important, as we can exclude some sources of endogeneity and omitted variable bias, but not all. By including the policy area fixed effects, we control for the fact that female lobbyists and legislators might be attracted to work on the same areas, for instance. Yet, the gender of the interest group representative may affect which policymaker is in charge of a specific dossier. It is reasonable to expect that if the main lobbyists representing Google or any other big tech company are male, for instance, an important dossier on net neutrality will be allocated to male legislators (regardless of the policy area and the unit in charge). Moreover, it might be that even within the same policy area some dossiers are more likely to be dealt with female or male policy-makers and lobbyists.

Therefore, we take a Bartik shift-share approach. We instrument the gender composition of a DG by interacting the shares of assistant and director female staff in that DG in 2010 with (the increase in) the number female legislators in those categories in the other DGs from 2010 to 2018. The idea is that the contemporaneous gender composition of the lobbyists in the interest group population in a policy area does not affect the gender composition of the DG working in that area ten years before or the change in gender composition of the other DGs. Yet, the latter is related to the change in gender composition of the DG of interest. In other words, we isolate the supply of female policymakers from the demand.

This is in line with many current applications of shift-share instruments. For instance, Basso and Peri (2015) instrument the population of immigrants in a region with the population of immigrants by nationality at $t0$ across economic regions and the increase in these populations by the aggregate growth factor of immigrants from that nationality in the US

between $t0$ and t. Acemoglu and Linn (2004) instrument the market size for a drug with the age profiles of users for each drug category and then compute the implied market size from aggregate demographics and income changes given these time invariant age profiles.

More formally, these are the two main terms (see Equation). $\frac{Female_{jp0}}{Tot_{j0}}$ is the share of female staff in DG j in position p (we have data on administrators (AD) and assistants (AST)) at the beginning of the sample (at time 0, namely 2010). These are the so called shares. $\Delta\ Female_{j-1pt}$ is the average increase in female staff in all the other DGs $j-1$ in position p from time 0 to time t. These are the so called shifters.

$$GenderLegInstrument_{jt} = \sum_{p=1}^{P}\sum_{j=1}^{J} \frac{Female_{jp0}}{Tot_{jp0}}(\Delta Female_{j-1pt}) \tag{2}$$

We then instrument $GenderLeg_{idp}$ in with $GenderLegInstrument_{jt}$ in 2.

We perform some balance tests in the Appendix. In Table A1 and Table A2, we regress the shifts and the shares of the instrument on the contemporaneous value of the gender of the EU representative. We find a statistically significant relationship, but this relationship vanishes when using policy area fixed effect. This is in line with our research design. We can then claim that our instrument is exogenous to the outcome within policy areas.

The second analysis relies also on the data on the meetings between lobbyists and EC legislators. Here, we test whether the gender of the legislator in a meeting affects the gender of the lobbyist in that same meeting. More specifically, the dynamic that we test in this analysis is that the interest group knows which policymaker is likely to be assigned to a dossier of interest at time $t-2$, as a result of the informal discussions taking place within the Commission, of which the interest group is arguably aware. [6] Then, the DG in charge officially allocates the dossier to a legislator at time $t-1$ and finally, that legislator holds a meeting with a lobbyist at time t. The interest group will adapt their team of lobbyists any time between time $t-2$ and time $t-1$ to match the legislators, more specifically their

[6] This discussions are unrelated to interest groups dynamics, such as which interest group work on the issue/dossier and who their lobbyists are.

gender. If the interest group knows that, within a DG, an important dossier is likely to he assigned to a female lobbyist, it will hire more female lobbyists. This will be reflected in who attends the meeting. Yet, we acknowledge that some interest groups are more likely to get a meeting in the first place and hence we use an Heckman selection model to account for this.

We first test whether the gender of the lobbyist is related to access to those meetings. More formally:

$$Meeting_{idp} = \alpha GenderIG_{idp} + \beta X' + \delta_d + \phi_p + \varepsilon_{idp} \tag{3}$$

where $Meeting$ is whether interest group i attends a meeting with legislators from DG d in the policy area p. We use fixed effects for: the DG (δ_d) and the policy area (ϕ_p). $GenderLeg_{idp}$ is the gender composition of the relevant DG d. Finally, we include a vector of control variables related to the interest group (X'): the budget of the organization, the number of lobbyists, its country of origin and the type.

Then, we use an Heckman two-stage model, with equation as selection equation:

$$GenderIG_{idp} = \alpha GenderLegMeet_{idp} + \beta Y' + \varepsilon_{idp} \tag{4}$$

The selection equation (equation) estimates whether interest group i is likely to attend a meeting with EC legislators, depending on gender representation of the DG ($GenderLeg_{idp}$) and on its type (X'). Equation 4 uses this estimation to build a variable that captures selection in the gender equation, namely whether that interest group chooses female or male lobbyists ($GenderIG_{idp}$) based on the gender of the EC legislators $GenderLegMeet_{idp}$ in charge of a dossier that participates in a meeting with interest group i, controlling for the gender of the boss of that legislator (Y').

Controlling for the boss of the legislator, usually the head of the DG or the Commissioner, is important. Private management scholars find that mentoring is crucial in the workplace,

especially for female employees, in overcoming barriers and serving as role model (Hunt and Michael 1983; Noe 1988). More generally, organisations with female heads are likelier to have more diverse staff (Vinnicombe and Singh 2002; Campbell and Mínguez-Vera 2008; Cook and Glass 2015). It is likely that the gender of the head of the DG and the overall gender balance of the DG will affect who is assigned a specific dossier, especially within the same policy area. We hence expect a strong relationship between the gender balance of the DG and the gender of the legislator in charge of a specific dossier (controlling for policy area fixed effects). Moreover, it is unlikely that the gender of the interest group representative will have an impact on who is responsible for an entire DG. This decision depends on political and nationality factors and the interest group population does not play a role in this decision, as seen above.

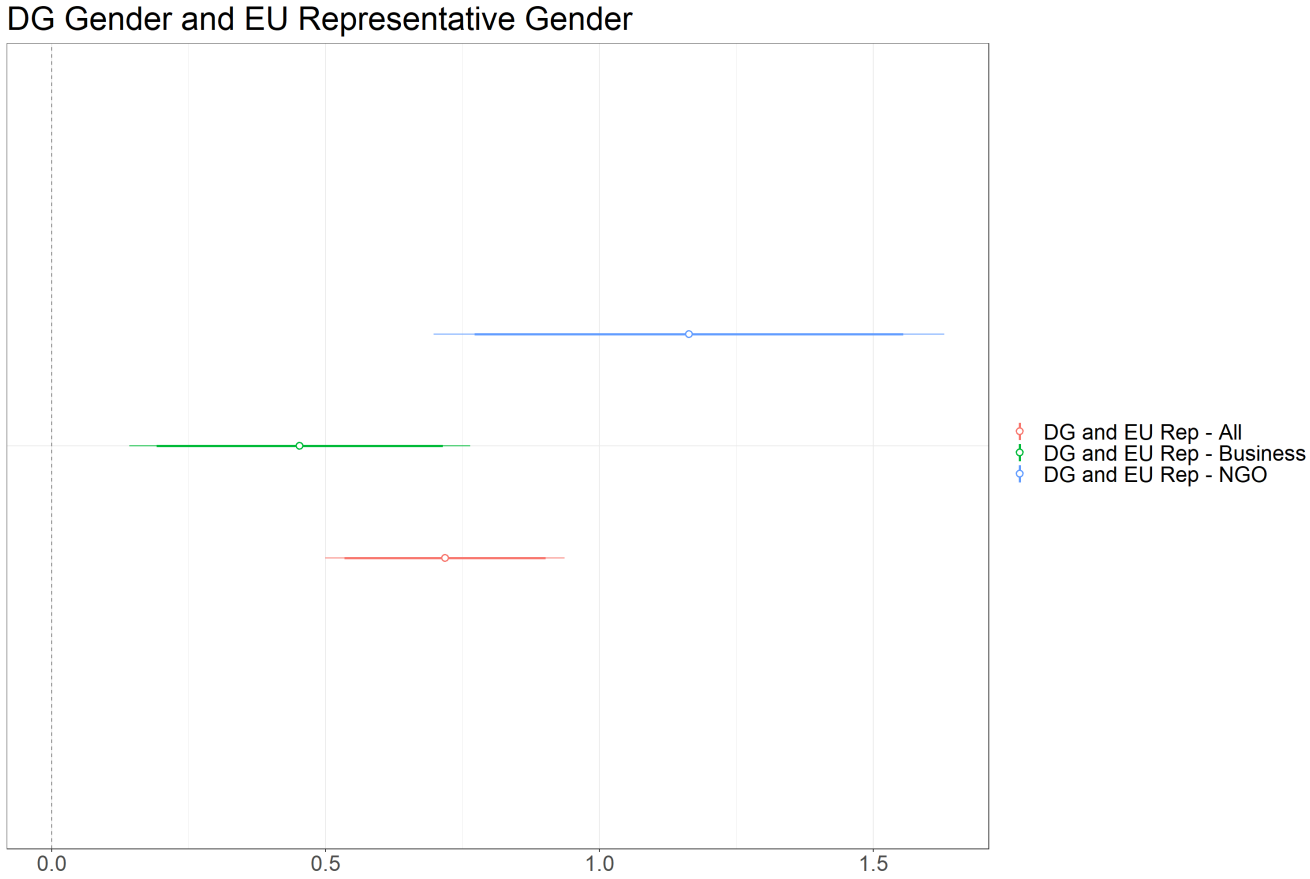
Results

Figure 8 shows the results of logistic regression models. We find that a relationship is present between the gender of the lobbyist and the gender balance of the relevant DG, indicating some preliminary support for Hypothesis 1. Moreover, the figure shows that the effect is stronger for NGOs: this evidence supports our Hypothesis 2. Civil society groups and NGOs enjoy less access to the Commission due to the nature of the EC's informational demands which give preference to business. While there are is a limited core of civil society groups identified as core insiders, on the aggregate civil society and NGOs can be labelled as "outsiders".

The results in Figure 8 are not conclusive, due to endogeneity and omitted variable bias. This is why we use an instrumental variable approach. Results for the analysis using the Bartik shift-share instrument are shown in Table 1. We find a statistically significant and positive relationship between the DG's gender (instrumented with the Bartik shift-share) and the lobbyists' gender. We can reject the null hypothesis that the instrument is a weak instrument and we find a very strong first stage.

We find empirical support for Hypothesis 1. This finding suggests that the relationship

Figure 8: DG Gender and EU Representative Gender for the All Sample, Business and NGOs



between the gender of legislators and that of lobbyists goes beyond the demand and supply factors seen above. For instance, this finding suggests that female lobbyists are more likely to get access to female legislators not (only) because they deal with the same issues, such as education and healthcare. [7]

We then test the mechanism hypothesised above (see Hypothesis 2). We find that the effect of the legislator's gender is stronger where interest group is an outsider and hence needs to compensate their access deficit. Table 2 and Table 3 show the results for the subsamples of business interests and the NGOs and civil society organizations, respectively. We find that the effect is stronger for NGOs. This provides further evidence that the relationship observed

[7] In the Appendix, we provide the results also for the other interest groups' representatives in Table A3 and Table A4.

Table 1: IV Reg: Gender DG (Instrumented with Shift-Share) and Gender EU Representative

	Gender IG - EU Rep			
	(1)	(2)	(3)	(4)
Gender DG	0.163***	0.169***	0.169***	0.169***
	(0.039)	(0.042)	(0.042)	(0.042)
IG Covs		X	X	X
IG Country		X	X	X
IG Type		X	X	X
DG			X	
Policy Area			X	X
N	74,486	66,778	66,778	66,778

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

is driven by interest representation and informational lobbying dynamics, as theorised above. We can exclude other mechanisms that might link the genders of the legislators and the lobbyists. As mentioned above, we would not find these heterogeneous effects, if the the mechanism at work was not based on informational supply. If gender mainstreaming was the ultimate goal of policy-makers, we would see business and NGOs hiring female lobbyists equally. The same holds true if the main mechanism at play was that female legislators and lobbyists are part of the same policy network or if female legislators work more with female lobbyists as they regard them as more credible.

In conclusion, interest groups tailor their strategies to institutions by adapting which lobbyists they use for meetings in order to improve their access.

Finally, we use an Heckman two-step model. First, we show the results for the selection equation model (Equation above). Table 4 shows that gender is positively related to the likelihood of getting access to the decision-making process of the EC. This effect is stronger for NGOs than for business, as shown in Table 5 and Table 6, respectively. Altogether, these three results bring further evidence to the hypotheses put forward above.

Table 2: IV Reg: Gender DG (Instrumented with Shift-Share) and Gender EU Representative - Business

	Gender IG - EU Rep			
	(1)	(2)	(3)	(4)
Gender DG	0.162***	0.162***	0.162***	0.162***
	(0.055)	(0.055)	(0.055)	(0.055)
IG Covs		X	X	X
IG Country		X	X	X
DG			X	
Policy Area			X	X
N	37,145	37,145	37,145	37,145

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 3: IV Reg: Gender DG (Instrumented with Shift-Share) and Gender EU Representative - NGO

	Gender IG - EU Rep			
	(1)	(2)	(3)	(4)
Gender DG	0.279***	0.279***	0.279***	0.279***
	(0.091)	(0.091)	(0.091)	(0.091)
IG Covs		X	X	X
IG Country		X	X	X
DG			X	
Policy Area			X	X
N	16,011	16,011	16,011	16,011

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 4: EC Meetings: Meeting and Gender EU Rep

	Meeting				
	(1)	(2)	(3)	(4)	(5)
Gender EU Rep	0.302***	0.343***	0.270***	0.260***	0.258***
	(0.030)	(0.030)	(0.035)	(0.035)	(0.035)
IG Covs		*X*	*X*	*X*	*X*
IG Country			*X*	*X*	*X*
IG Type			*X*	*X*	*X*
DG				*X*	*X*
Policy Area					*X*
N	78,260	70,375	70,375	70,375	70,375

Notes:

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 5: EC Meetings: Meeting and Gender EU Rep - NGO

	Meeting				
	(1)	(2)	(3)	(4)	(5)
Gender EU Rep	1.270***	1.291***	0.803***	0.795***	0.814***
	(0.085)	(0.085)	(0.093)	(0.095)	(0.095)
IG Covs		*X*	*X*	*X*	*X*
IG Country			*X*	*X*	*X*
DG				*X*	*X*
Policy Area					*X*
N	16,493	16,493	16,493	16,493	16,493

Notes:

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 6: EC Meetings: Meeting and Gender EU Rep - Business

	Meeting				
	(1)	(2)	(3)	(4)	(5)
Gender EU Rep	0.246***	0.246***	0.165***	0.157***	0.156***
	(0.035)	(0.035)	(0.041)	(0.041)	(0.041)
IG Covs		*X*	*X*	*X*	*X*
IG Country			*X*	*X*	*X*
DG				*X*	*X*
Policy Area					*X*
N	40,098	40,098	40,098	40,098	40,098

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

We report the results of the Heckman selection model in Table 7. We find a statistically significant and positive relationship between the gender the EC legislator in charge of a dossier and the gender of the interest group's representative, instrumented with the likelihood of that interest group being given access to a meeting with that legislator, which is correlated with the gender balance of that DG, the policy area and so on, and controlling for the gender of the boss of the legislator.

Discussion

These findings elicit important implications for recent work in political economy and political science examining interest groups' strategies, which focuses specifically on lobbyists' individual characteristics used to improve access and highlights patterns in educational and professional background (Blanes i Vidal, Draca and Fons-Rosen 2012; Coen and Vannoni 2016, 2020*a*,*b*; LaPira, Marchetti and Thomas 2020; Coen, Katsaitis and Vannoni 2021). Our analysis highlights that while well-explored dimensions such as the educational and professional background of lobbyists matter, the less explored dimension of gender matters

Table 7: Heckman Selection: Gender EC Legislator and Gender EU Representative

	Gender EU Rep - Gender EC Legislator EU Rep	
	(1)	(2)
Gender EC Legislator	0.056***	0.057***
	(0.014)	(0.014)
Boss Gender	*X*	*X*
IG Type		*X*
Policy Area		*X*
N	83,964	83,964
Notes:	***Significant at the 1 percent level.	
	**Significant at the 5 percent level.	
	*Significant at the 10 percent level.	

considerably for interest groups strategic behaviour.

In addition, our results and analysis contribute to normative discussions on interest groups, representation, and political equality. A central thesis that cuts across this paper is that we should be interested in lobbyists' gender balance and its interaction with access to policymakers. In modern liberal democracies, interest groups have a multi-layered role. To begin with, as a critical component of the policy-making process, they provide information-expertise to policymakers that supports high-quality outputs (Schmidt 2013), this allows key institutions to maintain their relevance as authorities regulating behaviour efficiently and (re-)distributing resources equitably. Moreover, they act as a link that connects constituencies with legislators (Hall and Lamont 2013), improving the range of inputs reaching institutional actors, and vice-versa.

In so doing, they ensure representation and participation that covers requirements of political equality (Saward 2003; Dahl 2006). Furthermore, as participants of political processes they also partake in the symbolic act of political communication (Edelman 1985), they support specific socio-normative trends that spill-over into formal policymaking procedures and broader political behaviour (formal and informal).

Whereas interest groups are a vital cog of policy-making, the individuals representing these organizations have a crucial role. Acting as their organization's interface, they establish relationships of trust with policymakers; ranging from street-level bureaucrats to top-level political actors. On the one hand, factors such as professional experience provide background knowledge, epistemic expertise that allows them to effectively contribute to policy discussions by gaining and maintaining access as experts (Dunlop and Radaelli 2013). On the other hand, these experiences offer access to policy networks as trusted actors (Coen and Katsaitis 2019).

The contribution of female lobbyists to the policy-making is important for two main reasons. First, as public policy should be based on representative inputs (Pitkin 1967; Dryzek 1996; Mansbridge 1999), the individuals involved in lobbying should represent the population's overall gender distribution. This representativeness dimension has both direct (or practical, epistemic) as well as indirect (socio-normative, symbolic) aspects. [8]

From a direct or knowledge perspective, some issues are closer to female constituencies (Roberts 2015): women's re-productive rights such as abortion, employment issues such as maternity leave, or re-distributive issues such as the taxation of specific health products. In similar fashion, female lobbyists can provide better input on issues taking into consideration how policy impacts women, even if the policy is not directly linked to issues impacting women. This may be either due to potential direct policy spill-over i.e. policy on financial regulation may have adverse impact on women which goes unseen by policymakers. It may also be because policy does not consider intersectionality, for example policy on improving energy efficiency in poor households does not consider gender dimensions.

From an indirect (or symbolic) perspective (Gherardi 1995). A political union founded on the values of representation precludes an equal representation of its citizens along different dimensions including, for example, race and/ or gender, and/or sexual orientation, and/or political orientation. The absence of actors involved in politics and policy-making that embody these dimensions, de-legitimizes the procedures' inclusiveness and ultimately the

[8] We acknowledge the difference between procedural and substantive representation (Celis, Childs, Kantola and Krook 2008). This paper focuses on the former.

institutions' relevance.

Conclusion

This paper is the first to take a gender perspective and assess on an individual level lobbyists access to policymakers in the European Union. Drawing from resource-dependence theory, we argued that interest groups are likely to use the lobbyists' gender to improve their likelihood of gaining access and meeting with a policymaker.

By cross-referencing data from the JTR with a unique dataset on meetings held by specific legislators with interest group representatives in the European Commission we create a unique dataset to test our argument. In so doing, we provide a nuanced perspective that assesses the specific lobbyist and policymaker interacting in a specific meeting. Moreover, we determine in detail lobbyists individual characteristic and their organizations as well as for the policymakers and their institutions. Using machine-learning techniques, we extract the gender of the lobbyists and legislators.

We tested our hypotheses by relying on a battery of fixed effects. We find that female lobbyists are likelier to gain access to meetings when the legislator is female. The results indicate that interest groups are adapting their strategies to improve their lobbying success when dealing with different institutions, with gender being a notable characteristic taken into consideration. Interestingly, these strategies is put in place by both business and civil society actors.

Our findings suggest that a glass ceiling is present in the relations between business/civil society and government in the EU, whereby the gender representation dynamics in place in government are reflected among the lobbyists who organized interests hire. A strong gender imbalance is present in the European Commission, especially among mid and high tier groups: different factors contribute to create a glass ceiling whereby female staff struggle to climb up the organizational ladder. Yet, when the glass ceiling cracks and female officials

are put in charge of a dossier, interest groups are strongly incentivised to act accordingly and put a female lobbyist or manager responsible for that dossier. This underscores how reforms in the public sector that accelerate gender mainstreaming can have a notable effect outside of them.

Theoretically, this paper provides a bridge that links discussions on interest groups strategic behaviour and institutional gender mainstreaming specifically in relation to staff. In so doing, we clarify the interaction between gender, access, and interest groups. Moreover, we add to normative discussions on the value of procedural equality from a gender perspective. Further comparative work, assessing this interaction in other institutional contexts offers a fruitful and cross-cutting way forward.

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Apppendix: Making Supply Meet Demand: Gender Representation and Lobbying

January 17, 2022

Contents

1 Balance Tests

Table A1: Balance: Gender EU Representative and Gender DG Shifts

	Gender DG Shifts		
	(1)	(2)	(3)
Gender EU Rep	−0.000	0.000	0.000
	(0.00000)	(0.00000)	(0.00000)
IG Covs		X	X
IG Country		X	X
IG Type		X	X
Policy Area			X
N	74,486	66,778	66,778

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table A2: Balance: Gender EU Representative and Gender DG Shares

	Gender DG Shares		
	(1)	(2)	(3)
Gender EU Rep	0.003***	0.003***	−0.000
	(0.001)	(0.001)	(0.0001)
IG Covs		X	X
IG Country		X	X
IG Type		X	X
Policy Area			X
N	74,486	66,778	66,778

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

2 Robustness Checks

Table A3: IV Reg: Gender DG (Instrumented with Shit-Share) and Gender EP Representative

	Gender IG - EP Rep			
	(1)	(2)	(3)	(4)
Gender DG	0.167***	0.172***	0.172***	0.172***
	(0.059)	(0.065)	(0.065)	(0.065)
IG Covs		*X*	*X*	*X*
IG Country		*X*	*X*	*X*
IG Type		*X*	*X*	*X*
DG			*X*	
Policy Area			*X*	*X*
N	21,081	18,118	18,118	18,118

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table A4: IV Reg: Gender DG (Instrumented with Shit-Share) and Gender Representatives

	Gender IG - Rep			
	(1)	(2)	(3)	(4)
Gender DG	0.147***	0.156***	0.156***	0.156***
	(0.031)	(0.033)	(0.033)	(0.033)
IG Covs		*X*	*X*	*X*
IG Country		*X*	*X*	*X*
IG Type		*X*	*X*	*X*
DG			*X*	
Policy Area			*X*	*X*
N	71,599	63,960	63,960	63,960
R^2	0.001	0.001	0.001	0.001

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.