Which Lobby Won the Vote? Visualizing Influence of Interest Groups in Swiss Parliament

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Abstract. Members of national parliaments (MPs) often have ties to interest groups, or 'lobbies', which might try to influence policies. In order to quantify the influence of lobbies on parliamentary decisions, we design an online platform that allows users to explore votes results, focusing on how interest groups members voted, in order to identify which lobbies voted for or against a given measure and in which proportion. We apply this approach to the specific case of the Swiss Federal Parliament. To achieve this, we build a database that combines two sources of openly available data: (1) a register of politicians' interest ties, maintained by Lobbywatch.ch, an association dedicated to the monitoring of Swiss politicians' interest ties and (2) the individual votes results in the Swiss Federal Parliament, accessible through a web-service provided by the parliamentary service of the Swiss government. Our platform allows users to explore the following perspectives of the data: (1) general information about lobbies (e.g. size, domains), (2) individual votes results, with a drill-down by lobby that shows the distribution of votes in each interest group for each specific vote, and (3) overall (dis)agreement of individual MPs with their party and lobbies across all considered votes. We believe that such an exploration platform can be a powerful tool to help quantify the influence of lobbies in politics. Indeed, a qualitative evaluation of the prototype was conducted with 7 domain experts (5 journalists and 2 politicians). They were all able to complete successfully the submitted tasks. They rated its usability and usefulness as rather high (mean respectively 7.4/10 and 6.8/10). Moreover, most of them reported that such a platform has the potential to increase the accountability of politicians towards the people and consequentially to raise the trust of the population in their elected representatives.

Keywords: Lobby · Votes · Data Visualization · Politics · Open Data · User Experience

1 Introduction

Interest groups, or 'lobbies', are organized movements whose mission is to protect the interests of a group of people or corporations active in a particular field,

generally by influencing public institutions and political representatives. In modern democracies, interest groups play in important role in bringing specific topics onto the public policy agenda and in shaping the opinion of the parliament and general public alike about issues that concerns them. Therefore, it is not surprising to observe a growing number of ties between members of parliaments (MPs) and interest groups [9, 12]. Due to the raising influence of lobbies on the work of MPs and overall policy-making, several countries have legislated that MPs shall openly disclose their ties to lobbies. In addition to that effort, the media also plays a crucial role in bringing to light hidden interests of politicians that might not be documented in official registers [2].

Overall, the practical influence of lobbies can be witnessed in different stages along the policy-making process. While a lobby effect is certainly present already in early stages (like pre-parliamentary bureaucratic work, consultative procedures, parliamentary work in privately held commissions, etc.), it remains largely opaque and difficult to observe due to the confidential nature of the process in those stages. For long, common wisdom has considered that the greatest share of the influence of lobbies was carried out during those early moments and that, as such, it would stay mostly hidden to the public. However, recent work has shown that the trend towards the professionalization of politics has resulted in an increasing influence of lobbies on the parliamentary work itself, i.e. the work actually done in the parliament through votes and amendments of laws [20]. Now this stage is open to the scrutiny of the general public. Moreover, in many modern democracies, the individual votes of MPs can even be available publicly on web platforms or as open data.

How can the influence of interest groups on political decisions be assessed at the parliamentary level? Given the observations above, we formulate the postulate that the voting behavior of MPs in the parliament during the law-making process can be a valid proxy for the actual influence of lobbies on policy-making. To explore this hypothesis further, we introduce the design of an online platform that allows users to explore MP votes results, focusing on how interest groups members voted, in order to identify which lobbies voted for or against a given measure and in which proportion. We apply this approach to the specific case of the Swiss Federal Parliament. It should be noted that the implementation of our approach was made possible only by progresses in E-Government and Digital Government initiatives in Switzerland that have enabled the publication of votes and MPs' interest ties as open data [1].

The paper is organized as follows. We first present a state of the art of applications that aim at visualizing interest ties in politics, as well as previous research studying the impact of interest ties in policy-making at the parliamentary level. Then we introduce the platform that we developed ("Lobby&Votes") and a qualitative evaluation in the form of semi-directed interviews with 7 participants that we conducted to assess the usability and usefulness of this platform. We conclude by discussing the limitations of our approach and open perspectives for future research.

2 Related Work

Several visualizations have been developed in recent years to help in understanding the influence of lobbies on politics. Lobbyradar.org [14] is a website that shows the interest ties of German politicians in the form of a network of connected nodes. Colors are used to distinguish different types of nodes. Groups of interests, parties, companies and organizations are represented in green, while members of parliament are in blue and members of the government are in orange. Nodes representing individuals are linked to their interest ties. A search box allows users to find a particular politician or organization and see their connections. Overall, the visualization forms a dense network of connected nodes with details on-demand and serves as a global map of interest ties in German politics. In the same vein, Kdovpliva.si [21] presents the map of interest ties in Slovenia. The features are mostly the same as Lobbyradar.org, but it also offers additional details and perspectives on the map, in particular a network of contacts between businesses, their lobbyists, politicians and state institutions and a network of transactions between companies in which lobbyists are legal representatives. At the European Union level, [8] has created a social network of lobby organizations members and political representatives of the EU (commissioners, cabinet members and directors-general) that have met regularly in a certain period of time. This visualization allows the identification of ties between policy-makers and lobbyists. It was also published by the European edition of Politico [6]. In the USA, BrightPoint [4] has developed a visualization combining a chord diagram with a network that shows the amount of money received by individual US Congress members from the top 20 interest groups in the USA (Political Action Committees or PACs). In their visualization, colors map to political parties and size of the elements is proportional to the amount involved, which helps in identifying the largest interest ties. In Switzerland, the newspaper NZZ has developed a visualization showing all accredited guests to whom MPs have given access rights to Parliament [15]. In that visualization, individuals are shown as nodes organized in a circular layout in several strata. The links are hidden by default and revealed only when hovering or clicking on a node. Direct and indirect links of MPs and lobbyists with organizations and other MPs or lobbyists are made visible by interacting with the visualization. Martin Grandjean also published a series of static infographics based on networks that explore the interest ties of Swiss MPs through the lens of access rights (accredited guests) [11]. A more recent visualization by NZZ shows the aggregate number of mandates that party members in the federal parliaments have in all business branches. The visualization takes the form of a modified chord diagram and shows in which proportion parties are connected to interest groups and vice versa [3].

Most of the solutions above attempt to provide a view of ties between individual politicians and groups of interest at a broad level using different kinds of proxies: declared interests, mandates in business branches, meetings with lobbyists, access rights, etc. However, none of them connects those ties to the actual policy-making process in order to evaluate their influence on the political deci-

sions of individual MPs. This latter aspect was tackled by research in the field of Political Science that we shortly cover next.

Previous work in the field of Political Sciences has explored the dynamic of lobbies and their impact on votes in parliaments. A comprehensive state of the art of previous studies in the field was presented by [9]. In the following, we pick up only the specific research done in Switzerland that is relevant to our work. Pioneering research studying the voting behavior of MPs in relation to their interest ties have shown that MPs having ties with economic lobbies vote in a more cohesive fashion than MPs linked to public lobbies [13, 19]. More recently, it was found that MPs affiliated with a large number of interest groups had a higher probability of voting against their constituents (i.e. the people who elected them in office in the first place): "the larger the number of sectional groups that support an MP, the higher the probability that the MP defects from her constituents" [10]. An econometric analysis based on the votes of politicians in the Swiss Parliament was conducted by [16]. They were interested in comparing loyalty to the political party versus loyalty to the interest groups with which MPs are affiliated. Their study identifies factors that influence the proximity of MPs to their political party typical voting behavior. Socio-demographic factors (gender, age, canton of origin) seem to play a role, but the authors also find evidence for a lobby effect: MPs with ties in banking, energy, insurance and transport tend to more often cast a vote that differs from the majority of their party colleagues. Their research therefore suggests that studying voting behavior of MPs with respect to their lobby affiliations can shed light on the role of lobbies in shaping public policies.

As we have seen, political science research has investigated the influence of lobby membership on votes at an aggregate level, i.e. for groups of politicians and considering all votes in a given time period. However, previous work in the visualization of interest ties did not explore systematically how interest ties impact the policy-making process through their influence on the votes of individual MPs. Our work presented in the next section attempts to fill this gap by relating MPs interest ties with their voting behavior through an online platform supported by data visualization.

3   'Lobbies & Votes' Platform

The platform developed in the context of this project takes the form of an online website that we called "Lobby & Votes". It allows the exploration of lobbies and votes in the Swiss Parliament along different perspectives and is supported by data visualizations and other navigation features. The platform introduces a novel perspective on the interweaving of interest ties, political parties and voting behavior of MPs. While our implementation does not have the ambition to go beyond the stage of a proof-of-concept realization, we believe its design can be influential and easily replicated in other countries.

Table 1. Some interest groups of Swiss Parliament members, French and English (excerpt).

Lobby name (French)	Lobby name (English)
Pharmaceutique	Pharmaceutical
Caisses maladie	Health insurance
Médecine	Medicine
Hôpitaux	Hospitals
Patients	Patients
Santé publique	Public health
Techniques médicales	Medical techniques
Musique	Music
Cantons/Régions	Cantons / Regions
Villes	Cities
Handicap	Handicap
Banques	Banks
Commerce de matières premières	Trade in raw materials
Immobilier et propriétaires fonciers	Real estate and landowners
Economie en général	Economy in general
Immigration	Immigration

3.1 Data & Infrastructure

The database we built for the website combines two sources of openly available data: (1) a register of Swiss federal MPs' interest ties, maintained by Lobbywatch.ch, an association dedicated to the monitoring of Swiss politicians' interest ties [2], and (2) the individual votes results in the Swiss Federal Parliament, made available through a web-service provided by the parliamentary service of the Swiss government itself [1]

The interest ties database was provided by the Lobbywatch association in an SQL format. Since then, this data was also made available through a JSON interface directly from their website. The Lobbywatch dataset is maintained by volunteer journalists and used as a high-quality source of information by the Swiss media. It has to be noted that this dataset differs from the one used in the research by [16], released later by the same authors [17]. Reasons for this choice are twofold. First, the Lobbywatch dataset is published as open data and readily available through a JSON interface. Second, the dataset by [17] only covers the politicians active in the 49th legislature and not the current one. The Lobbywatch dataset contains all 200 MPs from the vote dataset and a total of 137 different interest groups (e.g. Pharma, Patients, Pro-Nuclear, Pro-Environment, see also Table 1) that are distributed in 14 general domains or "branches" (e.g. Health, Energy). A total of 5040 interest ties connecting politicians with interest groups are documented in the database.

We downloaded the vote data directly from the web-service of the Swiss Parliament in a JSON format. The vote data covers the first 14 months of the current (50th) legislature, from November 31, 2015 to March 7, 2017 in the National Council. The National Council is the lower house of the bicameral
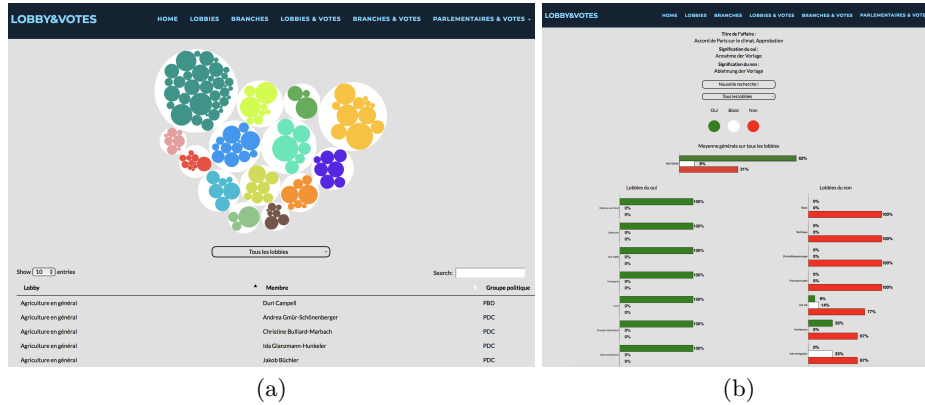
Fig. 1. (a) 'Lobbies' page presenting a visualization of all lobbies depicted as circles. Their color and position relate to the lobby branch (e.g. lobbies in Finance or Energy, etc.) and their size corresponds to the number of members in the lobby. A detailed list of lobby members is available as a sortable and searchable table underneath the visualization. (b) Detailed vote results drilled-down by lobbies. The affair title 'Accord de Paris sur le climat' is displayed along with meaning of 'Yes' and 'No' votes. The first chart on top shows the overall vote results. Green means 'Yes', red means 'No', white is 'Other vote'. Below the first chart, the left column contains detailed results for the 'Lobbies who voted Yes' ('Lobbies du oui') while the right column shows the 'Lobbies who voted No' ('Lobbies du non') sorted by decreasing score.

Federal Assembly of Switzerland. It comprises 200 seats apportioned to the Swiss Cantons populations. The votes of the higher house (Council of States) are not published as open data and could therefore not be integrated in our database. Our vote dataset comprises all 1536 votes of the National Council over the period considered.

The two datasets presented above were converted and merged into an SQL database. The server-side application was created in node.js and visualization templates have been implemented using the declarative languages Vega and Vega-Lite [18].

3.2 Platform Design

The prototype platform that we propose allows users to explore the following perspectives of the data: (1) general information about lobbies (e.g. size, domains), (2) individual votes results, with a drill-down by lobby that shows the distribution of votes in each interest group for each specific vote, and (3) overall (dis)agreement of individual MPs with their party and lobbies across all considered votes. In the remainder of this section, we discuss these three perspectives.

General information about lobbies The 'Lobbies' page depicted in Figure 1a shows a visualization of all lobbies in a circle-packing layout. Each colored circle

is a specific interest group. Interest groups of a specific branch are grouped in a white circle and share the same color. The size of a circle maps to the number of members in the corresponding lobby. Users can interact with the visualization to see details of specific interest groups (name, members, size) by hovering over circles or clicking on them. Underneath the visualization, a table shows the detailed membership list of all lobbies. Users can sort it by columns or search for a specific name. The menu bar on top gives quick links to the other pages of the website. An information text explaining the meaning of the visualization is also given, though it is not visible on that screenshot. The page 'Branches' contains the same visualization, but aggregated by branch / domain.

This overview visualization allows user to understand some general trends, such as the respective size of lobbies and branches, the amount of interest groups in a given branch and the size of each interest group. Details are available on-demand.

Individual vote results The pages 'Lobbies & Votes' and 'Branches & Votes' detail the result of each parliamentary vote and puts them into perspective with the interest ties of voters. In the page 'Lobbies and Votes', the full list of votes is initially presented in a searchable, sortable and filterable table. Upon selection of a specific vote, the individual vote results are shown. Figure 1b depicts the page after a vote has been selected. Under the vote title and general information, the overall vote result is displayed as a bar chart with 'Yes' votes in green, 'No' votes in red and 'Other' votes in white (both blank votes and abstentions are counted as 'Other' votes) with the title 'Moyenne générale sur tous les lobbies' – 'Average over all lobbies'. Underneath that overall result, a drill-down by lobby is presented. For each lobby, we aggregated the votes of the lobby members, computed the proportion of Yes-No-Other votes in that lobby, and created a bar chart using the same visual encoding as the overall result. Therefore, the detailed vote result for each lobby can be viewed in a glimpse. We have chosen to visually distribute the drilled-down lobby results in two columns underneath the overall result. Lobbies that voted mainly 'Yes' are shown in the left column, and lobbies that voted mainly 'No' are shown in the right column. They are sorted in decreasing order of the proportion of 'Yes' or 'No' votes, depending on the column. Finally, the display of results can be limited to only one lobby by selecting it in the interface. Also, the individual results of the vote showing how each MP voted is displayed in a table underneath the dashboard. This allows users to quickly spot the decision of specific lobby members for a given vote.

Overall (dis)agreement of individual MPs with their party and lobbies
The last perspective explored in our platform is the overall agreement level of individual MPs with their party and lobbies across all considered votes. Political parties are known to take position on certain topics and give voting instructions to their representatives in the parliament. These instructions will be followed with more or less discipline by individual MPs across the political spectrum. Interest groups are suspected to exhibit a similar behavior, though it remains
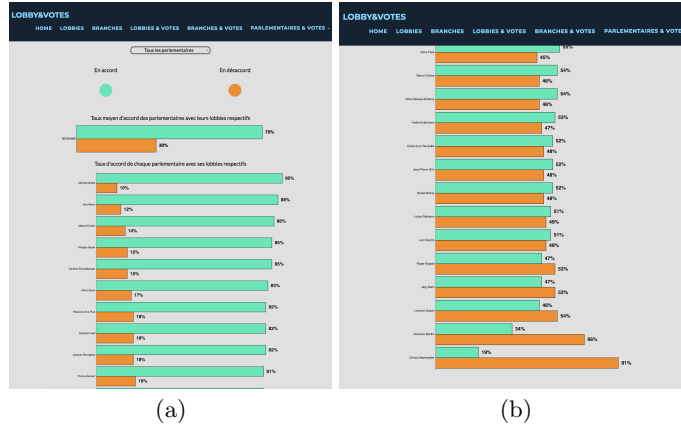
Fig. 2. (Dis)agreement of MPs with their respective lobbies. Turquoise bars represent the proportion of votes in agreement with the majority of the lobbies. Orange bars represent proportion of votes in disagreement. (a) The first chart on top shows the overall rate of (dis)agreement over all MPs and all lobbies. Below it, each chart represents the detailed (dis)agreement rate of each individual MP with their lobbies, sorted in decreasing order of agreement. (b) Detailed (dis)agreement continued: a view at the MPs that disagree the most with their lobbies. Christa Markwalder, who disagrees the most with her lobbies, was the president of the Parliament during the period and therefore abstained from most votes, which explains her score.
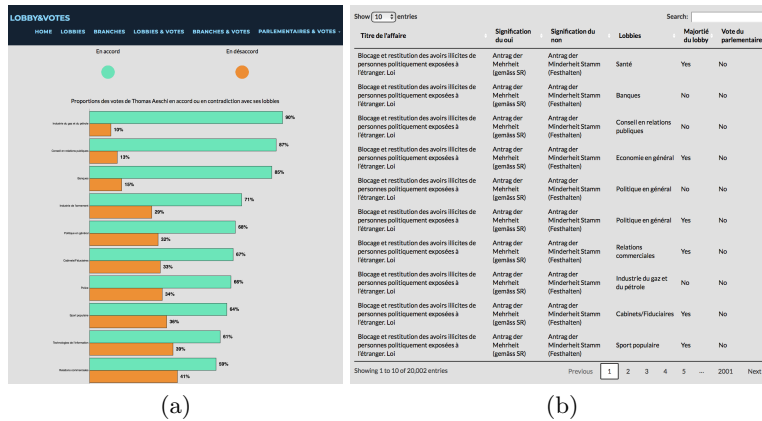

Fig. 3. Detailed agreement of a selected MP (Thomas Aeschi) with the lobbies he belongs to, presented (a) as summary charts per lobby and (b) as a detailed list of all votes per relevant lobbies. For example, the first chart on top in (a) shows that this MP followed the majority of the votes of the interest group "Oil and gas industry" in 90% of his votes.

largely hidden. In order to explore it, we computed the agreement of MPs with their interest groups and parties, taking inspiration from the work of [16].

We first computed the agreement between each MP and their respective lobbies by counting the proportion of votes in which that MP casted the same vote as the majority of members of the same lobby. This gives the proportion of votes in which the MP "agreed" or "disagreed" with that lobby. Then, to compute the overall agreement between each individual MP and all interest groups they belong to, we summed individual measures computed in the previous step across all relevant interest groups. A further aggregation step allows us to compute the overall agreement of all MPs with all the lobbies they belong to. Additionally, we computed the same measures for the political parties instead of the lobbies.

The results of those metrics are displayed on two pages of the platform. The first one shows the (dis)agreement of MPs with their party and the second one the (dis)agreement with their lobbies. This latter axis is certainly the most interesting and the most decisive in the analysis of the influence of lobbies in Swiss Federal politics. The visualization dashboards presented in those pages helps in assessing whether a MP is more influenced by her party or lobbies, and which lobbies in particular.

Figure 2 shows the visualization dashboards that depict the (dis)agreement of MPs with their respective lobbies. Turquoise bars represent the proportion of votes in agreement with the majority of the lobbies. Orange bars represent proportion of votes in disagreement. As in other pages, a detailed table is provided below those aggregated statistics, which allow users to search for specific votes. A drill-down by MP to explore the loyalty of their votes with regards to their respective lobbies is shown in Figure 3. As explained above, although not depicted here, similar visualizations are provided for the political parties as well, therefore allowing users to inspect in detail the influence of both political party and interest group affiliations on the votes of individual MPs.

4   Evaluation and Potential Impact

We evaluated the platform qualitatively with 7 persons (2 female, 5 male). As we envisioned that this platform would particularly appeal to journalists but also to politicians themselves and the general public, we contacted 2 editors-in-chief of Swiss newspapers, 3 journalists specializing in Swiss politics, 1 member of the Federal Parliament and 1 person from the general public. We met them individually. The evaluation was conducted in the form of a small controlled use of the platform followed by semi-directed interviews. We first introduced the context of the project and we let them familiarize with the platform for 10 minutes. Then we asked them to perform three lookup tasks: (1) find a lobby in which there is only one member and name that member; (2) in the vote on the repeal of the anti-racism law, find the proportion of yes and no in the Anti-EU lobby; (3) find a vote for which Bastien Girod disagrees with the majority of his party. Next, we asked them to rate on a 10-point Likert scale their perception of

the usability and usefulness the platform. Finally, we conducted a semi-directed interview about the potential impact of the platform by prompting them with the following questions: (1) Does the publication of this information make the Parliament more transparent? Why?; (2) Does such a platform increase the accountability of the elected representatives towards the people. Why?; (3) Does such a platform improve citizens' trust in their elected representatives? Why? Following a semi-directed approach, we encouraged people to elaborate their points of view and asked follow-up questions. Interviews were recorded.

All the participants succeeded in the 3 lookup tasks. They rated the usability of the platform as good (mean=7.4/10) and the perceived usefulness as rather good (mean=6.8/10). One editor-in-chief rated 4/10 the usefulness of the platform, arguing that the information it contains is too complex for the general public to understand and explore effectively and is only useful to specialists. Without his mark, the mean interest would have been 7.3/10.

The analysis of the data collected during the semi-directed interviews sheds light on the potential impact of the platform. According to all participants, this platform can make the parliament more transparent, because "it shows whether MPs defend the interest of their party or lobbies and everybody can see it". However, the politician we interviewed noted that lobby affiliation was not sufficiently detailed on the platform (i.e. he did not understand why he was affiliated to one specific lobby) and that this information should be more complete for a better transparency. A journalist noted that official registers are incomplete anyway and that this platform bridges the gap. Four participants think that the platform can increase the accountability of MPs because "it facilitates the explanation of voting behavior of representatives" and "because MPs will feel more surveilled", but only "if there is a good media coverage of it". Three participants think that it will not increase their accountability because "the information is already public" though not aggregated, or because the majority of "citizens are interested in personal values defended by politicians" rather than their behavior when elected, and finally because "some information is missing" like "the coherence of votes on a specific topic", which would facilitate the analysis of the results. Five people think that this platform will impact citizens' trust in their elected representatives, but not necessarily or immediately improve it: "they will understand who votes what and who is influenced by whom"; "anybody can understand who they really defend". Two political journalists think that such a platform will rather not impact the trust of citizen as "people trust speeches more than acts" and "the interest ties are already known".

Participants also provided useful comments and recommendations for the evolution of the platform. Overall, the pages displaying the proportion of votes in (dis)agreement with the majority of parties or lobbies were the most praised by our participants. They advised us to also take into account the canton represented by each MP as this can also have a strong influence on votes (i.e. MPs defending their regions and voters' interests). A link to the institutional Parliament's website which shows the vote result as a dashboard would also ease exploring the details of a particular vote. They also commented on the inter-

action and wished that charts were interactive, pictures of MPs were provided, or that the readability were better in some parts of the platform (text size too small and wording sometimes unclear).

5 Limitations and Perspectives

Our approach has limitations in several aspects. First, the influence of lobbies during pre-parliamentary work, consultative procedures and privately-held parliamentary commission remains opaque to an analysis of parliamentary votes such as ours. One might argue that the vote is a too late stage in the parliamentary process and that the negotiation has been done before parliamentary work, therefore effectively hiding the influence of lobbies. However, previous research has shown that parliamentary work has actually strengthened in Switzerland in recent years. In particular, the number of amendments to government proposals issued by the Swiss parliament has been on the rise [9]. This suggests that lobbies might still be very active during that phase of the law-making process and that the vote might be a valid proxy for the influence of lobbies on that process.

Moreover, in our approach, all lobbies are represented in votes results. Therefore, even if an interest group does not have any preference in the matter of a given vote, it will nonetheless appear in the results page, which creates unnecessary noise in the presentation of the results. On a more general note, with the high number of votes and the lack of a proper classification of vote issues and relevance to lobbies, it can be difficult to identify the role of a specific lobby in influencing a vote. Furthermore, the visualization of lobbies votes does not take into account the size of the lobbies and only represents the relative proportion of voters. A lobby with 3 members will appear as equally important as a larger 80-persons lobby. Finally, another limitation of our platform is that the votes of the second House of the Swiss Parliament (the Council of States) is not available as open data. The voting behavior of important MP in that House can therefore not be explored.

The platform could be improved in several ways, some of which were suggested by our study participants and stated in the previous section. Also, an analysis of the composition of lobbies (e.g. measuring the diversity of cantons and political parties represented in the lobby) and its impact on cohesiveness of lobby votes would help shed light on interest groups practices.

Perspectives for further research are manifolds. For example, it could be relevant to identify trends that go beyond a vote per vote analysis, e.g. which lobbies have the most influence in general, even more influence than political parties, on which topics. Developing metrics to measure it, as done by [16], could be a step in that direction. Although, doing this requires a more detailed vote dataset, informed of the topics of votes in such a way that it can be automatically connected to the interest of lobbies. One could try to identify automatically this connection and track evidence of vote instructions by specific lobbies, e.g. exhibited by a cohesive vote behavior of the MPs affiliated with them. Another approach would be to manually label the votes topics and connect them to

lobbies (i.e. identify which vote decision is in the interest of which lobby). This could be done using crowd-sourced approaches based on services designed with a gamification approach [7].

6   Conclusion

Interest groups, or 'lobbies' are thought to play a key role in shaping public policies in modern democracies. However, identifying their actual influence in legislative work remains difficult. We proposed an approach that combines votes of the members of parliament and their affiliation with interest groups as a way to systematically explore the influence of lobbies in the law-making process and the loyalty of lobby members. We introduced a prototype platform that enables this exploration and applied it to the use case of 14 months of legislative work in the Swiss Federal Parliament. The initial reception of the platform prototype among a group of 7 people including a politician, journalists and members of the general public was good. We believe our platform introduces a novel perspective on the interweaving of interest ties, political parties and voting behavior of MPs. Furthermore, we think that our general approach and the design of our platform can inspire similar realizations in other countries, which could bring more transparency and accountability in politics.

Acknowledgements

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