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Communicational and Lobbying Power in German Farm Animal Welfare Politics

Michael Grunenberg
Christian H.C.A. Henning

Insitute for Agriculture Economics
Kiel University

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About the authors:
Michael Grunenberg is research assistant and doctoral candidate at the departement for agricultural policy at Insitute for Agricultural Economics of Kiel.
Christian H.C.A. Henning is professor and chair of the departement for agricultural policy at Insitute for Agricultural Economics of Kiel.
Corresponding author: mgrunenberg@ae.uni-kiel.de

Abstract

Farm animal welfare is the main driver of nowadays criticism on German livestock sector. At the same time, non market actors more and more are key actors within animal welfare politics. Hence, we investigate political power of stakeholder organizations in German livestock policy.

Our network based framework consists of two components: First, actors influence policy decisions through informational lobbying. Informational lobbying refers to providing expert knowledge in order to influence decision makers' policy beliefs. Second, the exchange of influence resources and power allows interest groups to influence the policy positions of political agents. We combine both measurements with the Banzhaf power index in order to quantify the power of both, political agents as well as interest groups. How this power affects animal welfare policy is illustrated in the field of piglet castration.

Results imply that the agricultural sector as well as animal protection groups have the highest influence on beliefs and that state actors distribute most of the power to the agribusiness sector. This structures leads to a positive evaluation of surgical castration under anaesthesia. On the other hand, immunocastration is evaluated as rather useless. This implies that participatory processes decrease the procedures acceptance.

Keywords: communicational lobbying, political support, stakeholder influence, farm animal welfare

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1. Introduction

The German livestock production is perceived negatively by the public (Grossarth, 2014; Kayser et al., 2011; Rovers et al., 2018; Salamon et al., 2014; Zander et al., 2013). This applies especially for the pig production (Rovers et al., 2017, 2019). The acceptance problem is due to a lack of farm animal welfare (WBA, 2015) which is an issue of increasing importance in developed countries (Cornish et al., 2016). So it's not a surprise that German citizens state higher demand for farm animal products (BMEL, 2017a, 2018). To satisfy this demand, appropriate political processes have to be implemented.

Unfortunately, there seems to be a lack of political science knowledge about the processes in the field of German livestock and farm animal welfare (FAW) politics (see WBA,

2015). Few empirical studies focus on the issue. At the state level, the party difference hypothesis seems to be confirmed. Especially governments with green party included focus on the topic animal protection (Vogeler, 2017b). The party serves as driver for animal protection improvements. This is in the line with the findings of Ewert et al. (2018), who show that coalition agreements with green participation are more assigned towards multifunctionality positions in agricultural politics. Parties matter at the national level, too. Above all, the green party stresses farm animal welfare policies (Vogeler, 2017a). Moreover, the level of social concerns regarding animal welfare determines parties agendas: In Germany (and United Kingdom) " the high level of public concern for farm animal welfare is taken up by all major political parties" (Vogeler, 2019a, p. 329). But voting for parties is not the only way to participate on political processes and influence the decisions. Moreover, members of the society influence policies through organized interest groups (Becker, 1983). These interest groups consist of people of same profession, age or concerns (Grossman and Helpman, 1996). In general, they have a higher knowledge about certain single issues than outstanding people. Since they provide this knowledge and use it as influence resource (Henning et al., 2019), governments benefit from it. Accordingly, in general stakeholder organizations more and more serve in political advisory committees in Germany (Hustedt et al., 2010). Hence, the national strategy for farm animal husbandry (BMEL, 2017b) also includes stakeholder participation as a way towards a widely accepted livestock production. Thereby the government follows recommendations of WBA (2015).

Indeed, power of non-state actors increases. Market actors seem to take over FAW policy, for example through implementing (voluntary) labels. Maciel and Bock (2013) states that beside offering opportunities for participation of non-state actors this kind of governance also empowers food retailers to act as food regulators. In Germany state actors retire from steering (Vogeler, 2019b). Civil society organizations (CSO) call for better standards and use campaigns to draw attention to the topic and thus to increase the pressure. For example, a legal opinion on behalf of Greenpeace stated that the pig husbandry standards in Germany are not only against the animal protection law, but also violate the German constitution (Greenpeace, 2017). This NGO also conducts campaigns and protest actions (WELT.de, 2018). Beside activism, some animal protection groups work together with the agribusiness sector to develop standards for labels like Deutscher Tierschutzbund (o.J.). Beside the mentioned advisory committees or private initiatives, the role of (informal) policy networks can not be neglected for German politics (see Pappi et al., 1995). There is empirical evidence for the important role of stakeholder policy networks in common agricultural policy (CAP) of the European Union (Pappi and Henning, 1999; Henning, 2009). Since FAW is a subfield of agricultural policy, there is good reason to assume that networks occur among livestock policy stakeholders.

Previous studies on animal welfare policy stakeholders have focused primarily on at-

titudes and/or evaluation of different animal welfare indicators (see for example Heleski et al., 2006; Heise and Theuvsen, 2017; Verberke, 2009). To our best knowledge, there exist no study that investigates the role of communicational and classical lobbying[1] in German FAW politics. Thus, we know nothing about the effect of such network structures among the most relevant stakeholder organizations. This raises our first question: To what extend is German farm animal welfare politics affected by stakeholder participation? We answer this question by using a framework of stakeholder participation based on previous theoretical and empirical work on European CAP (Pappi and Henning, 1999; Henning, 2000, 2009) and implementing development policies in African countries (Stark, 2017; Henning and Krampe, 2018; Henning et al., 2019). Beyond pure description of network effects, we also want to illustrate the effect by investigating the case of piglet castration.

Despite this diagnosis of a retiring state in the case of FAW (Vogeler, 2019b), some issues especially of legal nature remain in the area of state. This is the case for piglet castration. One aspect of FAW is "Good health" of animals, which includes absence of pain caused by management procedures (Welfare Quality ®, 2009). Such a painful management procedure is the castration of male piglets without anaesthesia. Castration is performed in order to avoid bad smelling boar odor of meat from male pigs. In Germany the common practice is to castrate male piglets until the age of seven days without narcotise them. Back in 2012, a change of the Animal Welfare Act prohibited the piglet castration without anaesthesia from 2019 on (Jahn, 2013). But due to uncertainty about acceptance of the alternatives, German parliament extended the deadline for withdrawal from this procedure for two more years (Grunenberg, 2018). The alternatives in question are surgical castration under anaesthesia, immunocastration and boar mast. The first procedure may be performed under full (inhalation or injection) or local anaesthesia (Zöls, 2006, pp. 26-31). Of course it is still a surgical operation. In contrast, immunocastration suppresses the production of the sex hormones responsible for boar taint. The procedure consists of two injections, performed at intervals of at least four weeks. The second vaccination must be given between four and six weeks before slaughter (Candek-Potokar et al., 2015, see). Moreover, scientists recommend this method since it causes less stress for the animals (FLI, 2018). The third alternative requires neither surgical operation nor vaccinations. Instead, boars are fattened to a lower carcass weight than usual and thus are slaughtered earlier. Screening and sorting of carcasses during slaughter process is required here (Candek-Potokar et al., 2015). The question remains, how stakeholder participation affects the final evaluation of these alternatives and thus contributes to a final decision for or against a certain alternative. Thus, our second research question is: Which castration alternative is preferred at the end of a participatory process?

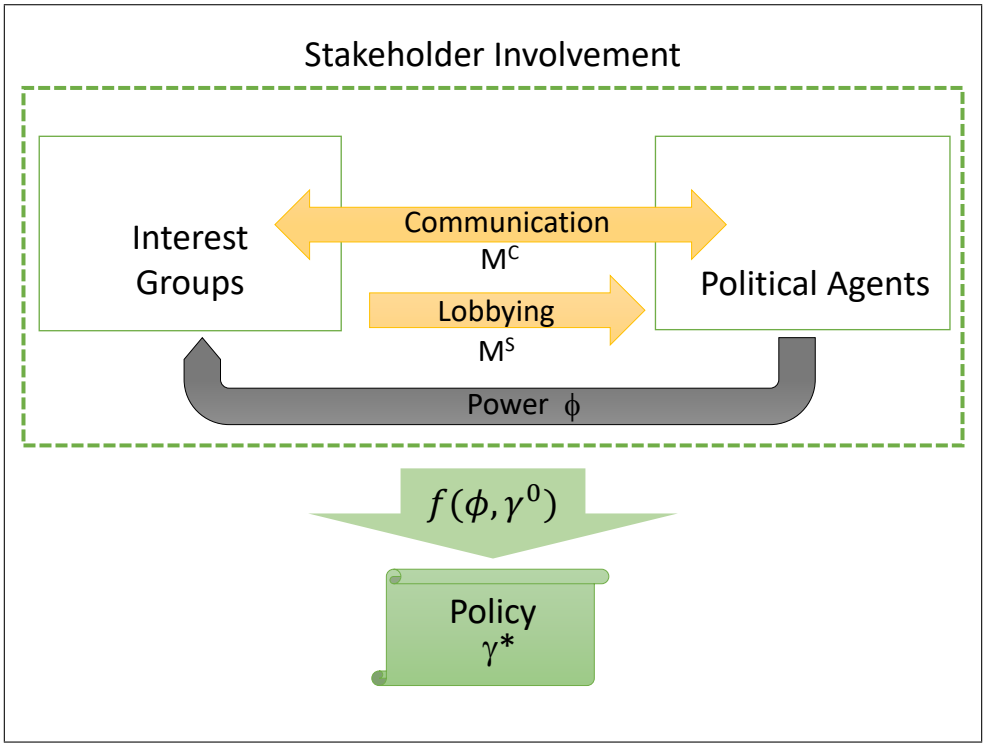
[1]Please note that own previous work only considered communicational influence using an unweighted network (Grunenberg, 2018).

To answer both questions, we proceed as follows. The next section provides a simple theoretical framework of stakeholder organizations' participation in political processes. Afterwards the data we use to apply the mentioned framework are described. We present the results of our analysis in the fourth section and complete with a conclusion in section five.

2. Theoretical Framework

We use a simple framework of stakeholder participation. As can be easily seen in figure 1, stakeholder involvement (rectangle with dashed green line) consists of two interaction channels between interest groups (set Q) and political agents (set G). Both types of actors are rational actors who want to maximize their utility. Particularly, interest groups are formed by people to archive goals (Olson, 1965; Becker, 1983) and therefore interested in power (Grossman and Helpman, 1996). Parties want to be (re)elected in order to get benefits from the governmental offices (Downs, 1957).

Figure 1: Framework



Source: Own Presentation.

The first interaction channel is *communication* (Henning et al., 2019). Interest groups provide expert knowledge to the political agents and vice versa. Moreover, political agents may also share knowledge among each other. This also applies for interest groups. According the model of belief formation described by Henning and Hedtrich (2018), communication affects actors' policy beliefs. Thus, this mechanism influences the mental models

actors have about the political technology that links policy x to outcome z. The belief formation model follows the logic of Acemoglu and Ozdaglar (2010), who state that social structure in which an actor is embedded in plays a role in belief formation. Thus one can think of a communication policy network among a set N of n actors, where $N = \{Q, G\}$. M^C is the $n \times n$ adjacency matrix of this communication network where element $m^c_{ij} > 0$ corresponds to a communication tie, i.e. i sends information to j. Let $\bar{M^C}$ denote the row stochastic transpose of M^C. Given own-control, i.e. the extent that an actors own knowledge determines his beliefs, network multiplier matrix can be calculated:

$$\hat{M^C} = [I - (1 - m^C_{diag}\bar{M^C})]^{-1} \times m^C_{diag} \tag{1}$$

where m^C_{diag} denotes own control and $\hat{m}_{ij}$ is the effect of j's initial on i's final belief. Please note that this model corresponds to the model of Friedkin and Johnsen (1990).

Note that Grossman and Helpman (1996) name provision of information for politicians as an influence resource beyond classical lobbying. This information not necessarily serve only self-interest, but may also be objective expert knowledge serving the welfare of all members of society (Ball, 1995). Thus, one can distinguish between the process of communication and *lobbying*. The latter is the exchange of political influence resources and power between interest groups and political agents (Pappi and Henning, 1998; Henning, 2000, 2009). This exchange game also takes place in a social network where M^S is the $n \times n$ adjacency matrix and $m^S_{ij} = 1$ denotes the provision of political support by i to agent j. Given the corresponding column stochastic adjacency matrix $\bar{M^S}$ and the interest in support X_{diag},

$$\hat{M^S} = [I - (s_k)_{diag}[I - (1 - s_k)_{diag}\bar{M^S}]^{-1}\bar{M^S}X_{diag}]^{-1} \tag{2}$$

is the network multiplier matrix where $\hat{m}^s_{ij}$ equals the power outflow from j to i. Please note that broker share s_k integrates direct and indirect power flows since it takes indirect connections into account $(i \to k \to j)$.

Both, communicational and classical lobbying, lead to *(total) power* of stakeholder organizations. Given the original voting power Φ of legislative actors, equation 3 gives the power resulting from lobbying.

$$\Phi^L_i = \hat{M^S}\Phi \tag{3}$$

Moreover, communication strengths this power, i.e. we sum up the influence of actor j on belief formation of other actors to get the total power (see equation 4)

$$\Phi^T_j = \sum_i \hat{m}^C_{ij}\Phi^L_i \tag{4}$$

As mentioned in figure 1, the final policy is the result of a function of actors' initial positions γ^0 and power. This function corresponds to the mean voter decision rule (Henning and Krampe, 2018):

$$\gamma^* = \sum_j \Phi_j^T \gamma_j^0 \tag{5}$$

This framework was applied to the data described in the next section.

3. Data

We use the data of an survey among German livestock policy stakeholder organizations. Organizations' representatives were interviewed between September 2017 and October 2018. Please note that at the beginning of every interview interviewers emphasized that they asked not for the interview partners' personal opinion. Moreover, interviewers asked them to state the position of their organization. Based on desk research we identified more than 100 relevant stakeholder organizations. Because of time and resource limits it was not possible to interview all of them. So after the first rounds of interviews, the intermediate results of a reputation network have been used to filter out the unimportant actors. Finally 37 interviews have been carried out. Note that since one organization did not completed the interview, we have a data set of 36 actors. Average interview duration was 1.5 hours.

3.1. Network Data

According to the theoretical framework, not only parliamentary groups and public administration agencies, but also interest groups form the set of interviewed organizations. Beside political profile and the measuring of FAW, the questionnaire contains policy preferences and elite networks. Within the latter, the representatives had to mark all organizations they perceive as important to livestock politics. This reputation network was used to set up network boundaries as mentioned above. Our networks of interest are the expert communication network as well as the political support network. Following an established approach, both were asked from two perspectives to get confirmed networks (see Pappi et al., 1995).

To get the confirmed weighted communication Network M^C, three questions had to be answered:

QC1: "From whom do you receive expert information regarding livestock?"

QC2: "To whom do you send expert information regarding livestock?"

QC3: "Information of which organization are especially valuable?"

QC1 refers to the perspective as knowledge receiver from other organizations, while QC2 asks for whom the organization serves as knowledge provider. Finally, the organization's representatives had to evaluate the marked organizations in QC1 with respect to the value of information (QC3). Thus, elements of M^C can be one of three values: If $m_{ij}^C = 0$, there is no communication tie between actors i and j where $m_{ij}^C = 1$ indicates that i sends information to j. If $m_{ij}^C = 2$, j perceives knowledge provided by i as especially valuable.

For the political support network, questions differ depending on the type of stakeholder organization:

QP1 "Which political actors do you support?"

QP2 "From which organizations do you receive political support?"

If an actor is an interest group, the question asked corresponds to QP1. In contrast, political agents had to answer QP2. Since we take indirect support into account (equation 2), we allowed the interest groups to mark other interest groups. Moreover, we allowed political agents to support other political agents. Finally, if $m_{ij}^S = 1$ i supports actor j.

3.2. Policy Variables

Table 1: Policy Variables

Policy	**Variable**
Surgical Castration with Anaestehsia	POLDESIGN_manCastration
Immunocastration	POLDESIGN_manImmunocastration
Boar Mast	POLDESIGN_manMast

Source: Own Presentation.

To investigate the effects on the piglet castration debate, we use three variables corresponding the three castration alternatives mentioned above. In particular, stakeholder organizations evaluated each alternative with regard to how useful they perceive the procedure. Corresponding variables are presented in table 1. The scale ranges from -2 (not useful at all) to +2 (very useful).

Moreover, we use the Banzhaf-Index (Banzhaf, 1965) as original political power. We calculate the index for all parliamentary groups of the German Bundestag based on the amount of votes each group owns according election results from 2017. Formally, Banzhaf power index of an actor g is the number of his critical votes divided by the sum off all critical votes (equation 6).

$$\Phi_g = B_g = \frac{c_g}{\sum_{k=1}^{n} c_k} \tag{6}$$

A critical vote is actor g's vote whose absence would make a winning coalition fail.

We present the results in the next section.

4. Results

Since one of the 36 complete organizations was not named as influential, our networks consist of 35 actors assigned to three sectors, two types and 11 groups as presented in table 2.

Table 2: Actors in the networks

Sector	Type	Group	n
StateActors	polAgent	ParlGroup	6
StateActors	polAgent	PubAdmin	3
StateActors	intGroup	Research	1
AgriBusiness	intGroup	Agric_Animal	7
AgriBusiness	intGroup	EcoAgric	2
AgriBusiness	intGroup	Egg_Milk	1
AgriBusiness	intGroup	Food	5
AgriBusiness	intGroup	Meat	3
CSO	intGroup	AniProt	3
CSO	intGroup	ConsProt	2
CSO	intGroup	EnvProt	2

Source: Own presentation.

4.1. Power Analysis

Calculation results of Banzhaf index are presented in table 3

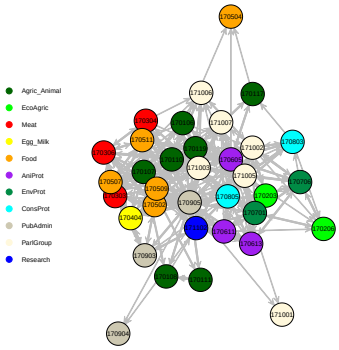
Table 3: Power of parliamentary groups

ORG.SYS	Φ
171003	0.392857
171007	0.178571
171001	0.107143
171006	0.107143
171005	0.107143
171002	0.107143

While the density of the communicational network is 0.266 (figure 2), the political support network's density is 0.085 (figure 3). Thus, 3.13 times more possible relations are realised in order to exchange knowledge than in order to exschange influence ressources.

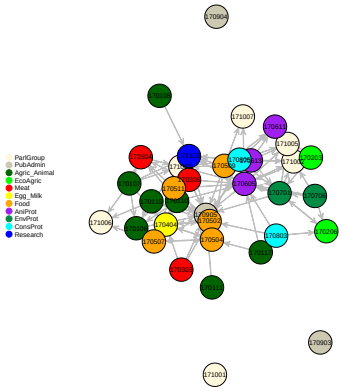
Based on this network structures we calculated the network multipliers. Figure 4 shows the average multiplier effects at the group level. Please note that we normalized values to external knowledge, i.e. cancelling out own control and presenting share of external knowledge effects. It's straightforward to conclude that the group of agriculture and animal production has a huge effect on other actor groups' beliefs. More than 40 percent of external knowledge effects of the food retailers are driven by producers as well as more

Figure 2: Communication Network



Source: Own presentation.

Figure 3: Political Support Network

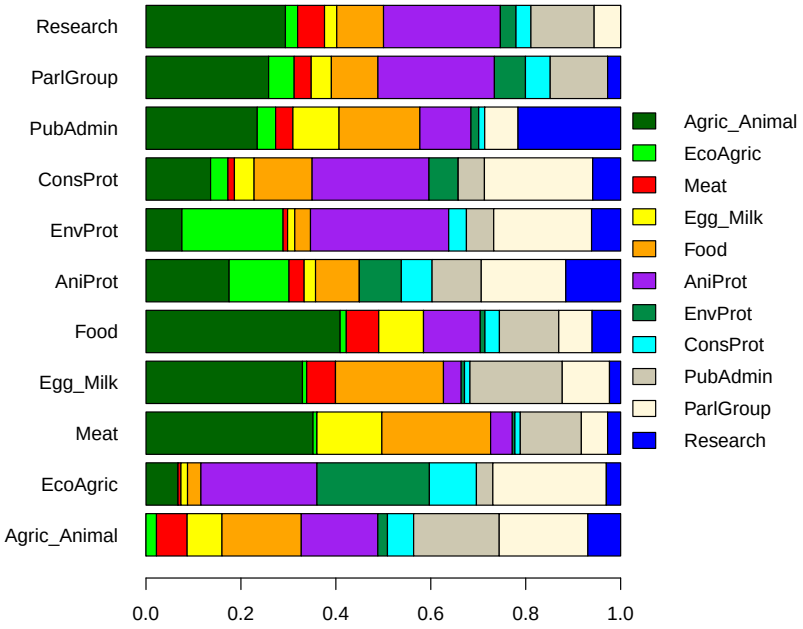


Source: Own presentation.

than 35 percent of meat group's beliefs (figure 4). Moreover, agriculture and animal production groups have the highest influence on the beliefs of parliamentary groups as well as on research. Another key player is the group of animal protection which not only has the highest influence on environmental protection, but also is second important for belief updating of parliamentary groups (figure 4). Interestingly, we also see high influence patterns of parliamentary groups. Thus, they not only receive information but also influence policy beliefs especially of ecological agriculture (0.239), consumer protection (0.228) and environmental protection (0.206) organizations.

Please not that we only present aggregated average support multiplier effects from parliamentary groups and public administration because there are no outflows from interest groups. Results of the support multiplier identify three profiteers at the group level. 26.8 percent of the power outflows from parliamentary groups are assigned to food retail or-

Figure 4: Grouped Communication Multiplier

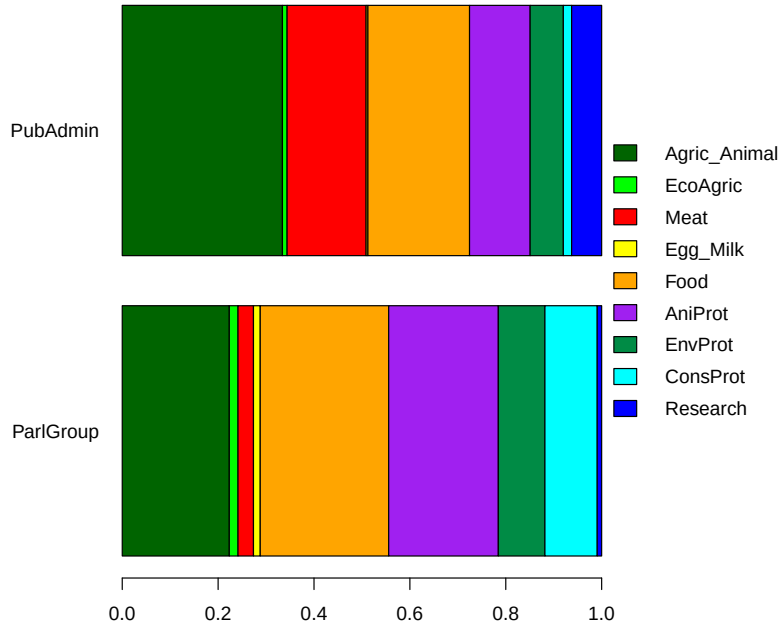


Source: Own Presentation.

ganizations (figure 5). Moreover, animal protection groups (0.229) as well as agriculture and animal production (0.223) gain power from lobbying structure (figure 5). Public administrations gives 0.3341 of control to agriculture and animal production. Additionally, food retail (0.212) as well as meat interest groups (0.165) benefit from lobbying structure.

We already presented the original voting power in table 3 above. Note that original power sums up to 1 (column "Phi" in figure 6) for the parliamentary groups. If we apply calculation according equation 3 using support multiplier results, we notice a power outflow from the parliament to an extend of 0.347 (figure 6, "Phi.L"). Through lobbying, food retailers' Φ^L now is 0.096 while agriculture and animal production group has power of 0.085. The third most powerful group is animal protection (figure 6, "Phi.L"). The groups' total power is presented in column "Phi.T" of figure 6: Here we clearly see that communication patterns lead to an final power outflow from parliament to an extent of 0.608. Moreover, agriculture and animal production organizations double their power through communication and are now the most powerful actor. While food retailers' power doesn't change compared to lobbying, communication results in animal protection groups being the second most important stakeholder group (0.131) among the interest groups (figure 6).

Figure 5: Grouped Support Multiplier



Source: Own Presentation.

4.2. Policy Decisions

The sample means of the three castration variables are presented in table 4. As one can easily see, all three alternatives are evaluated positive. Surgical castration performed under anaesthesia is evaluated as most useful compared to boar mast and immunocastation. This evaluation pattern is driven by the relative importance of farm animal welfare

Table 4: Sample Means of Policy Variables

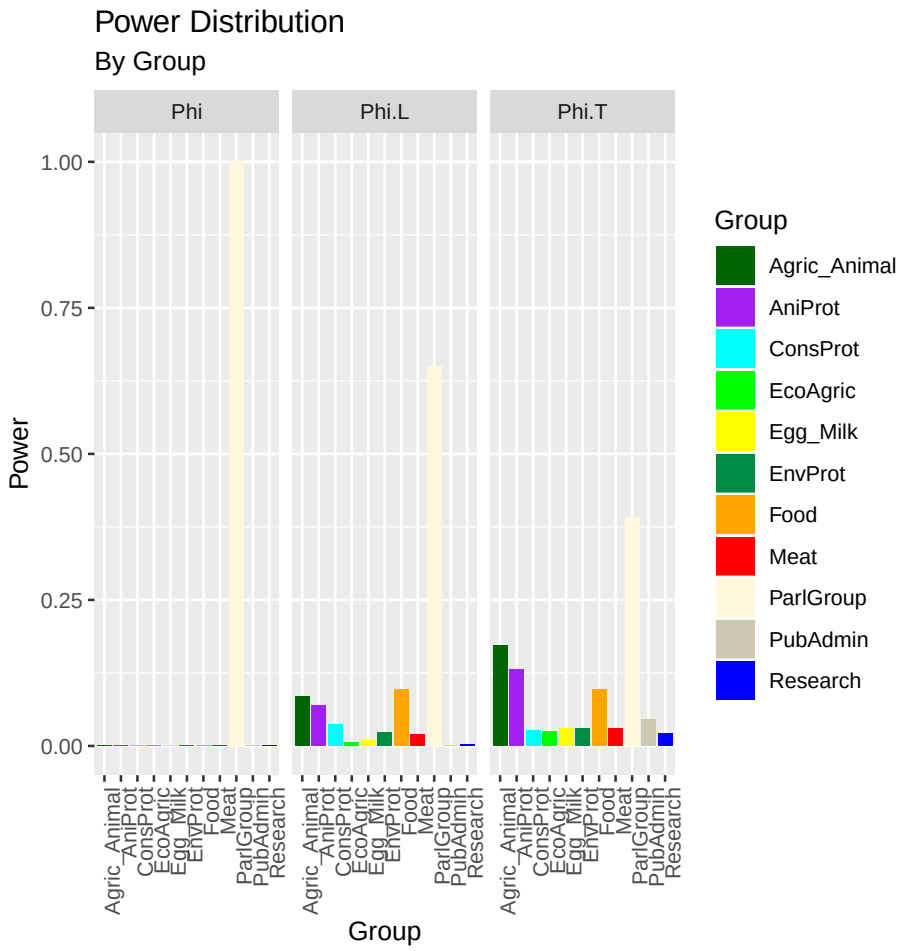
Variable	**Mean**
POLDESIGN_manCastration	0.6
POLDESIGN_manImmunocastration	0.389
POLDESIGN_manMast	0.417

Source: Own presentation.

(Z.FAW) and producers' welfare (Z.PRODUCER). As one can easily see in figure 7 as well as in table 5, there is a positive correlation between the relative interest in farm animal welfare and immunocastration. On the other hand, relation of relative interest in producers' welfare is negatively correlated with this castration procedure. We identified the same patterns for boar mast. For surgical castration there is a positive relation with interest in welfare of producers while correlation with Z.FAW is negative (table 5).

The final policy decision resulting from the power structure identified above shows that

Figure 6: Power Measurements at Group Level



Source: Own Presentation.

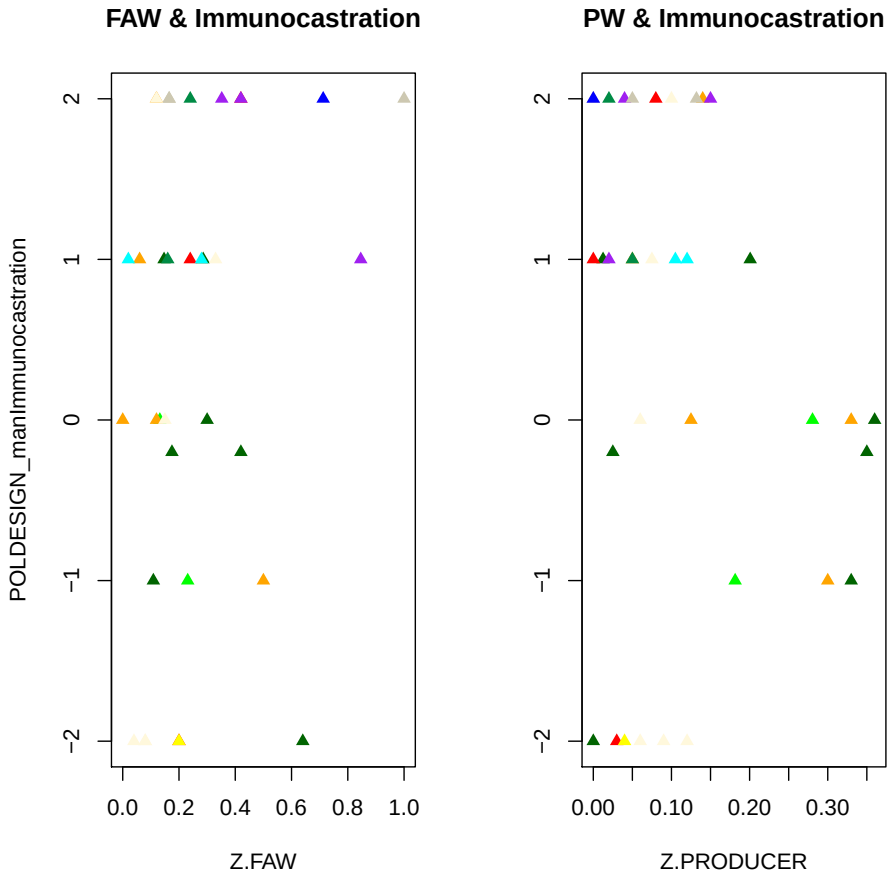
Table 5: Correlation of Policies and Goals

Variable	Z.FAW	Z.PRODUCER
Z.FAW		
Z.PRODUCER	-0.345	
POLDESIGN_manCastration	-0.256	0.210
POLDESIGN_manImmunocastration	0.236	-0.198
POLDESIGN_manMast	0.327	-0.210

Source: Own presentation.

surgical castration is preferred (table 6). Moreover, one can easily see that boar mast is evaluated as useful, too. The negative value of -0.112 for immunocastration implies negative evaluation of this procedure (table 6). Thus, taking this final result surgical castration seems to become the standard approach in Germany. Please note that this relative order is in line with the sample means of initial positions (table 4). Moreover, it is not affected by control decision rules that were applied (appendix 7, 7 and 8).

Figure 7: Comparison of Goals and Evaluation of Immunocastration



Source: Own Presentation.

5. Conclusion

Questions of farm animal welfare are challenging the public acceptance for German livestock production. Especially pig husbandry is facing much criticism. Since we know not much about corresponding political processes, the power of stakeholder organizations is unknown so far. Based on a framework of stakeholder participation including communication as well as lobbying structures we could contribute to the closing of this gap. Particularly we answered two questions regarding the quantification of stakeholder power and it's effect in a recent animal welfare debate. First, our results show that the agricultural sector as well as animal protection groups have the highest influence on beliefs within the stakeholder network. Moreover, the state actors distribute most of the power to the agribusiness sector, i.e. leading to power outflows of 60 percent from parliament to interest groups. Second, this structures finally leads to positive evaluation of surgical castration under anaesthesia. Immunocastration is evaluated as rather useless, i.e. participatory processes decrease acceptance of that procedure. Moreover, we could show that relative order of alternatives is not affected through certain scenarios. Main drivers of the

Table 6: Final Policy Decision

Variable	γ^*
POLDESIGN_manCastration	0.700
POLDESIGN_manImmunocastration	-0.112
POLDESIGN_manMast	0.369

initial policy positions are the importance of farm animal welfare or producers' welfare.

The positive evaluation of surgical castration performed under anaesthesia implies a high likelihood for the procedure to become the standard approach in Germany. Indeed, there are reasons that confirm this hypothesis. For example, surgical castration is already standard in Danmark (Herrmann, 2018), a competitor in the market of pork. Moreover, media report that there is pressure from German producer interest groups (Jücker, 2019). Additionally, there is the approval for anaesthetic Isoflurane by federal agencies (Fritz, 2018) and allowance for farmers to anaesthetize on their own (topagrar.com, 2019).

From a farm animal welfare point of view, this result might imply a non optimal decision. The procedure recommended by scientists is immunocastration, since burdens for animals are comparatively low (FLI, 2018). Pain caused by the procedure is limited only to the needle insertion for vaccine (Candek-Potokar et al., 2017). Moreover, after the second injection immunocastrated pigs demonstrate less aggressive behaviour when compared to same aged entire males (Rydhmer et al., 2010). While having a superior performance compared to pigs castrated surgical and growing faster than entire males, immunocastrates are less efficient in fattening. Thus, "[i]t is more economical to fatten immunocastrates than SC; yet, production costs and carcass quality are less favourable than that of EM" (Batorek et al., 2012). Despite advantages, German stakeholders prefer the surgical castration as mentioned above. Moreover, this evaluation is driven by economic concerns, i.e. the welfare of producers. Assuming that stakeholders know about the benefit of immunocastration over surgically castrated pigs, the question remains why the latter procedure is still preferred. Maybe the efforts of immunocastration overweight the gains. As Rydhmer et al. (2010) point out, the timing of second vaccination's application matters. Immunocastration's full effect is reached only from this point in time. Thus, producers have to put on more efforts in finding the right point of time for applying vaccination, leading to a higher workload (Link, 2008). Nevertheless, the procedure could be profitable at most farms over the long run: That costs of immunocastration are compensated by the higher performance of the animals and their better feed conversion (Verhaagh and Deblitz, 2019). All in all, the result of stakeholder participation is not only a non optimal decision. Moreover, it might be a hint for biased beliefs. Here we see need for future research.

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A. Appendix

Appendix 7: Control Scenarios

Variable	$\gamma^{\#}$	γ'
POLDESIGN_manCastration	-0.669	0.648
POLDESIGN_manImmunocastration	-0.118	-0.6
POLDESIGN_manMast	-0.454	0.116

Source: Own presentation.

$$\gamma' = \sum_j \Phi_j^L \gamma_j^0 \tag{7}$$

$$\gamma^{\#} = \sum_{g} \Phi_g \gamma_g^0 \tag{8}$$