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An assessment of land reform policy processes in Sierra Leone: A network based approach

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Abstract

A predominantly agrarian country where land is one of the most important productive assets, land reform remains one of the most important but contentious policy issues in Sierra Leone. Despite several failed attempts to reform the country's current land property rights and administrative arrangements, an assessment of these failed policy formulation policy processes have not been undertaken. In this paper, we use data collected during an elite network survey conducted in Sierra Leone in 2018 to quantitatively evaluate the recent land reform policy efforts that culminated into the 2015 National Land Policy. Specifically, we combine a belief formation model and a legislative decision-making model to quantify the knowledge-based power of the various stakeholders within the policy formulation process and the extent to which this power influences the policy beliefs of policy makers and other key stakeholders in the process formulation process. Our results indicate that the main policy beliefs, as it relates to reform or maintaining the current status quo, do not significantly change as a result of the exchange of expert information. This is because key stakeholders largely rely on their own control and only update their policy beliefs to a very limited extent after communications. Our results also indicate that the policy network structure in Sierra Leone facilitates consensus building, a process that might lead to increased ownership of policy programs by local stakeholders.

Keywords: Land reform, Land grabbing, informational exchange, political support, stakeholder influence

1 Introduction

In the wake of the global food and energy crises in 2007, an unprecedented increase in the acquisition of huge swath of agricultural land, mainly for investment purposes, in the developing world, caught the attention of many because of both the sheer scale of land involved and the speed with which it occurred (De Schutter, 2011; Meinzen-Dick et al., 2007). These sheer scale of these investments were very worrisome because they were mostly confined to South-east Asia and Sub-Saharan Africa (SSA), regions where the land rights of most land users are insecure largely because of national laws that grant land rights and ownership to governments or colonial legacy that vested the ownership and control of land in the hands of local traditional authorities. Unsurprisingly therefore, in a significant number of reported land acquisitions, negotiations for the transfer of land occurrs without the knowledge or consent of the land users, but rather through governments and/or traditional leaders who are the legal owners. As a result, a number of forced evictions of land users has become associated with this new phenomenon. As Borras Jr. et al. (2013) would later observe, the term "land grabbing" became synonymous with the acquisition of huge tracts of land at the expense of the displacement and expulsion of the poor and marginalized from occupied land with little or no consideration for the impact it will have on their livelihoods.

In the face of these increasing reports of forced evictions and displacement of land users for the purpose of large-scale acquisition of land by mostly foreign investors, calls for land reform programs that strengthen the land property rights of the small holder farmers and land users have grown louder. The Food and Agricultural Organisation (FAO), for instance, have proposed voluntary guidelines that emphasizes the prioritization of full community participation in all large-scale land acquisition processes (Food and Agricultural Organisation, 2012). Other commentators have suggested that if the property rights of land users are formalized and legalized and their tenure security strengthened, they would be protected against unforced evictions and would be better placed to have a say in subsequent acquisitions (De Schutter, 2015).

One such country in Sub Sahara Africa where large-scale investments in farmlands have triggered the debate about the need for land reforms is Sierra Leone. Emerging from a decade long civil war that had its origin in unequal distribution of resources, poor governance, and economic stagnation (**?**), Sierra Leone is a small country of seven million people, with a land mass of approximately 72,000 square kilometres, and richly endowed with very fertile soil, abundant rainfall, and rich mineral deposit (Central Intelligence Agency, 2013). Agriculture is the country's largest sector, contributing around half of the country's gross domestic product (GDP) and employing about 60 percent of the country's workforce (Statistics Sierra Leone (SSL), 2016). Land is therefore one of the most important productive assets in the country, particularly for the majority of the

country's households- 57.2% of whom are agricultural households- who rely on land for their basic sustenance. Accordingly, land related policies play a very important role in driving sustainable growth and economic development in the country. Beyond socio-economic reasons, the access to land plays an equally important role in influencing peace and cohesion within the country. A number of scholars identified the lack of access to land by the country's growing youthful population for agricultural and other socio-cultural purposes in rural Sierra Leone as one of the factors that precipitated the country's eleven-year brutal civil war (Richards, 1996; Unruh, 2008; Zack-Williams, 1999).

At the end of the country's brutal civil war, the government of Sierra Leone has been very keen on attracting foreign direct investment into the agricultural sector. Among its numerous pitches, the government offered concession and tax breaks to would be investors and claimed that only 15 percent of the country's 5.4 million hectares of arable land was under cultivation and that the remaining 75 percent was lying idle and available for agricultural investment purposes (Sierra Leone Investment and Export Promotion Agency, 2010). As a result, since 2009, large scale land acquisition increased tremendously in Sierra Leone. As in most parts of the world, the precise amount of land leased in the country is unknown. However, between 2009 and 2012, it was estimated that about one fifth of the country's agricultural land had been acquired by mostly foreign investors (Baxter and Schaefter, 2013). According to the latest land matrix database estimates, 773,999 hectares of land deals have been concluded and contracted in Sierra Leone (The Land Matrix Global Observatory, 2016).

The increasing displacement of land less farmers and other land users, who had no formal titles to their land, by foreign investors reignited an ongoing debates about the need for reforms of the Sierra Leone's cumbersome two tier land tenure system (Melsbach and Rahall, 2012). [1] Successive governments, scholars and other commentators have argued that the absence of a land registration system and land titles in Sierra Leone, the unwritten nature of customary land tenure systems, and the extensive role played by chiefs in facilitating all land transactions under customary tenure leads to legal uncertainties around property rights and results in tenure insecurity and uncertainties in land ownership in the country (Ochiai, 2017; Unruh and Turray, 2006). This has led to suggestions that the current tenure systems, land laws and regulations inhibit productivity, discourages investments and limits the allocation of land to the most productive users, including foreign investors (Johnson, 2011). The calls for land reforms thus only intensified in the wake of the increasing acquisition of large swath of farmland by foreign investors

[1] Sierra Leone operates a two tier land tenure system. The first, the freehold tenure systems, draws on the country's colonial past and is based on the English system of governance. It is applicable only in the country's capital city of Freetown and its immediate environs, which adds up to less than 1 percent of the country's total land mass. The second land tenure system, the customary land tenure system is based on customary laws. This system applies to all other regions in the country apart from the Western area, which makes up to about 99 percent of the country's land mass

that resulted in the displacement of small holder farmers (De Schutter, 2015; Melsbach and Rahall, 2012). On the one hand, advocates in favour of large-scale investment in agricultural land have called for reforms to end the cumbersome land transfer process and ensure that the most productive actors can easily have access to land (Johnson, 2011; Sierra Leone Investment and Export Promotion Agency, 2010). On the hand, civil society organisations and other interest groups have equally supported the calls to reform land laws and regulation so as strengthen the tenure security of land users through a land title registration system that will ensure secure property rights of small holder farmers (Baxter and Schaefter, 2013; Green Scenery, 2011).

It is within this context that Sierra Leone commenced it latest land reform program. Officially, the land reform policy formulation process began with the establishment of a national land reform project by the Ministry of Land and Housing and the environment, followed by a scooping activity in 2009 (Moyo and Kamara, 2009). At the end of a long and laborious process that included town hall meetings and multi-stakeholder platforms which brought together stakeholders from the governments, donor community, civil society organizations, women's group and traditional leaders, a policy document titled "National Land Policy" (NLP) was produced and formally launched by President Koroma in March, 2017.

However, this is not Sierra Leone's first land reform efforts ([see e.g. Ochiai, 2017; Unruh and Turray, 2006; Williams and Obredola-Davies, 2006) for previous failed land reform efforts in Sierra Leone]. The factors that determine the success or failure of agricultural related policies like land reform in Sierra Leone and other Sub-Saharan African countries have been extensively discussed in the Development Economics and Political Economy literature. Persson and Tabellini (2016) suggest that specific characteristics of the policy formulation process result in biased policy outcomes. Lobbying activities by powerful interest groups is commonly identified as one of the sources of inefficient agricultural on the Sub-continent (Swinnen et al., 2001; Anderson and Hayami, 1986). In Sierra Leone, for instance, past land reform failures have been attributed to the pressure from powerful interest groups like Paramount Chiefs who are custodians of land, and who will considerable political power and vested interest in maintaining the status quo (Acemoglu et al., 2014; Peters and Richards, 2011; Unruh, 2008). Additionally, the lack of scientific knowledge about how different land policies affect society has been generally identified as one of the reasons why some land reform policies have failed in the past. In his seminal work on land reforms, Deininger (2003) contends that many land reform programs fail because the policy formulation process are not driven by scientific or empirical evidence, but are rather driven by ideological positions. In circumstances where knowledge gap exists in a policy formulation process, there have been suggestions that communication and exchange of information between policy makers and stakeholders who are knowledgeable in specific policy areas could lead to a choice of better policy options (Acemoglu

and Ozdaglar, 2011; Golub and Jackson, 2010; Morrissey and Nelson, 2004).In the case of Sierra Leone, expectation have been rife that this latest land reform effort will help spur economic growth and development because the policy formulation process followed a very participatory process where the view of wide range of stakeholders were sought out and where exchange of ideas and information among experts and the various stakeholder organisations could have resulted in the choice of sound policies.

The aim of this paper is to analyze the land reform policy formulation process in Sierra Leone and quantitatively evaluate the informational value of communications during the policy formulation process and the extent to which it affects final policy choices. Specifically, we draw on Henning et al. (2019)'s Mean Voters model- a thereotical model that combines belief formation and legislative bargaining process- to measure the complex interaction among the various stakeholders and their influences in the policy formulation process. Specifically, we will seek to answer the following questions: Who are the key policy makers in the land reform policy formulation process in Sierra Leone? Which actors have access to these policy makers and to what extent do their access shape final policy choices? Does the exchange of expert information within Sierra Leone's land reform policy network influence policy makers and lead to the transfer of some political decision-making power to non-political stakeholders? Data used in the empirical application of our model was collected through an elite network study, a data collection method that allows for the collection of quantitative network data and policy beliefs through a face-to-face interview.

The rest of this paper will have the following structure. After this introductory section, the next section discusses the theoretical and framework adopted used in the study. The data collection method is described in section 3 and the empirical results of the study are presented in section 4. In section 5, we will conclude.

2 Theoretical Framework

In order to understand the role policy beliefs and informational exchanges play in the policy formulation process, we adopt an theoretical framework that focuses on policy beliefs and political institutions as two of the main determinants of policy choices. Specifically, our analytical framework focuses on the role exchange of expert information plays in determining final policy choice. In the following sub-section, we provide a detailed description of our theoretical model.

2.1 General Overview

The state of a society's welfare is generally a function of the provision of certain public and private goods. The provision of these goods is based on the implementation of certain policy choices. A specific policy choice can be broadly divided into the policy preferences

of actors and the processes through which those policy preferences are aggregated into final policy choices. In the Political Science literature, the term policy preferences are used to describe the set of policies actors would like to see implemented to achieve a desired end state Henning et al. (2019). A case in point could be establishment of a comprehensive land titling and registration system as part of a land reform program or achieving food self-sufficiency. Policy beliefs, on the other hand, provide a window through which one gets a glimpse of an actor's conceptualization of how specific policy instruments impact the state of the world. An actor's policy beliefs and her policy preferences are therefore interconnected because the former drives the latter.

Generally, actors form policy beliefs using their mental models. Mental models are policy makers way of simplifying how complex systems work (say for instance the functioning of a country's economy). These mental models, also commonly referred to as policy beliefs, are mostly based on actors pre-existing knowledge about how specific policy instruments or strategies impact the real world. However, since policy evaluation processes are in themselves complex and all humans have intellectual and cognitive limitations, all actors, whether policy experts, political agents or ordinary citizens, do not have a perfect mental model that fully captures the true relationship between specific policy instruments and their impact on the state of the world. Thus, in a bid to improve their mental models, actors deepen their understanding of these complex relations through two principal way. Firstly, they do so by learning, through observation, about how systems react to specific policy choices. Secondly, they perfect their mental models through the exchange of information with policy experts and other political actors. It is through the latter, that is informational exchange, that actors who have no constitutional or formal policy making responsibilities in a society, influence the policy making process. If and when they communicate with policy makers, their knowledge about specific policy instruments or strategies form part of the factors that could influence final policy choices.

It should be noted that mental model differ across actors based on their understanding of how policies translate into outcomes. The mental model of political actors, for instance, is different from say policy experts like trained economist or development practitioners, who are more knowledgeable about the complex relationship between policy instruments and their impact on society (see e.g. Bischoff and Siemers., 2011; Blendon et al., 1997; Rhoads, 1985; Walstad, 1996). Caplan (2001) conducted a statistical study and concluded that the policy beliefs of politicians is different from that of policy experts because while the policy beliefs of the politicians are affected by naive judgmental anomalies, expert policy beliefs, on the other hand, are largely unbiased and true. Thus, in such instances, an exchange of expert information between policy experts and politicians could help the latter update their knowledge and lead to the choice of efficient policy options.

Accordingly, our theoretical framework consist of two components that explain the policy formulation process described above. These two components, as illustrated in

Figure 1 are: i) a belief formation model and ii) a legislative bargaining model informed by an analysis of the country specific legislative process. We lean on two strands of literature to develop these analytical framework. First, we follow Friedkin and Johnsen (1990) and use a non-Bayesian set-up to model belief formation. We then employ the non-cooperative legislative bargaining model of Baron and Ferejohn (1989), as basis for modeling the legislative decision-making process in Sierra Leone. Our model, the mean voter rule developed by Henning et al. (2019) , is given by the equation in the rectangle in Figure 1. In essence the mean voter rule reproduces final policy decisions as the result of a cooperative political bargaining among agents with individual ideal positions Y and political power C. We now provide a detailed description of the two main components of our theoretical framework.

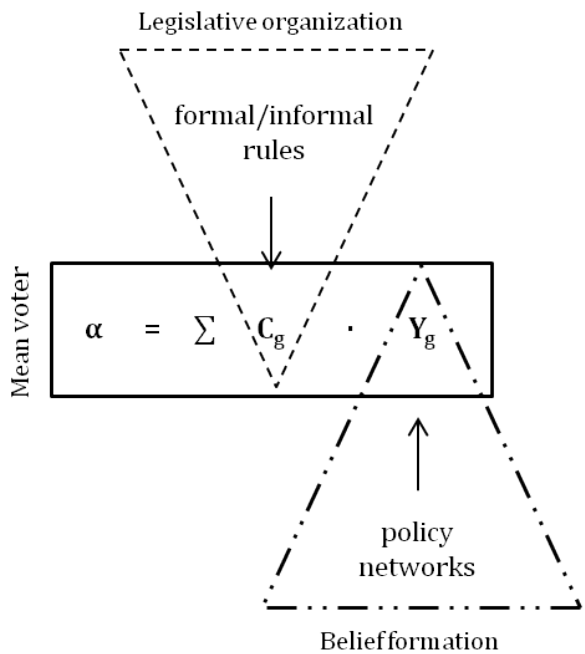

Figure 1: Overview about the framework.

Source: Authors.

2.2 Belief Formation Modeling

We model belief formation using a non-Bayesian approach similar to that employed by Friedkin and Johnsen (1990). Our analysis also draws on the work of Pappi and Henning (1995) who used a social influence model to analyze the policy formulation process in Germany, Japan and the USA. In sum, our model of belief formation is based on the notion that individual's final policy position is formed by taking the weighted average of the policy beliefs of individuals from whom they receive information about the impact of policy decisions through communications and their own initial policy position

Specifically, we divide the belief formation process into three components. The first

component is the initial policy beliefs. The policy beliefs of actors are formed based on their observations of how specific policy instruments impact the state of the world using their simplified mental models. Initial policy beliefs, A_i^0, of actor i is therefore a reflection of his inference from observations without taking into consideration information received from other actors via communication. Initial policy beliefs are thus influenced by exogenous factors like observational learning even before an actor update her policy beliefs through other methods like communication with other actors.

The second component of the belief formation process is the communications network, the channel through which exchange of expert information about policy instruments and their impact on society's welfare occur. Let us denote the set of actors that participate in a communications network as a country's political elite (E). where i represents a generic element of E. These political elites consist of political agents g, who are constitutionally responsible for determining national policies, and a sub set of non-governmental actors who have no formal constitutional or legislative responsibilities. It follows then that it is extremely difficult, if not impossible, for each actor to establish communications ties with all influential actors in the network since access to the set of actors that influence final policy positions is highly restricted.

Let our communication network be defined as a binary network M, where $M_{ij} = 1$ signifies that actor i and actor j have an established communications tie. Furthermore, we define the subset $E_i = j \in E,\ M_{ij} = 1$ as the neighbourhood of actor i, where it is the case that

$$\sum_{j \in E_i} m_{ij} = 1 \text{ with } m_{ij} = \frac{M_{ij}}{\sum\limits_{j \in E_i} M_{ij'}}. \tag{1}$$

Accordingly, we can denote the communications network as $M = [m_{ij}]$ where $m_{ij} > 0$ indicates that actor i pays attention to actor j. M is assumed to be a row stochastic matrix where the sum total of the weights for each actor equals 1.

2.2.0.1 The Belief Formation Process:

The third component of the belief formation process outlines the procedures through which individual actors combine their own beliefs with that of the beliefs others communicate to them in the communications network to arrive at their final policy beliefs. Our framework proposes that individuals update their initial policy beliefs A_i^0 by taking the weighted averages of their neighbours' beliefs A_j^0 with m_{ij} representing the weight that actor i places on the current belief of actor j and m_{ii} being the weight of actor's own belief (see

Jackson, 2008):[2].

$$A_i^* = m_{ii}A_i^0 + \sum_{j \neq i} m_{ij}A_j^0 \tag{2}$$
$$\Rightarrow A_i^* = m_{ii}A_i^0 + (1 - m_{ii}) \sum_j \hat{m}_{ij}A_j^0 \quad with \quad \hat{m}_{ij} = \frac{m_{ij}}{(1 - m_{ii})}.$$

Where A_i^* represents the belief of agent i after communication. Own communication is a measure of the extent to which an actor relies on his or her own expertise on specific policy instruments in the process of forming his final policy belief. Where M represents a row normalized to one and $(1 - m_{ii})$ is the aggregate weight of all neighbors beliefs in actor $i's$ belief. Let m_{diag} represent the diagonal matrix with diagonal elements m_{ii}. Then eq. 2 can be re-written as

$$a^* = \left[I - (1 - m_{diag})\,\overline{M}\right]^{-1} m_{diag}a^0, \tag{3}$$

Where $\widehat{M} = \left[I - (1 - m_{diag})\,\overline{M}\right]^{-1} m_{diag} = [m_{ij}]_{i,j \in E}$ represents the network multiplier matrix. This matrix multiplier takes all communication loops into consideration among actors and thus captures all the direct and indirect effects of actor $j's$ initial belief on $i's$ belief resulting from informational exchange. An element of the multiplier matrix m_{ij} defines the field strength of actor $j's$ initial belief operating on actor $i's$ final belief. If $i = j$, the element m_{ii} of the multiplier matrix M equals the weight that an actor i puts on his own initial belief. In sum, for all row stochastic matrices, the belief formation process described above results in a final policy belief a^* as the weighted average of the initial belief of all actors before communication a^0, where the weight of actor $j's$ initial belief for actor $i's$ final belief equal the element m_{ij} of the multiplier matrix M. [3]

2.3 Consensus Building in Policy Networks

The possibility that exchange of expert information within policy networks will results in consensus building among the participants in a policy network is a function of the embeddedness of actors with heterogeneous policy beliefs within a communications network and the receptiveness of actors to the information shared by others. We refer to such a receptiveness as their level of own control. Firstly, if we consider our communications networks as a connected component where say two agents are connected to each other through a direct or indirect communication tie and assume that m_diag= 0, then the product of the

[2]Friedkin and Johnsen (1997) assume that all actors attribute the same weight to their own initial belief. However, we make no prior assumptions about the weight that actors place on beliefs of others in our belief formation module but ascertain their own control empirically. Note, that heterogeneous weights among actors will still deliver an unambiguous final policy belief.

[3]Please note that the belief up-dating in eq. 3 is similar, but still differs from the DeGroot model analysed by Jackson (2008). In particular, our model includes the DeGroot and the Friedkin model as a special case.

belief formation process will be a perfect consensus (Golub and Jackson, 2009). However, in practice, the assumption that communications networks are a connected component are and improbable. Rather, communication networks are very structured, and restricted. Most often than not, members of such networks communicate with only a minute subset of the whole populations ([see e.g. Henning, 2018). Thus, in instances where the views are divergent within a network, then exchange of expert information will not result in consensus building among the members in the communications network.

It therefore follows from 3 that level of trust that agents place on the belief of others they communicate with determines the level of consensus that can be reached as a result of informational exchange. To this end, we assume that m_diag>0 implies that communication converges to an equilibrium point even though actors could hold heterogeneous policy positions. In our general model, actors might have different relative levels of trust that they place on their own policy positions and that which they place on the policy position of other actors. These different levels of trust in their own positions might be based on the level and quality of information available to an actor. For instance, poorly informed actors might place more weight on the communicated positions of other actors while experts might place more weight on their own positions. Therefore, consensus building is not self-evident in our model. Rather, it is dependent on the country specific attributes of the elite communication network.

2.4 Modeling Legislative Bargaining

We model legislative decision-making using Henning et al. (2019)'s mean voter decision rule, a theoretical model that combines Baron and Ferejohn (1989)'s legislative decision-making model and Grossman and Helpman (1996)'s interest group model into a cooperative legislative bargaining model. The mean voter rule postulates that final policy choice is a result of package deals among political agents that are based on an agent's ideal policy positions (Y_g) and an agent's political power (C_g). Final policy decisions in the legislation is an outcome of a legislative bargaining process among different set of legislators, where g is a member of (N_g) who all have heterogenous policy preferences (U_g). All of the various political agents will prefer to have their ideal policy positions implemented by the powers that be. However, their preferred positions can only be implemented within constitutional rules, where individual legislators will require support from a winning coalition to have their ideal policy positions implemented. Thus, the legislative bargaining process is akin to a competition that involves the formation of winning coalitions among different political agents. The probability of being part of a coalition is dependent on constitutional rules and the embeddedness of an agent in the constitutional system.

Political agents are aware that a non-corporative political legislative bargaining process would result in an uncertain policy choice because it will be akin to a lottery over agents'

ideal positions. If we therefore assume that politicians are risk averse, then such a non-corporative legislative bargaining process will be deemed as inefficient. Hence, political agents have an incentive to agree, ex ante, on a corporative policy formulation process that guarantee each political agent a higher pay off. To this end, the mean voter decision rule is a self-regulating mechanism as long as legislators do not discount future gains from corporation too much.

In essence, the final policy decision corresponds to the weighted mean of legislators' ideal position Y_g:

$$\alpha = \sum_g C_g Y_g \text{ with } \sum_g C_g = 1. \tag{4}$$

Where the weight C_g of an agent's g ideal position reflect her voting power which is determined by political institutions. Technically, under certain assumptions, C_g equates to the ratio of the number of winning coalitions in which an agent g is a member and the sum of these numbers for all relevant political agents. Under this assumption, the political power C_g is akin to the classical Coleman-Banzhaf voting power index which measures the ability of an actor to change a vote (Banzhaf, 1965; Coleman, 1971).

2.5 Derivation of Voting Power Indices

In order to measure the distribution of power among agents, we calculate a voting power index through a) the identification of votes that are compulsory for a final decision to be made and b) by defining the threshold of votes to be met before a collective decision is made. Generally, a distinction can be made between formal and informal voting power games. Formal power games emanate from legislative processes in democratic systems as enshrined in a country's constitution. Such processes typically start with a parliamentarian or member of the executive branch of government submitting a bill to parliament. Such a bill will then make it way through the committee stages, undergoing various modifications in the process- including amendments, before it is finally presented on the house's floor for a final vote.

Informal power distributions, on the other hand, are based on internally enforced standards of legislative power. As Shepsle and Weingast (1987) contend, observed power distributions are not only limited to formal institutional rules. Thus, although the general policy formulation process follows clearly laid down rules and regulated procedures spelt out in a country's constitution, political agents informally delegate agenda setting power on specific policies to certain ministries or public agencies who are in charge of specific policy areas. Additionally, as Bratton (2007) argues, the rule of law is very weak, even if not entirely non-existence in the developing world. In these circumstances, one of the most prominent informal institutions that significantly influences many aspects of political decision making in Africa is the "Big Man" presidentialism. The "big man" presidentialism typifies a situation in which formal institutions and laws become secondary

and instead political power becomes highly personalized and concentrated around the presidency, leading to an increasing political power in the hands of the president and his or her cabinet (see also Van de Walle, 2003). As a result, informal rules and structures override formal institutions and structures to ensure that political power largely resides within the cabinet and presidency, thereby making final votes on the parliamentary floor largely meaningless and merely academic.

In order to measure the voting power of a political agent, we employ the concept of Banzhaf power indices. The Banzhaf Power indices calculates the voting power of an agent by counting all the possible winning coalition, and for each agent all the winning coalitions where his vote is critical in ensuring that the coalition wins (Banzhaf, 1965; Coleman, 1971).

2.6 The Generalized Political Power Index

Based on the descriptions of the belief formation process and the mean voter rule, the final policy decision α^* that results from the exchange of expert information among members of an elite network follows from:

$$\alpha^* = \sum_g C_g(\sum_j m_{gj} Y_j^0 + m_{gg} Y_g^0), \text{ with} j \neq g, \tag{5}$$

Where m_{gj} represents the weight that agent g puts on the initial belief of actor j and m_{gg} the weight that the actor places on his own initial belief. The above equation thus constitutes our theoretical model. This framework considers the policy formulation process as an aggregation mechanism for the various policy positions Y_i based on the belief formation in networks and the voting power distribution in parliament C_g.

Our theoretical model forms the basis through which we derive the generalized political power index. This index is used to analyze the political power behind knowledge transfer in communication networks and the resulting power outflow from political agents to other stakeholder organisations without political power. We compute this index by combining the power of an actor to influence the policy beliefs of other actors and her political capacity in determining the final policy decision:

$$C_j = \sum_g m_{gj} C_g, \tag{6}$$

Where m_{gj} represents the weight agent g places on actor j's initial belief and C_g represents agent g's formal and informal voting power.

In summary, generalized power summarizes a) the political influence of actors who have no original voting or political power based on their information provision to actors who are have formal or informal political power and b) the political influence of actors with

original voting power who give up some of their original power of determining final policy choice in exchange for expert information in an elite communications network. These political agents rely on these informational exchanges to form their final policy position. The lower the number of actors that have access to an information receiver, the higher is the influence of the sender's position on the final policy position of the information receiver. Actors can contact influential players both directly, or indirectly through other policy brokers.

3 Data

In order to evaluate the land reform policy formulation process, we conducted an elite network survey in Sierra Leone between October and November in 2018. The data collection process took the form of a face to face structured interview using specially designed questionnaires suitable for policy network studies. The units of observation in our survey were stakeholder organizations who are considered as major players in the policy formulation process. In particular, these stakeholder organisations were treated as corporative actors because of their formal policy formulation responsibilities (Coleman, 1990). Accordingly, in the course of administering our questionnaires, we emphasized to respondents that we were particularly interested in the views and positions of their organizations and not their personal opinions.

To ensure that our policy network study data is suitable for the assessment of a policy formulation process, a consistent specification of the set of actors that are important in the policy formulation process in our specific policy domain was imperative. To do this, we specified the boundaries of our network using a two-step approach normally applied during previous policy network studies (see Knoke et al., 1996; Laumann and Knoke, 1987; Laumann et al., 1989; Pappi and Henning, 1999a,b). In the first step, we developed a list of potential organizations to be interviewed through a desk research. This was also supplemented by a review of policy documents and discussions with local policy experts in the agricultural and land reform policy domain in Sierra Leone. At the end of the first step, a preliminary list of 107 organizations was developed to serve as a guide in our choice of the set of organizations to be interviewed.

In the second step, we drew on experience garnered during previous network studies to select, from our preliminary list, the first set of organizations to be interviewed. The first set of organizations we interviewed were principally stakeholder organizations who have formal political power and known to be very important in the agricultural and land reform policy domain. These stakeholder organizations included, among others, the ministry of Land Country Planning and the Environment, The Ministry of Agriculture and Food Security, the Ministry of Finance and other subordinating ministries. During each round of interviews, we used a reputation question in our questionnaire to determine the next

set of organizations to be interviewed. The reputation questionnaire asked respondents to mark organizations they consider especially influential in the agricultural and land reform policy formulation process. Organizations who were nominated more than three times were then interviewed in our subsequent rounds of interviews. This snowballing procedure was used until all the relevant organizations in the land reform policy space were interviewed. At the end of the survey, a total of thirty-nine stakeholder organizations were interviewed (see 3 for the list of interviewed organizations).

Our carefully crafted questionnaire was divided into four parts. In part one and two, we collected data about generic agricultural policy goals and positions and specific agricultural policies in line with Sierra Leone's Comprehensive African Agricultural Development Plan (CAADAP) compact, the National Sustainable Agricultural Development Plan. Part three of our questionnaire covered the 2015 National Land Policy and collected data about specific policy position and concerns in this policy document. In Part four, the policy network section of our questionnaire, we collected data about reputation, communications, political support and social relations networks. Part five of the questionnaire focused on the different organizational attributes of our stakeholder organizations. For the purpose of this paper, we will rely on data collected in part 3 and 4 of our questionnaire.

The focal point of our model is the communications network which contains data about the exchange of expert information between different stakeholders within the land reform policy space. For the purpose of our study, we refer to expert information as any type of information about the impacts of a specific policy options that can be transmitted from one actor to another. An example of an expert information would be the impact of land titling on agricultural productivity and investment in the agricultural sector. These expert information data were collected from both a demander (organisations that receive expert information from other organisations) and supplier (organisations that provides information to other organizations) perspective. Accordingly, respondents were asked to mark all organizations to whom they provided expert information on agricultural and reform policies on a regular basis (supply) and those from whom they receive expert information on agricultural and land reform policies on a regular basis (demand). If both a receiver and supplier separately reported the exchange of information between their organizations, that particular informational exchange or knowledge transfer is considered as confirmed. We used this information to construct a confirmed communications network, a network considered to be more reliable for network analysis from a theoretical point of view Pappi and Henning (1999a).

Another important component of our belief formation model is the weight stakeholder organizations place on their own initial policy beliefs. To collect data on the weights actors placed on their own initial policy beliefs, respondents were requested to determine the relative importance they place on externally provided information in relation to their own expertise in the policy impact evaluation process. To this end, respondents were

requested to divide 100 points between the weights they placed on externally provided information and that which they place on their own expertise.

As mentioned earlier, part four of our questionnaire collected data about Sierra Leone's land policy reform program, focusing on the relative interest in and preferred position of stakeholder organizations in relation to the most important policy issues covered during the policy reform formulation process. This was done using a nested structure. In the first nest, we collected data about the relative interest in specific land reform policy issues. These policy concerns consist of relevant policy outcomes drawn from Sierra Leone's National Land Policy (NLP) document. They can broadly be divided into issues related to land rights administrations and land property rights. At the second level of our nest, we collected data about stakeholder organisations interest and position in the specific policy issues. The full list of the policy positions is listed in table 1.

Table 1: Description of land reform policy beliefs and interests

Policy Positions	Variable
Establishment of a new land administrative framework	New_Admin_Frame
Customary land governance reform	Customary_Reform
Establishment of a comprehensive land title registration system	Land_Titling
Land demarcation, mapping and survey services	Map_Survey
Land property rights of women	PR_Women
Land property rights of foreigners	PR_Foreigners
Taxation of land leasehold fees	Tax_LHF
Land property rights of large scale land investors	PR_LSLI
Land property rights of small holder farmers	PR_SHF

Source: Authors.

To model policy belief formation, we follow from Henning (2018) and model stakeholder organizations policy positions concerning a specific policy strategy as their initial policy position. In order to ensure comparability and enable us assign actors in specific locations within our policy space, we used a 7-point ordinal scale of positions. Our ordinal scale had fixed and meaningful poles of scales which served as an empirical and metric measurement of the distances between actors. Our rating scale ranged from 1, implying policy position that supported reforms and 7 implying policy positions that supported maintaining the current status quo. Besides the valid assessment of policy positions, we also identified the interviewee's interest in a specific policy. Here, we used the distribution of 100 points across the policy components. It should be noted that our main aim here is to predict the true policy beliefs of the different stakeholders and how the exchange of expert information affects the belief formation process. Thus, our variables should be regarded as only be done for illustrative purposes.

3.1 Legislative Power Distributions

In order to model legislative bargaining process and ascertain the political decision making power political agents transfer to other non-political stakeholder organisations as a result of knowledge transfer in our communications network, we combine the network multiplier with political decision-making power to derive the total political power of stakeholder organizations. We start by calculating the indices that represents the various voting power distributions of various political actors in the policy formulation process by first defining the threshold of votes to be met before a collective decision is made. After that, we identify actors whose votes are compulsorily needed for a final decision to be reached. This is done by applying the concept of Banzhaf power index to calculate the power indices for specific voting power games in Sierra Leone.

We start by selecting our voting power games based on both the constitution of Sierra Leone and a desk review on the attributes of political decision making in Sierra Leone. First, we follow from Bratton (2007) and Van de Walle (2001) to argue that the principle of "Big man presidentialism" obtains in the case of Sierra Leone. Furthermore, we suggest that Sierra Leone's constitution confers agenda setting powers on the president which includes the initiation and submission of bills to the house of parliament. Additionally, we take note of the fact that the country's governance is based on a presidential system and legislative matters are decided based on a simple majority rule. The president however has a binding veto power which requires a two third parliamentary majority to be overridden, implying that the executive branch of the government has a binding agenda setting power. In practice however, parliament wills little significant power and its role is largely academic in the policy formulation process. On this basis, we formulate the relevant legislative games, taking into consideration the dominant role played by governmental institutions based on these informal legislative norms.

However, the literature does not succinctly spell out the roles of various governmental ministries in the policy formulation process. We therefore formulate various country specific legislative games. In the first scenario, we assume that land reform policies are largely driven by the Ministry of Lands, Housing and the Environment (MLHE) who have an agenda setting power vis-Ã -vis the cabinet including the president, with the cabinet having a final approving power based on a simple majority vote. In the second scenario, we assume that the president functions as a 'primus inter pares' in his cabinet and has agenda setting rules vis-Ã -vis his cabinet. In the third contrasting DUO scenario, we assume that the presidency and the MLHE share an agenda setting power. Lastly, we consider three further scenarios (MLHEPARL, PRESPARL and DUOL) in which we assume that legislative decision making in Sierra Leone is characterized by party leadership (that is the ruling Sierra Leone Peoples Party plays has an agenda setting power). In these three government led scenarios, we assume that legislative decision-making power is shifted

among MLHE, the President, MLHE and the President, and the leading party the SLPP in combination. It should be noted that the main opposition party, the All Peoples Conress is included merely for the sake of completeness as they do not have any agenda-setting power in all of the above-mentioned scenarios. The calculted Banzhaf power indices are presented in figure 2.

Table 2: Banzhaf Power Indices

	MLHE	PRES	DUO	MLHEPARL	PRESPARL	DUOL
OPRES	0,122	0,2683	0,2581	0,0962	0,2115	0,2051
MAF	0,2683	0,122	0,2581	0,2115	0,0962	0,2051
MOF	0,122	0,122	0,0968	0,0962	0,0962	0,0769
MLHE	0,122	0,122	0,0968	0,0962	0,0962	0,0769
MLGRD	0,122	0,122	0,0968	0,0962	0,0962	0,0769
MOPED	0,122	0,122	0,0968	0,0962	0,0962	0,0769
MTI	0,122	0,122	0,0968	0,0962	0,0962	0,0769
APC	0	0	0	0	0	0
SLPP	0	0	0	0,2115	0,2115	0,2051

Source: Calculated by authors from own data.

4 Results

4.1 Relevant Actors in Sierra Leone's Land Policy Domain

A comprehensive list of the thirty nine stakeholder organizations we interviewed in our policy survey and their corresponding indegrees of centralities is presented in table 3. The indegrees of centralities (IDCs) of the reputation network are a summary of nominations received by all organisations in our land reform network domain. These IDCs are calculated by summarizing nominations received by each organization, standardized by the number of the maximum possible nominations, excluding self-nominations (Wassermann and Faust, 1994). In our model, it is a measure which quantifies the prominence of an actor in a directed network, signifying the perceive influence of stakeholder organizations in the land reform policy domain in Sierra Leone. Our results show that the Ministry of Agriculture and the Ministry of Lands are perceived as the most influential organizations, with each having an indegree centrality measure of 0.97 and 0.95 respectively. This is followed by the paramount chiefs, the legal custodians of all customary land, and the most prominent donor organization in the policy domain, the United Nation's Food Development Organization. At the group level, the executive branch of government is perceived to be the most influential group with an average indegree centrality score of 0.77. This is closely followed by donors and public agency with average indegree centrality

scores of 0.75 and 0.72 respectively. On the other hand, agricultural producers (0.64) and agricultural industries (0.52) are seen as not highly influential in this policy space

Table 3: Overview of interviewed Organizations

Organization	Type	IDC	Organization	Type	IDC	Organization	Type	IDC
MAF	GOV	0.97	MTI	GOV	0.71	SLPMC	IG	0.55
MLHE	GOV	0.95	MLGRD	GOV	0.68	SLCCIA	IG	0.53
PC	PUB	0.89	STATS SL	PUB	0.68	SLARI	RES	0.47
UNDP	DON	0.89	ADB	DON	0.68	SLPP	LEG	0.45
OPRES	GOV	0.87	WFP	DON	0.68	DWFC	IG	0.45
MOF	GOV	0.84	WHH	IG	0.68	NU	RES	0.42
EU	DON	0.84	MOPED	GOV	0.66	SLCAB	IG	0.42
WORLD BANK	DON	0.82	BSL	PUB	0.66	APC	LEG	0.39
NFFSL	IG	0.82	EPA	PUB	0.66	RADIO D	IG	0.39
SLIEPA	PUB	0.79	NRA	PUB	0.66	NAMATI	IG	0.37
DC	PUB	0.79	PCAF	LEG	0.55	ALLAT	IG	0.32
FAO	DON	0.79	GS	IG	0.55	ACTION AID	IG	0.26
IMF	DON	0.76	DFID	DON	0.55	AYV	IG	0.24

Notes: GOV: Government, IG: Civil society or private sector organization, PUB: Public sector agency or local government organization, LEG: Political party, DON: Donor organization, RES: Research organization. Source: Calculated by authors from own data.

4.2 Structure of Communications within Sierra Leone's Land Reform Policy Domain

Our results also indicate that exchange of expert information within Sierra Leone's land policy domain follows a clearly defined structure. We employ a block model analysis to identify the structure of expert communications using Butts (2008)'s Social network Analysis package developed for the "R" statistical package. Block Model analysis, a positional analysis based on structural equivalence, allows for the identification of actors with the same pattern of relations to other actors within a network. Its application to quantitative network data of exchange of expert information enables us to identify the embeddedness of stakeholders in our land reform policy domain. Using a block model analysis, we identify a pattern of exchange of expert information which can be divided into six blocks. This includes; the office of the president (block I1), a core political and land reform block (block I2), a land reform advocacy block (BI3), a peripheral block (BI4), a legislative and media block (B15), and a donor and technical block (BI6). This communications structure is illustrated in figure 2 and depicts the underlying political communications structures in Sierra Leone. As can be seen, the graph consists of six blocks, with the size of the blocks representing the number of actors in each block. The arcs show the flow of information to and from a specific block and illustrate the existence

of established ties between and among the different blocks. The size of the arc shows the amount of expert information exchange that flows between the two blocks. The Edge-weights boxes indicate the extent to which information flows between and within networks based on the network densities. Dark green edge-weights for instance signify that there is a lot of information flow occurring between blocks while a light green illustrates the opposite. We use densities, a measure of the ratio of established ties and all possible ties within a network, to illustrate the underlying relational structures in our network.

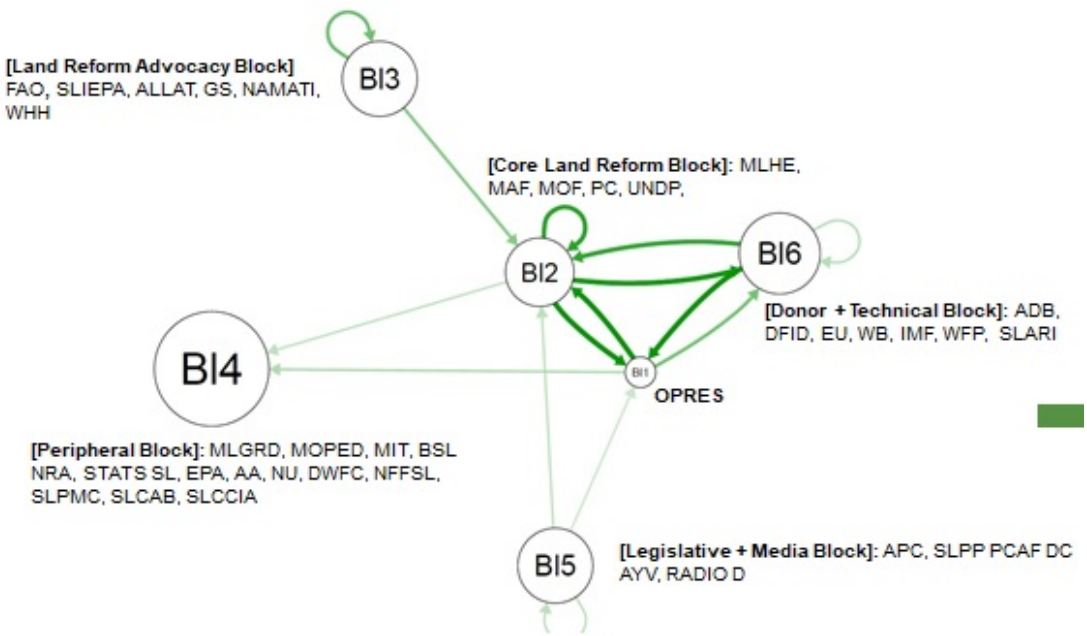

Figure 2: Structure of communications

Source: Calculated by authors from own data.

As shown in figure 2, the central position within Sierra Leone's land reform policy formulation communications network is occupied by the three most influential ministries (MLHE, MAF, MOF) who drive land reform policies within government, the paramount chiefs-the legal custodians of land under customary tenure, and the United Nations Development Program (UNDP) - the donor organization that have largely funded the just concluded land reform policy formulation process in Sierra Leone. They act as a broker and receive or send information to all the other peripheral blocks in the network. Exchange of expert information within the land reform policy domain in Sierra Leone is also characterized by an intense exchange among the three major blocks (BI1, BI2 and BI3) in the network and an exchange of information within all but one of the blocks. Additionally, the donor block, which includes Sierra Leone's leading agricultural research institute-SLARI, is strategically positioned and exchanges a lot of expert information with both the core block and the office of the president.

Block I3 is made up of stakeholder organizations that advocate for land reforms either because they are in favor of ensuring that the process of large scale land acquisition is

made less cumbersome for foreigner investors or because they want to ensure that the land rights of vulnerable land users are secure and protected in the face of this massive scale of land acquisition. Accordingly, the block consists mostly of stakeholder organizations that advocate for the land rights of small holder farmers and a public agency in charge of increasing investment in the country, SLIEPA. This block also seems to play a peripheral role and connects to the rest of the network through the political core block.

4.3 Stakeholders Influence in Policy Formulation

One of the main objectives in this paper is to determine the level of influence various stakeholder organisations have in the policy formulation process. Does the exchange of expert information within Sierra Leone's land reform policy network influence policy makers and lead to the transfer of some political decision-making power to non-political stakeholders? To answer this question, our starting point is the derivation of our network multipliers. Network multipliers illustrate the influence various actors have on the belief formation of others. In order to ascertain the influence profile of these different interest groups, we excluded own control figures - a measure that explains the extent to which an organization's own information and expert knowledge influences its final policy choice in the formulation and design of land reform policies - and normalized the network multipliers across all stakeholder groups. The results are presented in figure 3.

The results illustrate that when own control is excluded, the executive branch of government and donor organizations are the most influential groups in the policy formulation process. The executive highly influences the donor community (54%), public agencies (40%), media organisations (40%), iNGOs (37%), and Civil Society Organisations (33%), underscoring the fact that they are the most influential in the land reform policy domain in Sierra Leone. Donor organizations also highly influence the policy belief of the executive (34%), public agencies (32%), researchers (31%), agricultural producers (30%), Civil Society Organisations (30%), and agricultural industry (27%). The network multipliers also illustrate that stakeholder organizations in the agricultural sector, civil society organizations, and iNGO have little influence on the belief of the main stakeholder groups in the land reform policy domain.

4.4 The Belief Formation Process

Measured at the mean, our results in 4) suggest that, after the application of our network multipliers, stakeholders in Sierra Leone's land policy domain overwhelmingly support reforms that are geared towards the establishing of a land title registration system, updating demarcation, surveying and mappings services, strengthening property rights of women and small holder farmers, and customary governance reform. On issues related to the establishment of a new land administrative framework, strengthening the prop-

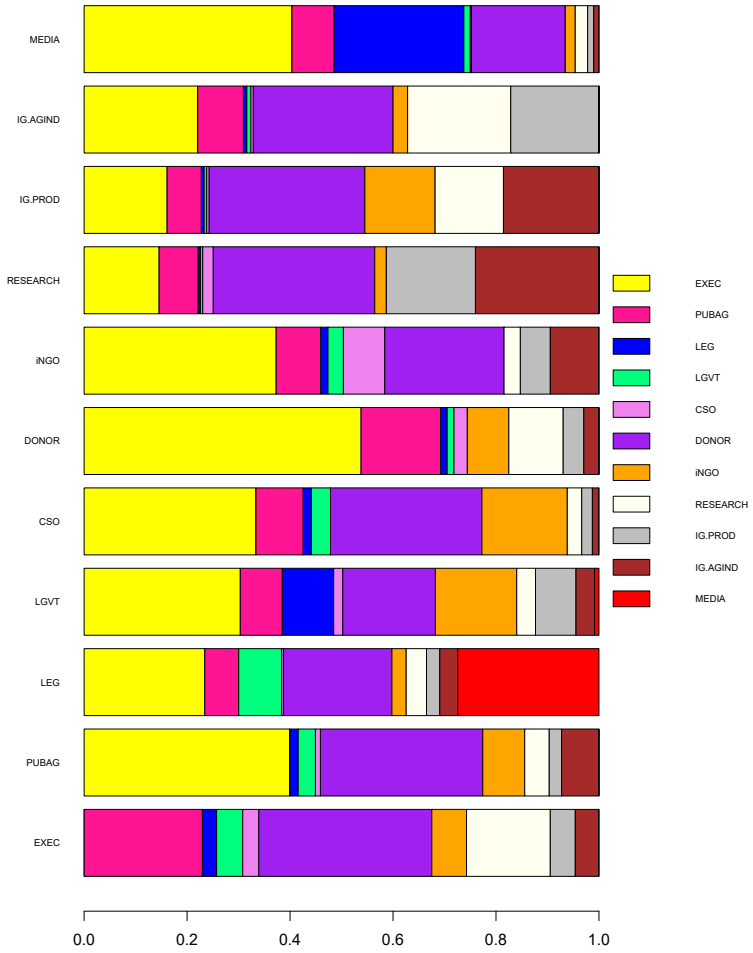

Figure 3: Power Outflow after Communications

Source: Calculated by authors from own data.

erty rights of foreigners and the taxation of land leasehold fees, respondents are willing to countenance some form of reform while maintaining some aspect of the current land administration set up.

Table 4: Summary statistics of land reform policy beliefs

Belief Variables	Beliefs	Mean	SD	Median
NEW_ADMIN_FRAME	Initial	4	2.3	3
	Final	4.1	1.5	3.8
CUSTOMARY_REFORM	Initial	3.2	2	3
	Final	3.1	1.4	2.6
LAND_TITLING	Initial	2.1	1.5	1
	Final	2.2	0.95	1.81
MAP_SURVEY	Initial	1.7	1.2	1
	Final	1.77	0.87	1.5
PR_WOMEN	Initial	2.1	1.4	1
	Final	1.94	0.85	1.57
PR_FOREIGNERS	Initial	4.4	2.5	4
	Final	4.3	1.6	4.1
TAX_LHF	Initial	5.4	2.2	7
	Final	5.2	1.5	5.6
PR_LSLI	Initial	4.4	2.4	5
	Final	4.3	1.5	4.5
PR_SHF	Initial	2.4	1.3	2
	Final	2.43	0.84	2.39

Source: Calculated by authors from own data

Results further indicate that the mean belief of five of our variables (customary reforms, establishment of a land title registration system, property rights of women, property rights of large-scale farmers and the property rights of small holder farmers) change negatively after the exchange of expert information, signifying an increase in support for reform on these issues. However, for three of the other reform issues (establishment of a new land administrative framework, taxation on land leasehold fees, property rights of foreigners and improvement of demarcation, mapping and survey services) the changes in the mean belief of variables were positive after communication, indicating a shift towards maintaining some elements of the status quo on these issues. Additionally, six of the nine median values of our variables fall between 1.0 and 2.7 range, while the standard deviation is low for all final beliefs.

However, what stands out from **??**) is that mean beliefs do not significantly change after communications. Is it then the case that exchange of expert information has no effect on final policy choice or is that any such effect is not apparent through the examination of the mean beliefs? Further investigation reveals three interesting insights.

Firstly, we propose that we do observe drastic changes in the mean beliefs for all the variables after communications because of reported high control values, an indication

that actors rely largely on their organization's own information and expert knowledge in the formulation and design of land reform policies than that communicated by other actors. For instance, own control within the executive branch of governments stand at 70%. Since donor and research organizations are normally assumed to be experts and technological leaders, it is therefore expected, as our results indicate, that donor groups (75%) and research groups (79%) have high own control and rely largely on their own expert information . This implies that these two groups of stakeholder organizations have high confidence in their own expertise and knowledge and do not change their policy beliefs significantly after communications. However, it is surprising that public agencies, who are also generally regarded as a technical group of experts in government, report a modest own control of 54%. The results also indicate that stakeholder organizations most receptive to information from other stakeholders are Public agencies (54%), local government authorities (51%), CSOs (59%) and iNGOS (57%).

Secondly, as can be seen from figure 4, the belief changes that occur at the group level after the application of our network multipliers seem to have a counter balancing effect. This is perfectly summed up by the changes at the group level for two of the most influential groups in our network. For instance, donors who are overwhelming in favour of reforms before communications shift their policy position towards retention of old institutional set up. On the other hand, the executive who mostly lean towards maintaining current land administrative arrangements shift towards supporting reforms on all but one of the policy issues. This pattern is apparent across all the different interest groups in our study.

4.5 Communication Netowrks as Consensus Building Mechanisms

Thirdly, while at first glance the impact of communications on the policy position of actors may seem infinitesimal, a close examination of the data reveals that communication does in fact act as a consensus building mechanism in the policy formulation processes. To demonstrate this, we evaluate the impact of the large number of policy instruments in our study on different policy outcomes by reducing the complexity in the data. We reflect this reduction in complexity using a principal component analysis, a method suitable for the extraction of a lower number of unobserved uncorrelated variables from observed correlated variables.

Our results predict that the nine policy instruments can be summarized into two broad policy reform goals. These results are presented in 5. The first component is labeled as a continuum which depicts support for state driven reforms versus market driven reforms because most of the policy issues associated with market driven reforms (support for lower taxes, strong property rights of foreigners, support against reforms that promote monop-

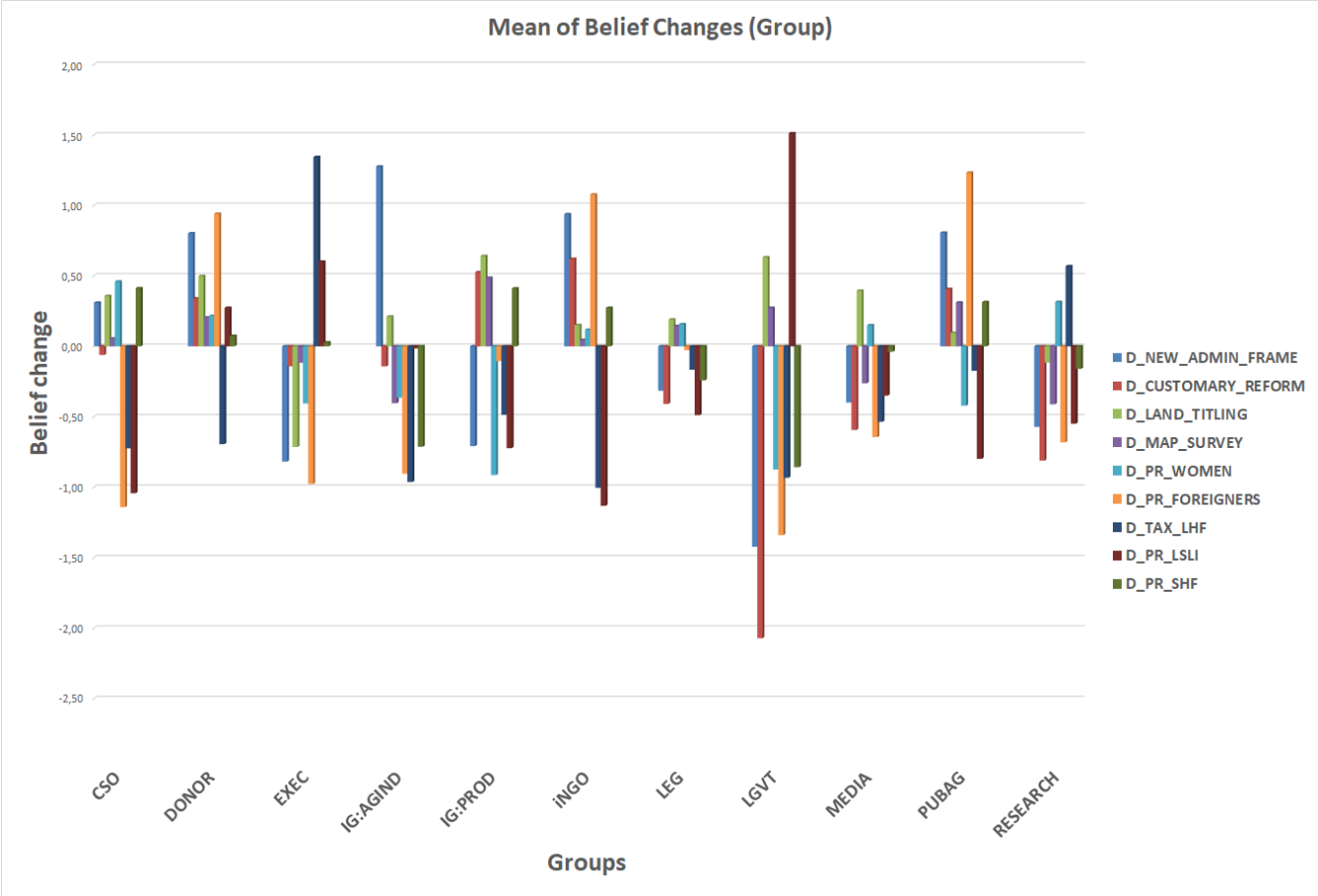

Figure 4: Mean changes of belief after Communications

Source: Calculated by authors from own data.

olistic competitions that is associated with strengthening the rights of large scale land investors) project relatively highly on the first component, while policy issues associated with state driven reforms (support in favour of higher taxes and a monopolistic land scale land investor model, and support against reforms that strengthen the property rights of foreigners) project lowly on the first scale. Higher values on this component is therefore an indication that an actor supports market driven reforms. The second component is labeled as a continuum which depicts support for the retention of old land administrative arrangements versus support for reforms that adopt new land administrative arrangements like the establishment of a land registration and titling system, upgrade of land demarcation, mapping and survey services and the establishment of a new land administrative framework. Higher values on this component is an indication that an actor prefers institutional reforms over current land administrative institutional set up.

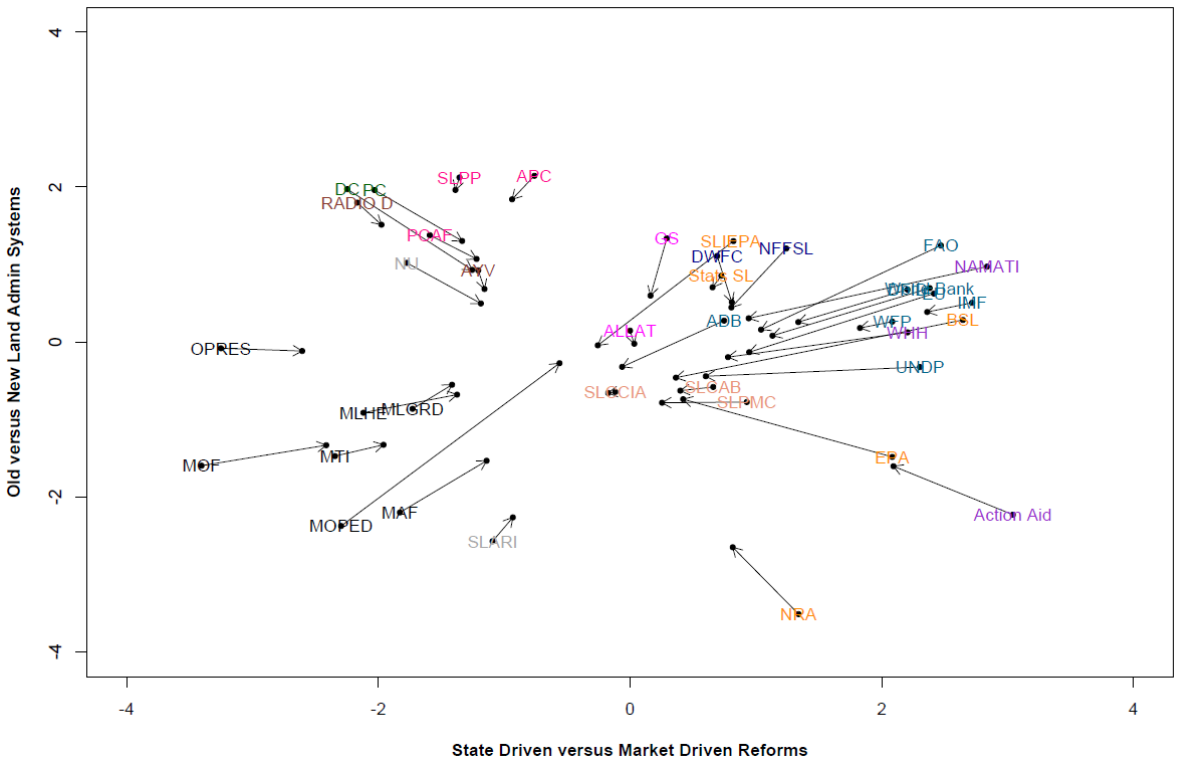

Figure 5: Consensus building regarding land reform policies

Source: Calculated by authors from own data.

Our results are shown in 5. From this graph, three clusters can be clearly identified. Firstly, on the bottom left of the graph are members of the executive branch of governments who are largely in support of state driven reforms but not keen on institutional reforms of the current land administrative systems in place. On the opposing end are donors, civil society organisations who are largely in favour of market driven reforms and institutional reforms of the current land administrative systems. Lastly, on the top left of the graph, we can also identify members of the legislation, local government author-

ities and the media as a third cluster. They support state led reform programs and all but one of the current land administrative systems- customary land governance reform. Opposition to reforming of customary land governance reform is expected within this group because, it composition includes paramount chiefs and other local authorities, who currently hold administrative powers and authority over all customary land.

While our results in table 4) suggest that at the macro level we do not record large enough shifts in policy positions after the application of our network multipliers, figure 5 demonstrate that communications do in fact lead to convergence in our policy network. On the whole, arrows point, for each dimension, predominantly in the direction of one policy position, suggesting that communication builds consensus among actors in Sierra Leone's land policy domain, even if it does not result in actors sharing or adopting the same policy position after communications. Clearly, as the results show, all actors compromise on their initial positions after communications. The executive branch of government compromises on its initial pro-state led and pro-retention of old administrative systems policy positions and move towards market led reforms, while accepting the need for reform of some of the old administrative set up after communications. Donors and Civil Society Organisations, on the other hand, compromise on their initial market reform positions, albeit remaining convinced of the need for the reform of land administrative reforms. Local government authorities and legislators also accept the need for some form of reform of the customary governance system and move towards market led reforms after communications.

The direction of belief updating for each actor i for each policy strategies d in our graphical representation is computed using the representation below:

$$DIR_{di} = (P^{*}_{di} - P^{0}_{di})P^{0}_{di} \tag{7}$$

Where P^{0}_{di} represents an actor's initial policy position, and P^{*}_{di} represents an actor's policy position after belief updating.

After an application of our network multiplier, a negative difference between the policy positions of actor i and actor j indicates convergence to a common point after belief formation. Consider that a negative difference between initial and final policy positions after communications results in either of these two cases: i) $P^{0}_{di} > 0$ and $P^{0}_{di} > P^{*}_{di}$, or ii) $P^{0}_{di} < 0$ and $P^{0}_{di} < P^{*}_{di}$. This signifies that the difference in the final policy position between stakeholder organisations decreases with communication, even if their initial positions still remain heterogeneous. Given that an overwhelming majority of the calculated belief formation direction are negative for both components, it signifies that policy positions converge towards a common point after communications for both components, indicating that exchange of expert information builds consensus for land reform policies in Sierra Leone. It further demonstrates that the convergence of policy positions in our model is not a presupposition. Rather, it shows that stakeholders in our network are open to

updating their policy beliefs based on information they receive from other players in the network.

4.6 The Political Power Behind Knowledge Transfer

As has already being highlighted, before communications, only political agents with formal constitutional responsibilities and political power could, in principle, influence final policy choice. However, through their participation in the elite communications and political support networks and because of the valuable expert information they provide, stakeholder organizations who originally had no formal political power, are able to interact with political agents with formal political power, and influence final policy choice. In essence, they provide political agents with the valuable information that shape their policy beliefs and the political agents in turn give up (or transfer) some of their generalized decision making power to these stakeholder organizations to influence policy formulations. In our study, we analyze the amount of generalized decision making power an actor gains due to his participation in the elite communications network by combining the network multiplier with the Banzhaf power indices to measure the power outflow that results from the exchange of expert information. Figure 6 presents the result of power outflow for the Duo and the Duol scenarios, two of the scenarios we outlined in section 3.1.

Our results indicate that before the exchange of expert information in the case of the DUO scenario, power resides entirely with the executive. After communications, the presidency gives up a little over 60% of its power to influence policy formulations. The bulk of this generalized decision making power is passed on to donors (15.7%), public agencies (8.6%) and research organizations (5%). Both International iNGOs (2.9%) and CSO (3%) have little generalized power, while the others have almost no influence in the policy formulation process. In the second scenario (DUOL) where legislative decision-making power is shifted among MLHE, the President, and the leading party the SLPP through its Members of parliament, our results show a different power dynamic. It indicates that before communications, power is shared between the presidency (79%) and parliament (21%). After communications, generalized power largely flows to donors (13%), public agencies (7%), and research organisations (5%). However, even after the power outflow, the executive branch of government (43%) and the legislature (15%) still remain the stakeholder organizations with the most generalized power in the network. Furthermore, our results suggest that most of the generalized power of donors, public agencies and researchers largely comes from the knowledge they provide to other network members during the information exchange process. Parliament's power does not increase significantly in the first case and reduces slightly in the second case after communications. This might be because of their embeddedness in the communications network. In line with their low influence over belief of stakeholders, agricultural interest groups, CSOs and the media have very

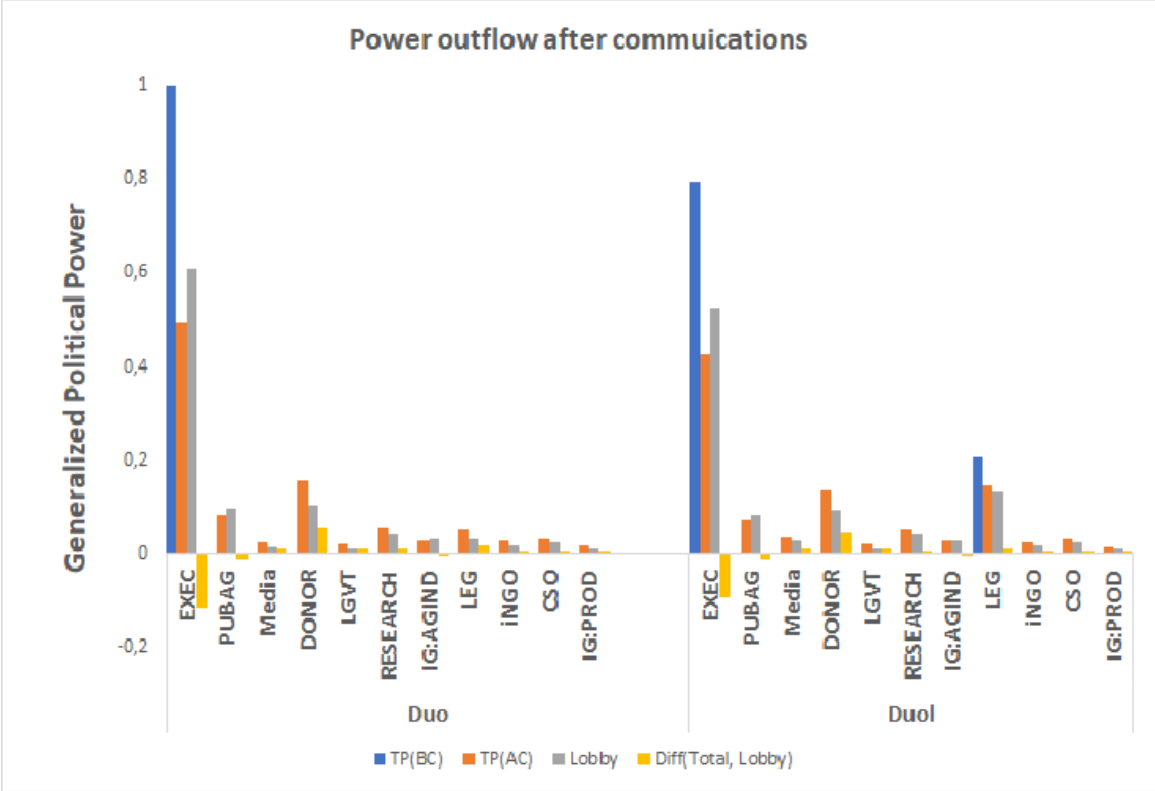

Figure 6: Power Outflow after Communications

Source: Calculated by authors from own data.

limited influence in the land reform policy program in Sierra Leone. Overall, the executive branch of government and the donors still remain the most influential stakeholder organizations in the policy formulation process.

5 Conclusion

Land reform remains one of the most contentious policy issues in most Sub-Saharan countries including Sierra Leone. In this paper, we set out to analyze the political power behind knowledge transfer through the exchange of expert information and understand the role played by different stakeholder organisations in the land reform policy formulation process. In order to do this, we combine Friedkin and Johnsen (1990)'s belief formation model with that of Baron and Ferejohn (1989) and Grossman and Helpman (1996)'s legislative decision-making model to analyze the land reform policy formation policy in Sierra Leone. This combination allows for the identification of the communications structures and the quantification of the effect of exchange of expert information on land reform policy formulation.

Our analysis shows that exchange of expert information within Sierra Leone land reform policy space is dense and very structured. In relation to the policy belief formation process, our results indicate that donors, executive branch of government, public agencies and to a lesser extent, research institutes have a huge impact on influencing the policy beliefs of other actors. The main policy beliefs, as it relates to reform or maintaining the current status quo, did not significantly change as a result of the exchange of expert information. However, exchange of expert information seemingly facilitates consensus building with the policy network, a process that might lead to increased ownership of policy programs by local stakeholders. The key stakeholders largely rely on their own control even though they update their policy beliefs, to a limited extent, after communications. Additionally, our results show that land titling, customary governance reform and the strengthening of demarcation, mapping and survey services are reform programs that are widely supported across the board by all stakeholders. Thus, government should consider laying emphasis on these specific issues during any reform program before moving on to other slightly more contentious issues like the property rights of foreigners, property rights of large-scale farmers and the property rights of women. Our results also indicate that as a result of the exchange of expert information, political agents give up some their decision making power to non-political actors like donors to influence final policy choice.

Unlike other social influence models, we make no prior assumptions about the weights placed on the belief of others in our belief formation models. We rather empirically collect and measure them. We acknowledge that there are some limitations to our results. In the first place, while we have employed a theoretically founded model in our study, we make no conclusions about how efficient the policy formulation process is, in relation to whether

or not it results in the choice of the most efficient land reform policies. Additionally, we concede that our measurement of initial belief has some limitations. Our assumption is that some communications about the different land policy reform issues have occurred within the communications network. As a result, we cannot be certain that our reported beliefs are either the initial or final belief or simply a bit of both. We therefore emphasis that our application of the network multiplier should be regarded as a simulation exercise and not a forecast. However, we are satisfied that our empirical paper contributes to an understanding of the land policy formulation process in Sierra Leone by measuring the communications structures and quantifying the effects of communications on final belief and the resulting power outflow.

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6 Appendix

Table 5: Overview of Interviewed Organizations

Acronym	Orgname	Orgtype	IDC
OPRES	Office of the President	EXEC	0.87
MAF	Ministry of Agriculture and Forestry	EXEC	0.97
MOF	Ministry of Finance	EXEC	0.84
MLHE	Minister of Lands, Housing and Environment	EXEC	0.95
MLGRD	Minister of Local Government and Rural Development	EXEC	0.68
MOPED	Ministry of Planning and Economic Development	EXEC	0.66
MTI	Ministry of Trade and Industry	EXEC	0.71
BSL	Bank of Sierra Leone	PUBAG	0.66
EPA	Environmental Protection Agency of Sierra Leone	PUBAG	0.66
NRA	National Revenue Authority	PUBAG	0.66
SLIEPA	Sierra Leone Investment and Export Promotion Agency	PUBAG	0.79
Stats SL	Statistics Sierra Leone	PUBAG	0.68
APC	All Peoples Congress	LEG	0.39
SLPP	Sierra Leone Peoples Party	LEG	0.45
PCAF	Paliamentary Committee on Agriculture and Forestry	LEG	0.55
DC	District councils	LGVT	0.79
PC	Paramount Chiefs	LGVT	0.89
ALLAT	Action for Large-scale Land Acquisition Transparency	CSO	0.32
GS	Green Scenery	CSO	0.55
ADB	African Development Bank	DONOR	0.68
DFID	Department for International Development of the British Government	DONOR	0.55
EU	European Union	DONOR	0.84
FAO	Food and Agricultural Organisation of the United Nations	DONOR	0.79
IMF	International Monetary Fund	DONOR	0.76
UNDP	United Nations Development Programme	DONOR	0.89
WB	World Bank	DONOR	0.82
WFP	World Food Program	DONOR	0.68
Action Aid	Action Aid	iNGO	0.26
NAMATI	NAMATI	iNGO	0.37
WHH	Welt Hunger Hilfe	iNGO	0.68
SLARI	Sierra Leone Institute of Agricultural Research	RESEARCH	0.47
NU	Njala University	RESEARCH	0.42
DWFC	District Women?s Farmers Cooperatives	IG:PROD	0.45
NFFSL	National Federation of Farmers of Sierra Leone	IG:PROD	0.82
SLPMC	Sierra Leone Produce Marketing Company	IG:AGIND	0.55
SLCAB	Sierra Leone Chamber of Agri-Business	IG:AGIND	0.42
SLCCIA	Sierra Leone Chamber of Commerce, Industry & Agriculture	IG:AGIND	0.53
AYV	African Young Voices Radio/Television	MEDIA	0.24
RADIO D	Society for Radio Democracy 98.1 FM	MEDIA	0.39

Source: Calculated by authors from own data.

Table 6: Network multiplier

	EXEC	PUBAG	LEG	LGVT	CSO	DONOR	iNGO	RES	IG:PROD	IG:AGIND	MEDIA
EXEC	0,703	0,068	0,008	0,015	0,009	0,100	0,020	0,048	0,014	0,014	0,000
PUBAG	0,184	0,539	0,007	0,015	0,004	0,145	0,038	0,022	0,011	0,033	0,000
LEG	0,045	0,013	0,810	0,016	0,001	0,040	0,005	0,007	0,005	0,007	0,052
LGVT	0,149	0,040	0,049	0,510	0,009	0,088	0,077	0,018	0,039	0,018	0,004
CSO	0,137	0,038	0,006	0,015	0,591	0,120	0,068	0,011	0,009	0,005	0,000
DONOR	0,133	0,038	0,003	0,003	0,006	0,753	0,020	0,026	0,010	0,007	0,000
iNGO	0,157	0,036	0,006	0,013	0,034	0,098	0,578	0,013	0,025	0,040	0,000
RES	0,030	0,016	0,001	0,001	0,004	0,066	0,005	0,791	0,036	0,050	0,000
IG:PROD	0,054	0,022	0,002	0,002	0,002	0,101	0,046	0,044	0,666	0,062	0,000
IG:AGIND	0,105	0,042	0,003	0,004	0,002	0,129	0,013	0,095	0,081	0,525	0,000
MEDIA	0,118	0,024	0,074	0,004	0,001	0,053	0,006	0,007	0,003	0,003	0,706
Total	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	

Source: Calculated by authors from own data.

Table 6 presents our network multipliers per group, and can be read row- or column-wise. Reading row-wise, it depicts the power of the row actor to influence the column actor's beliefs and vice versa. The values in the columns reflect the weight that the column actor puts on the initial belief of the row actors. Diagonal values are the average weight kept by the specific group on their own initial beliefs. The numbers sum up to 1 for each column. Values given are averages over actors of the specific pair of groups.