Showdown in Schönau: A Contest Case Study

Bouwe R. Dijkstra and Patrick R. Graichen

1 Introduction

Initiated by Tullock (1967), the model of the rent seeking contest is currently a quite popular subject of theoretical analysis. Performing empirical research is difficult due to the twilight in which many attempts to influence political decisions take place. As a result, the sparse empirical research into contests has mainly been limited to indirect effects.

In the absence of a sound empirical basis, theoretical analysis operates mainly with contest success functions like the Tullock (1980) function, because these functions are conventionally used and their properties are convenient and well-known. Furthermore, it is common for theoretical extensions to be made without reference to empirical research showing the relevance of the extension being undertaken.

The present paper addresses this unfortunate situation by presenting a case study of a political contest. Of course, a case study like this cannot be used to test the contest model or to estimate all its parameters. But at least we can try to describe the case in terms of contest theory: payoff, stake, effort, success probability and

B.R. Dijkstra (✉)
University of Nottingham, Room C3A Sir Clive Granger Building, University Park, Nottingham, NG7 2RD UK
e-mail: Bouwe.Dijkstra@nottingham.ac.uk

P.R. Graichen
Agora Energiewende, Anna-Louisa-Karsch-Straße 2, 10178 Berlin, Germany
e-mail: patrick.graichen@agora-energiewende.de

contest success function. We may gain some insight into the nature, the size and the effectiveness of the lobbies' activities, and their decisions about how much and what to do. Finally, we may identify some elements of the actual contest that have not been theoretically modeled yet.

The contest we study is a conflict between environmentalists and an electricity supplier in the small German town of Schönau. Starting in 1986, the environmentalists of Schönau organized a campaign for a more environmentally friendly form of energy production and finally succeeded (after two local referenda) in July 1997 when their own energy supply firm replaced the original supplier. In this chapter, we shall mainly restrict ourselves to an analysis of the second referendum.[1]

Of all political decisions, the referendum is probably the one most accessible to empirical contest research. Attempts undertaken by lobbies to influence a decision made by politicians or bureaucrats are more elusive. Because the actors tend to be secretive about the influence attempts, it is difficult to find out when the major decisions were made and how (hard) interest groups tried to influence these decisions. Furthermore, unlike an election, a referendum is about a single issue.

The rest of the paper is organized as follows. The Schönau story is presented in Sect. 2. In Sect. 3 we introduce our method: the theoretical background of contest theory and our sources. We also review previous empirical research into rent seeking contests. Section 4 discusses the qualitative aspects of the contests: who the active lobbies were, what they did, which arguments they used and what their strategies were. Section 5 addresses the quantitative aspects: stakes, effort, lobbying effectiveness and success probability. In Sect. 6, we analyze the outcome of the referendum. We examine which voter groups were more inclined to vote one way or the other and which factors influenced, or even determined, the outcome. Section 7 presents some implications of our case study for contest models. Section 8 concludes the paper.

2 The Story

After the Chernobyl nuclear accident in April 1986, the anti-atomic movement received widespread support everywhere in Europe. Even in Schönau, a little town of 2500 inhabitants located in the Black Forest (Southern Germany), living mainly on tourism and with a strong Catholic-conservative background, a group called "Parents for a nuclear-free future" was founded.

Starting out as a self-help group, the members soon decided they should try and make an active difference themselves by contributing to a reduction in energy use and to more environmentally-friendly methods of electricity generation. They approached the regional energy monopolist KWR (Kraftübertragungswerke Rheinfelden) asking for a linear tariff structure, the discontinuation of electricity

---

[1]Graichen (2003) analyzes the whole conflict.

from nuclear power plants (40 % of the electricity came from nuclear power plants) and higher feed-in tariffs for combined heat and power (CHP). KWR refused to discuss these terms. Thus, the action group had to operate on its own. Over the next few years they initiated several courses of action: hearings with experts on the use of renewable energy and CHP in Schönau, an annual energy saving campaign, private recycling initiatives and a benefit concert for the children of Chernobyl, who were also invited to spend their holidays in the Black Forest region.

It was in 1990 that the Schönau case started to develop in an unusual way. Schönau's monopoly concession contract with KWR was not due to expire until 1994, but KWR offered the town a contract renewal from early 1991 for the duration of 20 years, together with a 100,000 DM[2] increase in concession fees.

The environmentalists realized that if they did not act now, they would be saddled with the uncongenial KWR for another 20 years. So they raised 100,000 DM themselves, offering to pay the amount to the town if the contract with KWR was not renewed prematurely. By 1994 they would have set up an energy firm themselves and then the town could choose between KWR and them.

In July 1991 the council voted 7 to 6 for the acceptance of KWR's offer. The 5 CDU (conservative) members, the CDU mayor and one SPD (social democrat) member were in favour, the 4 FWV (independents) members and two SPD members were against.

However, since the constitution of the state of Baden-Württemberg allows for local referenda,[3] the environmentalists rallied for a referendum to suspend the council decision. The referendum was held in October 1991 after three months of intensive campaigning by both sides. The political battle was quite heated and led to a relatively high turnout of 74.3 % with 55.7 % (729 votes) in favour of termination of the contract with KWR.

In the years 1992–1994, the environmentalists launched several operations to prepare for the "final battle". They founded their own electricity firm EWS (Elektrizitätswerke Schönau). Experts devised an energy concept for the town on the basis of regional conditions and green preferences. Money had to be raised, since they would have to buy the electricity grids from KWR.

Two local elections reversed the majority in the town council. The 1993 elections for mayor were won by CDU-backed candidate Seger, who promised to remain neutral on the electricity grant issue. His opponent had spoken out in favour of EWS. In the 1994 town council elections, the FWV (independents) won a seat off the CDU (conservatives).

---

[2] 1 DM (Deutsche Mark) = 0.51 Euro.

[3] The rule is as follows: a referendum to withdraw a town council decision must be held if within 4 weeks after the decision in question 15 % of the voting population signs a referendum claim. The referendum itself results in the rejection of the town council decision if there is a majority in favour of rejection and this majority comprises at least 30 % of the electorate. The town council is then obliged to act accordingly for three years.

Early 1995, both the regional firm KWR and the environmentalists' firm EWS presented a contract offer to the town. The town council finally decided on 20 November 1995 with 6 to 5 votes[4] to grant the electricity concession to the "green" EWS firm. A "Citizens' Pro-Referendum Initiative"[5] was immediately formed, initiated by the local conservative CDU establishment. This group collected enough signatures for a second referendum, to be held in March 1996.

In the winter of 1996, the little town with its voting population of 1800 experienced a political battle of previously unknown vehemence. In this paper, we shall present an extensive account of this battle of the environmentalists against the electricity firm and its local allies. On March 10, 1996 the referendum had the highest electoral turnout ever in the history of Schönau with 84.3 %; 52.4 % (782) voted in favour of the environmentalists, confirming the town council vote from November 1995.

After strenuous negotiations about the price, the environmentalists' firm EWS finally took over the electricity net on 1 July 1997. On that day, of course, little changed outwardly in Schönau. Initially, EWS simply distributed the electricity produced by KWR to the 1700 households of Schönau. But already in the first year, EWS changed a lot: A new energy tariff structure was presented, increasing the incentives to save energy. The energy bill is delivered monthly, so as to provide direct feedback on households' energy consumption. Several small-scale Combined Heat and Power installations and photovoltaic systems were installed in private households and on municipal and church buildings. In late 1998, EWS made use of the liberalization of the European electricity market to replace the nuclear power they bought previously from KWR by hydro-electricity from Austria. At the same time, EWS became a national broker in green electricity and is today supplying over 150,000 households all over Germany with green power.[6]

3 Method

3.1 The Application of Contest Theory

3.1.1 Limitation to the Second Referendum

We analyze the conflict between the environmentalists and the energy firm KWR as a contest. The antagonists are pictured as agents expending resources to try and win the concession. The concession is granted as a result of a multi-stage

---

[4]For EWS: 4 FWV representatives and two SPD representatives. For KWR: 4 CDU representatives and one SPD representative. The mayor abstained. One FWV representative was not allowed to vote because of his sizeable financial interest in EWS.

[5]We shall refer to this group later as Citizens' Initiative or CI.

[6]See www.ews-schoenau.de.

political decision.[7] First the town council decides who will get the concession. The lobby that has lost in the town council can then try to collect enough support for a referendum. At the referendum, the town council decision is repealed if the majority of votes is for withdrawal and either the turnout or the (absolute) number of votes for withdrawal is high enough.

In the case of Schönau, however, the first two stages of the game did not leave much scope for strategic considerations. Collecting enough signatures for a referendum was not a problem. On each occasion, more than twice the required number were collected. In 1991, the voting behaviour of the town council members was determined beyond influence attempts well in advance. In 1996, the council voted according to the 1991 patterns, with the mayor abstaining as announced. Thus, we do not lose much if we limit the analysis to the referendum.

As we have seen in the previous section, there were two referenda in Schönau about the electricity concession. In this paper, we shall limit ourselves to the second referendum. The second referendum is more interesting because it was final, and therefore the lobbies' stakes were higher. Furthermore, the consequences of rejection or vindication of the town council vote were relatively clear. As a practical matter, there was also more information available about the second referendum.

3.1.2   The Contest for the Referendum

Three lobbying groups were active in the 1996 referendum campaign: the environmentalists on the one side, and the electricity firm KWR plus the Citizens' Initiative (CI) on the other side. In this subsection we discuss the theoretical background of the lobbies' behaviour in terms of contest theory.

In a contest, the players expend resources in order to increase the probability that a certain process will have a favourable outcome.[8] Instances are of R&D races, sports matches or political decisions.

Since a referendum as such has not been modeled, we take the general formulation of the contest model as our starting point.[9,10] The success probability p for the environmentalists can be written as a function of the efforts by all agents:

---

[7]In this paper, we take the content of the concession offers as given. This subject is discussed by Graichen et al. (2001), who show that when challenged by environmentalists, the monopolist's offer will be more environmentally friendly than otherwise. Liston-Heyes (2001) derives similar results.

[8]See Long (2013) for an overview and Congleton et al. (2008) for an anthology.

[9]For an analysis of the general model, see e.g., Hillman (1989), Baik (1994) and Nti (1999). A logit-function contest is an example of an aggregative game (Cornes and Hartley 2007): A player's payoff only depends on his own input and the sum of everyone else's input. Cornes and Hartley (2005, 2012) apply the apparatus of aggregative games to study equilibrium existence, uniqueness and rent dissipation for contests with risk-neutral and risk-averse players, respectively.

[10]We assume that the turnout will be so high that the referendum is valid. Herrera and Mattozzi (2010) show how a quorum requirement can actually reduce turnout in a referendum.

$p(x_E, x_K, x_C)$. This is the so-called contest success function, where x_i, $i = E,K,C$, is the effort by lobby group i: the environmentalists E, the energy firm (KWR) K and the Citizens' Initiative (CI) C. The partial derivatives are $p_{xE} > 0$, p_{xK}, $p_{xC} < 0$.[11] Since both KWR and CI lobby for the same outcome, the outcome is a public good for them. A general formulation of the contest success function is given by the following logit function, axiomatized by Münster (2009) for a public good, following Skaperdas (1996) and Clark and Riis (1998) for a private good[12]:

$$p = \frac{f(x_E)}{f(x_E) + g(x_K, x_C)},$$

with f', g_{xK}, $g_{xC} > 0$. The simple Tullock (1980) function, which is often used in rent seeking analysis, is a special case of this general function with:

$$f(x_E) = x_E, \ g(x_K, x_C) = x_K + x_C,$$

All three lobbies maximize their payoffs U_i, $i = E,K,C$, given by:

$$U_E = p(x_E, x_K, x_C) \, v_E - x_E,$$

$$U_K = [1 - p(x_E, x_K, x_C)] \, v_K - x_K,$$

$$U_C = [1 - p(x_E, x_K, x_C)] \, v_C - x_C.$$

Here v_i, $i = E,K,C$, denotes lobby i's stake, i.e., the difference it makes for the lobby whether it wins or loses. When there are no binding upper limits to a lobby's effort level x_i,[13] the Nash equilibrium is determined by the first-order conditions of U_i with respect to x_i.

Since the energy firm KWR and the Citizens' Initiative are lobbying for the same outcome, the political decision is a public good for them. More specifically, as v_K will probably not be equal to v_C, it is an impure public good. Among others, Nti (1998) and Dijkstra (1999) have studied non-cooperative behaviour in contests for pure and impure public goods, respectively. Dijkstra (1999) shows that in the non-cooperative equilibrium with the simple Tullock (1980) function, only the lobby with the highest stake will be active on the pro-KWR side.

---

[11]Note that this formulation does not include all contests. It excludes the perfectly discriminating contest, in which the side that spends the most wins for certain (Hillman and Riley 1989). We exclude the perfectly discriminating contest here, because we do not consider it applicable to a referendum campaign.

[12]Other potential functional forms are the difference form (Hirshleifer 1989) and the relative difference form (Beviá and Corchòn 2015).

[13]See Che and Gale (1997) for an analysis of budget constraints.

However, since KWR and CI have a common interest, one might expect them to get together before the actual contest and work out a cooperation scheme. A number of specific co-operation schemes have been studied in the rent seeking literature: support (Dijkstra 1998), sharing (Loehman et al. 1996) and rewards (Baik and Kim 1997). With support, one lobby pays for part (or all) of the effort by the other lobby. Dijkstra (1998) shows that, with the simple Tullock (1980) function, the high-stake lobby will support the low-stake lobby and remain inactive itself.

3.1.3   Review of Empirical Research

In his survey on the empirical measurement of rent-seeking costs,[14] Del Rosal (2011) argues that empirical research on rent seeking has lagged behind theoretical research and that this has held back the development of the field. We might add that this is especially true for referendum campaigns.[15] Here we shall discuss research of a more qualitative nature.

Schneider and Naumann (1982) analyze the influence of interest groups on referendum voting in Switzerland. However, they only take account of the interest groups' vote recommendation, and not of additional activities.

Using data from Swiss referendums, Christin et al. (2002) show that uninformed voters tend to favour the status quo. The authors are less successful in trying to establish that uninformed voters can base their vote on cues from endorsements by political parties.

In the introduction to a special issue on the process of opinion formation and change in referendums, LeDuc (2002) distinguishes three types of dynamic. In the case of opinion formation, voters are poorly informed about the subject of the referendum. As they form their opinion, they are open to cues from various sources. The potential for volatility is very high in this case.

In the case of opinion reversal, a referendum on a reasonably well-known issue takes on a new direction in the course of the campaign. Finally, an uphill struggle occurs when a side is relatively certain of its core support, but has to reach out to other groups in order to secure victory.

In their study of the 1999 Australian republic referendum, Davidson et al. (2006) conclude that the republicans tried to argue that the change to a republic was minimal and emphasized the advantages, while the monarchists successfully argued that the change was substantial and risky.

---

[14]See Benito et al. (2014) and Powell (2012) for more recent empirical research and Decheneux et al. (2015) for a survey of experimental research on contests.

[15]Referendums have much in common with two-candidate elections (e.g., Hillman and Ursprung 1988; Erikson and Palfrey 2000; Ben-Bassat et al. 2015).

3.2 The Case Study

3.2.1 Research Questions

Our aim is to describe the Schönau contest with the notions derived from contest theory and to draw conclusions from the real world phenomena pertinent to modeling issues. Thus, we are interested not only in quantitative aspects of the contest, but also in qualitative features and in the way the lobbying interaction can be modeled. More specifically, the questions we are interested in are:

Quantitative Aspects
– How much did the lobbies spend in terms of time and money?
– How high are the lobbies' stakes?
– What are the lobbies' resource constraints? Can they spend extra effort at constant cost, as in the standard set-up, do they have hard budget constraints or no constraints at all? Specifically: Did donors and the electricity firm pay for part or all of the expenses by the environmentalists and Citizens' Initiative, respectively?
– On the eve of the referendum, how was the environmentalists' success probability assessed?

Qualitative Aspects
– What did the lobbies do: how did they try to get their arguments across, did they try to appeal to specific electoral groups?
– Were there certain electoral groups that were more inclined toward the environmentalists (EWS) or toward the energy firm (KWR)?
– In retrospect, what are the factors to which the interviewees attribute the environmentalists' victory?
– What did the lobbies know about each other's activities? Did they react to each other or, in the case of KWR and CI, fine-tune their strategies to each other?

Modeling Aspects
– What can we say about the functional form of the contest success function? How effective were the efforts by the respective groups? Which factors influence lobbying effectiveness?
– Can we summarize lobby i's efforts by one variable x_i in the contest success function, or do we have to differentiate with respect to the nature of the effort?

3.2.2 Sources

The Schönau contest was very well documented by all sides involved. We were thus able to collect not only the complete set of campaign leaflets from all three groups but also all the newspaper articles that were published concerning this case

in the two local newspapers. Furthermore, in March 1999 we conducted interviews with[16]:

- Dr Michael and Mrs Ursula Sladek (environmental pressure group). Mr Sladek is the town physician and has represented the independents (FWV) in the town council since 1989;
- Mr Rolf Wetzel (environmental pressure group), policeman and manager of the environmentalists' firm EWS;
- Mrs Dagmar Zuckschwerdt (environmental pressure group), teacher in Schönau, living outside the town;
- Mr Manfred Gollin, head of the energy firm's (KWR) legal office and leader of its Schönau campaign;
- Mr Helmut Pfefferle (Citizens' Initiative), head of the CDU (conservatives) town council group from 1989-1999;
- Mr Herbert Karle (Citizens' Initiative), local CDU chairman;
- Mr Klaus Ruch (Citizens' Initiative), member of the independents (FWV);
- Mr Bernhard Seger, mayor of Schönau since 1993, CDU member.

4 Qualitative Aspects of the Contest

4.1 Composition and Organization of the Lobby Groups

4.1.1 Environmentalists (EWS)

The environmental group consists mainly of middle-class citizens not originally from Schönau. Police officer Wetzel was asked to join the group before the first referendum, because the group needed native Schönau residents like him to enhance their appeal to other native Schönau residents. The campaign team for the second referendum consisted of about ten members. The campaign was led by the Sladeks.

4.1.2 Energy Firm (KWR)

KWR is a private firm supplying energy to the Southern Black Forest (242,000 inhabitants). Its headquarters are in Rheinfelden, about an hour's drive from Schönau. In 1996, KWR's electricity mix was 60 % water power, 35 % nuclear energy and 5 % other (including Combined Heat and Power). The Schönau case was initially the responsibility of the head of the electricity customer section. Our interviewee Gollin, head of the legal office, assisted him from the beginning because of the important legal angle in the matter. Gollin took over the responsibility for the

---

[16]The quotes in this paper are English translations of the authorized interview reports (in German). The reports are available from the authors.

second referendum campaign, which means he was given a budget and a free hand to conduct the campaign as he saw fit.

4.1.3 Citizens' Initiative (CI)

The Citizens' Initiative was founded shortly after the town council's November 1995 decision in favour of the environmentalists. Initiated mainly by the local CDU establishment, they made an effort not to be too closely connected with the conservative CDU because they wanted to reach out to non-conservative voters as well. The social democrats (SPD) town council group leader Hitz was also on their side. Our interviewee Ruch was a member of the independents (FWV). The senior and junior managers of the plastics firm Frisetta (a.o. toothbrushes) were also associated with the Initiative. The hard core of the Initiative consisted of about ten members.

4.2 Campaign Activities by the Lobby Groups

As in any campaign, all three lobby groups organized campaign meetings and used the local media (by placing advertisements and writing letters to the editor). We now turn to the other, special activities the lobby groups undertook.

4.2.1 Environmentalists (EWS)

The environmentalists' most effective campaign weapon was house calls. They visited every household in Schönau where they considered the people to be undecided.

> "You cannot replace face-to-face conversation by any other means, because for many people it is the only form of communication they know, next to the TV." (Mr and Mrs Sladek)

Their campaign leaflets came once a week[17] for 13 weeks, and were designed in a rather simple style (black print on plain paper). The first seven leaflets consisted of one A4 sheet (double-sided), the last six leaflets consisted of a double A4 sheet. Another activity was the door-to-door distribution of jars of marmalade, produced by a local firm, with a "No" sign. On referendum Sunday, the sight of the marmalade jar on their breakfast table was supposed to remind the people to vote "No". Furthermore, the environmentalists targeted specific groups, organizing a coffee afternoon with folk music for the elderly and a rock concert for the young people on the eve of the referendum.

---

[17]Campaign leaflets by all three lobby groups were distributed door-to-door.

4.2.2 Energy Firm (KWR)

For the last seven weeks of the campaign, KWR established an office in Schönau for citizens with questions.[18] Like the environmentalists, KWR also delivered campaign leaflets which were published twice a week over the last 6 weeks. Each campaign leaflet was a double-sided A4 sheet, printed in blue (with the word "info" in purple) on chlorine-free bleached paper. In addition, KWR organized an equipment exhibition in the schoolyard of Schönau. There was a price tag attached to every piece of equipment in order to drive home the point that EWS would never be able to afford the equipment needed to run the electricity system.

4.2.3 Citizens' Initiative (CI)

The Citizens' Initiative, campaigning in favour of the KWR, also distributed leaflets to each Schönau household. Their six fliers came at irregular intervals and were in a simple style. Each consisted of a double-sided A4 sheet and was printed in black on coloured paper. Two leaflets were in humorous carnival rhyme. Moreover, SPD group chairman Hitz wrote an open letter in favour of the KWR, which was also delivered door-to-door. As an "answer" to the environmentalists' jars of marmalade, the pro-KWR forces distributed Frisetta toothbrushes with 10 reasons for voting "Yes". Furthermore, they organized pro-KWR advertisements by local firms and by the CDU.

4.3 Arguments from the Lobby Groups

The *environmentalists' (EWS)* main arguments were:

– we are environmentally friendly—at the same cost as before;
– the people of Schönau should take electricity supply into their own hands, instead of accepting the dictates of and paying to a big firm from outside;
– EWS attracts visitors to Schönau, directly with its energy seminars and indirectly by making Schönau a national news item.

On the other side, the *energy firm (KWR)* and the *Citizens' Initiative (CI)* argued:

– KWR is already quite environmentally friendly, with 60 % of the electricity generated by hydro power, and it is contractually tied to the present 35 % of nuclear energy;

---

[18]Opening hours were Mondays from 4 to 6, Wednesdays from 10 to 12 and Fridays from 3 to 6.

– EWS will not be able to operate in an economically viable way, at least not without increasing electricity prices;
– EWS does not have KWR's equipment and expertise to restore power supply in the case of failures;
– with EWS, jobs might be lost, because firms' investments are discouraged by higher electricity prices and reduced supply security;
– after the town had fully run down the electricity net in 1974, KWR bought the net and has completely modernized it since.

4.4 Strategies by the Lobby Groups

4.4.1 Environmentalists (EWS)

The campaign team kept a record of the electorate, in which they classified the voters in the categories "Yes", "No" and "undecided". They updated this classification continuously during the campaign. The goal was a total of 805 "No" (i.e., EWS) votes, which would amount to 50.1 % at a 90 % turnout. The team did not visit those classified as "Yes" votes (around 20 % at the beginning of the campaign). The "No" votes (around 20 % at the outset) were in constant need of confirmation. The campaign team tried to contact every voter through the member they thought was most sympathetic to this voter. They spent extra time trying to convince "opinion leaders" within a family.

According to Mr and Mrs Sladek, the environmentalists did not only argue factually, in their leaflets, but also emotionally, because they realized every choice has an important emotional component. In the campaign, EWS wanted to present a positive message. Zuckschwerdt and Mr and Mrs Sladek pointed out that they took no interest in the opponents' actions because replying or reacting to the opponents did not fit into their concept. They tried to ignore the opponents, but:

> "Toward the end we deviated from this strategy and reacted more in our leaflets. That was because KWR and CI produced so much sleaze, so many pathetic false claims." (M. and U. Sladek)

Knowing it was hard to dismiss the low-competence argument brought forward by KWR on a rational basis (because very few would be able to understand the calculations involved), the environmentalists framed the issue as a matter of trust. If KWR won on the basis of the wrong figures, no one would notice. But if EWS won on the basis of the wrong figures, they would be in serious (personal) trouble for failing to run the electricity system. Furthermore, the environmentalists asked: "If it is so clear that we can't run the electricity net, why is KWR trying so hard to win the referendum?" (M. and U. Sladek).

As part of their "against big business" argument, the environmentalists also took up the sheer size of KWR's lobbying effort. They argued that the rich "Goliath" KWR was trying to squash poor "David" EWS with its money, money which, in

the end, they had made in Schönau. We shall refer to this effect, which played an important role in the campaign, as the "Goliath effect".

4.4.2 Energy Firm (KWR)

KWR did not have a grand strategy in the Schönau case:

> "From here we could not make a good assessment of what was going on in Schönau. The vehemence of the environmentalists surprised us again and again. We just reacted to their actions. Our people kept calling us, saying: 'They're up to something again, won't you do something?' We were under constant pressure to do more" (M. Gollin, KWR)

KWR tried to conduct a factual campaign, because as a firm and as an outsider, they could not appeal to the people's gut feelings. Only in their last leaflet, which came with a personal letter from KWR management, did they try to strike an emotional chord. The emotional side was mainly left to the Citizens' Initiative in Schönau itself which could appeal to the voters more directly. KWR reimbursed CI's material cost completely.

Gollin, head of the KWR campaign, found it hard to argue against the environmentalists' main line of approach, which he describes as: "Pro EWS means against KWR, means against nuclear energy, means pro health". His assessment of the situation was therefore:

> You can never get rid of a lie by calling it a lie. The lie is out there.

4.4.3 Citizens' Initiative (CI)

According to Ruch (CI), CI's goal was to mobilize the voters who were inclined toward the energy firm KWR but not all that interested in the matter:

> We could count on about 20 % of the votes: the loyal CDU voters and those who disliked the EWS people. At the polls, we had 48 % of the votes, so we had been able to mobilize another 28 %. The high turnout was an achievement on our part, but it was not enough. Turnout among the EWS supporters was 100 %, whereas among our supporters it was 70–80 %. We should have mobilized even more people. With a 100 % turnout (which of course is only theoretically possible) we would have won.

According to Ruch, the Citizens' Initiative always knew what the environmentalists were up to because one cannot keep that a secret in such a small town. However, he only recalls one instance where the Initiative reacted to the environmentalists' activities. After EWS had distributed marmalade to all households, the Initiative distributed Frisetta toothbrushes. This was an idea by the Frisetta manager to which Ruch and Karle had objected, arguing that such a reaction or act of retaliation would not be productive.

5   Quantitative Aspects

5.1   Stakes of the Lobby Groups

KWR was not prepared to make a statement on the size of their stake, i.e., the profit they would have made if they had been granted the energy supply concession for Schönau. We estimate this sum at approximately 8.5 m DM (i.e., the net present value of a 20-year-grant).[19]

Next to the direct financial loss, there was also the potential damage to KWR's image. The firm's image had already suffered from the conflict with the environmentalists, but the loss of image would increase further if EWS won the referendum and managed to run the electricity system. This would serve as a constant reminder that KWR had been unable to combine an environmentally-friendly and economically viable electricity supply.

Because we anticipated it would be difficult for the interviewees to give a quantitative estimate for the stakes of the environmentalists and the Citizens' Initiative, we did not try to elicit such an estimate. We did ask how much it would matter to them (in general terms) whether they won or lost, how they saw the comparative stakes of EWS and CI qualitatively and the relation between stake and lobbying effort. The interviewees agree that EWS had a higher stake than the Citizens' Initiative:

> "It would have been a catastrophe for the environmentalists if they had lost. Of course we were disappointed as well when we lost, but we could come to terms with that more easily." (H. Pfefferle, CI)

> "We had a positively formulated goal, to which we committed ourselves completely. If we had lost the referendum, that would have been the end of the Schönau Energy Initiatives. It would also have hurt us personally. We would have done a disservice to the national environmental movement, because we wanted to show that things can be done differently. There is nothing special about Schönau: if changes are possible here, they are possible anywhere. Furthermore, we would have been very annoyed that we would not be able to prove KWR's figures wrong." (M. and U. Sladek, EWS)

The interviewees also agree that the environmentalists lobbied more than the Citizens' Initiative, because they had a higher stake. This is the reason why EWS made house calls (which require a lot of time and determination) and CI did not.

---

[19]From the figures we have at hand, one can estimate a gross yield of 1 m DM per year. We consider the marginal personnel costs of KWR for Schönau to be negligible, since the Schönau energy consumption covered only 6 % of KWR's total output. Discounting 1 m DM gained for 20 years at 10 % gives us the stake of 8.5 m DM.

Table 1 Efforts by the lobby groups

	Time (h)	Money (DM)
EWS	2500	10–15,000
KWR	400	<30,000[a]
CI	400	5000

[a]Including all of CI's expenses

5.2 Lobbying Effort by the Lobby Groups

We asked the three lobby groups for a quantitative estimate of the time and money they spent on the campaign. The results are summarized in Table 1.

5.2.1 Environmentalists (EWS)

Mr and Mrs Sladek estimate the environmentalists expenses at 10–15,000 DM. The money was spent on advertisements in the local newspapers, propaganda material and copying costs, fees and travel expenses for invited speakers and artists and the jars of marmalade. The latter was the largest single item, costing a few thousand DM.

The environmentalists simply spent what they thought was needed. They were planning to try and cover their expenses afterward through donations. If the donations had fallen short of the expenses, they would have paid the difference from their own pockets.

Mr and Mrs Sladek were only able to give a very rough estimate of the time spent on the campaign. The estimate amounts to 2500 h, consisting of the following components:

– For every brochure, around 10 people got together for 4 h to discuss the contents. The result was then processed by Mrs Sladek (5 h) and a layout expert (15 h). Distributing the brochures to every household in Schönau, which was mainly a task for the members' children,[20] took another 5 h. This amounts to 65 h per brochure, which multiplied by 13 brochures yields 850 h.
– In the first phase of the campaign (the first 10 weeks), the 10 active members spent about one hour a day talking to Schönau inhabitants about the concession grant.[21] This amounts to 70 h a week, 700 h altogether.
– In the hot phase of the campaign (the last three weeks), police officer Wetzel took two and physician Sladek three weeks off in order to campaign full time. At a rate of 60 h a week, this amounts to 300 h.

---

[20]We realize it is questionable whether time spent by the members' children should count as time spent by the environmentalists.

[21]According to the Sladeks, a house call could take up to 1½ hours. Wetzel took between 10 min and 2 h, on average at least 20 min, whereas Zuckschwerdt needed 2 to 3 h.

– During the last three weeks, the other eight members of the campaign team spent about four hours a day campaigning. This amounts to $8 \times 4 \times 20 = 640$ h.

According to the EWS interviewees, the team spent all their spare time campaigning:

> "We gave it all for the victory. If it hadn't been enough, at least we would not have ourselves to blame. If people don't want change, one has to accept that." (M. and U. Sladek)

5.2.2   Energy Firm (KWR)

For the referendum campaign, Gollin requested and received a budget of 30,000 DM. He did not exhaust this budget. The brochures were the most expensive item: the fee for the designer, the printing and the distribution.

Gollin reconstructs KWR's input of time as follows:

– Gollin visited Schönau around 8 times, and had perhaps two meetings with colleagues in the nearby town of Zell. At 4 h per visit, this amounts to 40 h.
– Gollin spent 4 h on every brochure, which for 12 brochures amounts to 48 h.
– The head of KWR's electricity customer section always accompanied Gollin to Schönau, and all in all must have spent the same amount of time: 90 h.
– The lady from the public relations office spent around half as much time as Gollin: 45 h.
– The equipment exhibition in Schönau: one day for a number of KWR employees.
– The Schönau campaign office was open for a total of 50 h. Per employee present, travelling time would be another 50 h. During opening hours, one or two KWR employees were present. Taking one and a half as an average, this amounts to 150 h.

Thus, total estimated time input from KWR is about 400 h, 180 of them at the executive level and 220 at a lower level.

According to Gollin, there was a heated debate within KWR whether they should not do more. Gollin named two reasons for the modest size of KWR's input. The first is that KWR did not want to leave the impression that the rich "Goliath" KWR was steamrolling poor "David" EWS with its money. Secondly, Gollin realized that the people would be motivated by their gut feelings. Thus, spending more money on glossy brochures or posters would not have brought much:

> An expensive publicity campaign makes sense to introduce a new product or a brand name. But that was not the issue here. Every voter in Schönau knew KWR and EWS. It is not possible for an outside actor like us to pull anyone over to our side with a publicity campaign. Especially not in Schönau where the positions had hardened so much that some people did not even talk to each other anymore.

5.2.3   Citizens' Initiative (CI)

According to Karle, the CI treasurer, the Citizens' Initiative spent around 5000 DM. KWR paid for all the expenses. According to Karle, there was no budget constraint from KWR. The Initiative could have spent much more, for instance on a professional brochure, and KWR would still have paid for everything. But the initiative did not want to spend on such things, because "we did not want to flood people with campaign material" (Karle).

Ruch estimates his own time input at at least 10 h a week for 10 weeks. He estimates the average input of the other 10 members at 30 h at the most. This amounts to a total of 400 h.

5.3   Lobbying Productivity

We tried to elicit estimates of marginal lobbying productivity from the interviewees, with questions like: "Suppose the energy firm KWR had spent another 100 DM (be it in promotion material or in time) on the campaign. How much would the Citizens' Initiative have had to spend to accomplish the same effect? How much would the environmentalists have had to spend to offset the effect?" Only Gollin, head of the energy firm's campaign, was able to give a quantitative estimate: he considered 100 DM from the Citizens' Initiative to be at least as effective as 500 DM from KWR.

All of the interviewees agreed that KWR's campaign productivity was lowest, because the firm could not appeal to the voters as personally and emotionally as the environmentalists or the Citizens' Initiative. As Gollin (KWR) and Pfefferle (CI) pointed out, the energy firm would not have been able to collect signatures for the referendum in the first place. Another handicap for KWR, mentioned by Mr and Mrs Sladek (EWS), was that they came from outside. In the ultimate phase of the campaign, outside support is futile. Finally, the interviewees agree that the environmentalists' attempts to turn extra lobbying effort by KWR against them, referred to in Sect. 4.4 as the "Goliath effect", (possibly) constituted a problem for KWR.

Our interviewees disagree on whether the environmentalists or the local pro-KWR forces achieved higher campaign productivity. The heads of the environmentalists' campaign, Mr and Mrs Sladek, estimate that their campaign productivity was lower than CI's, as EWS started the campaign from a very bad position (see Sect. 6.2.6). The environmentalists compensated this disadvantage with high lobbying input, whereas the Citizens' Initiative managed to achieve considerable results with relatively little effort. According to Ruch (CI), however, the environmentalists' campaign was more productive, because they targeted specific voter groups, like the elderly and the youth.

5.4   Success Estimates on the Eve of the Referendum

On the eve of the referendum, both sides felt confident. Only Gollin, campaign manager for the energy firm KWR, says he was too far away from Schönau for a reliable assessment of the odds:

> The people from the Citizens' Initiative kept telling us: 'We are going to win. Everyone we meet is against the Sladeks.' But I know from my own experience how that works: You only talk to the like-minded. The opponents don't talk to you or don't speak up.

This quote also provides us with one of the reasons why both sides felt confident. However, there were also concerns on both sides. Ruch (CI) was somewhat worried about the rock concert organized by EWS on Saturday night. He realized there were still a considerable number of votes to be gathered from the youth. Wetzel (EWS) was worried about the high turnout[22]:

> We had counted on 600 sure votes, which would have been sufficient at 65 % turnout of an 1800 voter electorate. But as turnout rose above 80 %, we were not sure whether we had been able to mobilize enough voters on our side.

6   The Vote

6.1   Voter Groups

The interviews yield a consistent picture on the issue of which voter groups were more inclined to vote one way or the other. Tending more toward the environmentalists were:

– the older people, who had great confidence in their physician Dr. Sladek. Furthermore, they were receptive to the argument that a vote for EWS was a vote against atomic energy and for a safer world for their grandchildren. Winning over the older people was an important coup for EWS, because they traditionally vote conservative;
– the youth, who were against atomic energy. They wanted to rebel against "big bad business" embodied by KWR. Finally, Sladek's boisterous, easy-going attitude appealed particularly to them;
– the non-natives who, having already moved once, "were more open to new things" (Zuckschwerdt, EWS).

Tending more toward the energy firm KWR were:

---

[22]Note that Ruch (CI) also considered a high turnout to be working in favour of the energy firm KWR (see Sect. 4.3).

Table 2 Breakdown of the referendum vote

	District 1	District 2	Postal votes	Total
Allowed to vote	797	987		1784
Valid votes	540	720	233	1493
Yes (KWR)	273 (50.6 %)	348 (48.3 %)	90 (38.6 %)	711 (47.6 %)
No (EWS)	267 (49.4 %)	372 (51.7 %)	143 (61.4 %)	782 (52.4 %)

Note: Turnout was 84.3 %. Of 1504 cast votes, 11 were not valid

– the native residents of Schönau. Their attitude is best summed up by Pfefferle's (CDU) statement in the November 1995 town council meeting:

> In electricity matters, in environmental matters, in economic matters, in service security matters, we have no problems in Schönau. And when there are no problems, why change anything?

– the middle-aged;
– the lower-education, lower-income groups, especially those working with local firms. They were afraid that with EWS, electricity prices would rise and employment would be harmed, because firms might leave or not expand in Schönau.

The breakdown of the referendum vote (Table 2) corroborates the impressions from the interviewees. EWS did best with the postal votes. These are mostly elderly people, or young people living outside Schönau. Electoral district 1 is the lower-income district of the two. In this district, KWR actually defeated EWS.

6.2 Success Factors

In this subsection, we look at the factors which influenced, and maybe even determined, the outcome of the referendum. The factors are ordered in roughly descending order of importance, as our interviewees saw it. In the concluding Sect. 6.2.6, we present our own assessment of the success factors.

6.2.1 Dr. Sladek

All the other interviewees see Dr. Sladek as the driving force behind the environmentalists' strategy of confrontation with the energy firm KWR. They also ascribe the ultimate success of this strategy largely to his involvement. Especially the non-EWS interviewees emphasize Sladek's role in the referendum campaign. The importance of Sladek's involvement consists of the following elements:

– As a town physician, Sladek knew and had access to many people, and people, especially the elderly, had great confidence in him;

– his personality, described as charismatic, inspiring and congenial;
– his commitment, which prompted him to invest a lot of time in house calls.

On the other hand, Gollin (KWR) and Ruch (CI) also mention that Sladek's public image antagonized many people "who don't like his way of walking through the streets like a guru" (M. Gollin).

6.2.2 Lobbying Quality and Quantity

The interviewees agree that both the quantity and the quality of the environmentalists' lobbying input was highest, and that this contributed to their victory. As far as lobbying quantity mattered, it was the time spent, not the money:

> "Money hardly played a role in the campaign. None of the groups tried to win votes by spending lots of money. Nor would it have worked that way." (K. Ruch, CI)

The main difference in lobbying input was that the environmentalists made house calls and the Citizens' Initiative did not. Pfefferle, Karle and Ruch (all members of the Citizens' Initiative) realize they might have won if they had also made house calls. But they admit the matter was just not important enough for them to spend so much time and effort on house calls, even if it would have guaranteed the victory.

The pro-KWR side is divided on the question whether the energy firm itself and/or the supporting Citizens' Initiative should have done more. While recognizing a possible "Goliath" effect (Sect. 4.4), Ruch (CI) still believes that KWR did not do enough:

> KWR could have done more, and it wouldn't necessarily have cost that much. A bit more local presence, for instance with radio spots, in newspapers or with posters, would have done a lot of good. If KWR had made an ultimate effort in the final days, we would have won. A few days before the vote, we warned KWR that they should do more. But they must have thought that victory was already theirs.

As we have seen in Sect. 5.2, there was also a call from within the energy firm for more involvement, but Gollin, head of the KWR campaign, successfully defended his modest spending outlay. Gollin himself entertains the thought that KWR should perhaps have tried to activate the pro-KWR forces in Schönau at an earlier stage. However this strategy has its limitations:

> As a firm, you can't just go to someone you don't know personally and say: 'Do something for us.' All you can do is refund the expenses for such an initiative. You can't demand from them to put their time into it.

The Sladeks (EWS) also suggest that, since more spending by KWR would not have been effective, the energy firm should have pushed the Citizens' Initiative more. Pfefferle (CI) tends to agree, but Ruch (CI) argues against it:

> It was our task to motivate our supporters, and you can only do that in the last couple of weeks before the vote.

6.2.3 Campaign Quality, Quality of Arguments, Credibility

Zuckschwerdt and the Sladeks (all EWS) name the quality of the environmentalists' campaign, the quality of their arguments and their credibility as important success factors. In the previous years, the environmentalists' activities (recorded in Sect. 2) had earned them credibility and respect, even from those who were initially suspicious of the "eco-freaks". Ruch (CI) also mentions that the environmentalists' strategy of inviting renowned experts and TV personalities to Schönau boosted their credibility.

In the campaign, EWS tried to remain factual and not to return the innuendos from the other side in kind, and this paid off.

"The other side could not come up with anything concrete and just went berserk." (D. Zuckschwerdt, EWS)

According to Gollin (KWR), it was just the other way around:

Dr. Sladek tapped into basic fears, which was hard to counter with the more factual information from KWR.

Ruch (CI), however, agrees with the environmentalists' view:

EWS had the better arguments: pro-environment, pro-future. All we could do was scare the people a bit. The substance of our position was much weaker, because we were merely against something. These days, the progressive have an advantage over those who want to take it slow. We only had a few trumps in the campaign: first Frisetta's warning of employment losses and secondly the conservative attitude of the people in Schönau. But the people were just not conservative enough.

6.2.4 The Mayor

Although personally in favour of KWR, mayor Seger kept the promise made in his 1993 mayoral campaign that he would not speak out officially in favour of either position. Not only did he abstain from the November 1995 town council vote, he also refrained from endorsing either side during the referendum campaign. Karle and Pfefferle (CI), CDU members like Seger, are convinced that KWR would have won if Seger had come out in favour of the energy firm. Mayor Seger disagrees:

I think 80 % of the voters knew my personal stance in the matter and how I would vote. I don't believe the outcome would have changed if I had spoken out publicly as a mayor. Voters are not that manipulable.

6.2.5 The Town Council Vote

A corrective referendum is a chance to repeal a prior town council vote. One side lobbies against the town council vote, the other side lobbies in favour of it. It is an interesting question which of these lobbies has a better starting position. This is particularly interesting when modeling the multi-stage game introduced in

Sect. 3.1.1. When it is an advantage to lobby in favour of the town council decision, this is a reason for trying to win the majority in the town council.

The interviewees in Schönau are experienced in this matter, because the town council majority was reversed between its July 1991 and its November 1996 decisions. The environmentalists campaigned against a town council decision at the first referendum, but in favour at the second referendum. For the energy firm KWR and its allies, the opposite applies.

According to Ruch and Pfefferle (both CI), it is an advantage to lobby against a town council decision, because of the "protest potential" of people who like to vote against. Wetzel and the Sladeks (all EWS), on the other hand, argue that the town council vote for EWS worked in their favour at the second referendum. In their view, a town council decision is an important argument in convincing predominantly conservative and authority-abiding voters.

However, although the vote was in their favour, the environmentalists saw themselves in a bad starting position immediately after the town council meeting. At the meeting, both EWS and KWR had presented their offers. While EWS had made a factual presentation, KWR seized the opportunity for an aggressive attack, calling into question the viability of EWS's offer.

> "After this meeting, we first had to reassure our own supporters that our project was not only ecologically worthwhile, but also economically viable." (U. and M. Sladek, EWS)

6.2.6   Assessment of the Success Factors

To conclude the analysis of the success factors, we present our own assessment of EWS's success. We attach great importance to the role of Dr Sladek, because of his charisma and his position within the town as a physician. Furthermore, having worked for years on the subject, the environmentalists not only had a high stake in the outcome. They had also built up team spirit, credibility with the voters and experience in persuading people.

Another vital difference between the environmentalists and the energy firm is the availability of spare time by volunteers. This lobbying input was far more productive than money, the other input. The environmentalists put all their spare time into the campaign. KWR, as a firm, did not have direct access to spare time. They had the local Citizens' Initiative working for them, but its members were not motivated enough to spend large amounts of spare time campaigning. All that KWR could do (and did) was refund the Initiative's material expenses. Paying for their time was out of the question, since this would have destroyed the very nature of the input.

The environmentalists' campaign was not only labour-intensive, but also of high quality.[23] For each voting group (the youth, the elderly, the parents, etc.) an individual campaign approach was chosen. Dr Sladek as their figurehead, the

---

[23]As in the 1999 Australian republic referendum (Davidson et al. 2006), the pro-change side made a positive case for change, while the pro-status quo side emphasized the risks of change.

support of the elderly and the town council vote in their favour functioned as cues for uninformed voters (Christin et al. 2002; LeDuc 2002).

On the other side, the energy firm KWR cleverly used the town council meeting to spread doubts about the economic viability of the environmentalists' bid. KWR's tactic of addressing the voters over the heads of the town council may be seen as their only truly effective action. KWR had the advantage of representing the status quo (Christin et al. 2002), but it seems that they underestimated the environmentalists throughout. In the campaign, the Goliath effect kept them from spending as much as they would have wanted to. We should note here that the Goliath effect only exists because the environmentalists managed to turn the size of KWR's lobbying effort against them. This effect is therefore another token of the quality of the environmentalists' campaign. Finally, the Citizens' Initiative, while necessary for KWR to stand a chance at all, did not have the motivation, coherence and skills to make the difference.

7 Modeling Issues

In this section, we shall analyze the referendum campaign in Schönau from the perspective of the theory of the rent seeking contest. Taking the size (Table 1) and the nature of the lobbies' efforts as our point of departure, we shall see how this case study can enrich the theory.

The first point to note is the low level of KWR's lobbying input relative to its stake, tentatively calculated in Sect. 5.1 as 8.5 m DM. The apparently low level of rent seeking effort is a general phenomenon that has puzzled researchers (Tullock 1997). Two main reasons can be given for KWR's low effort level.

The first reason is that we have to distinguish between the lobbying inputs of money (be it spent on material, wages or external services) and spare time. Spare time was by far the most productive input. As a firm, KWR did not have direct access to spare time, and thus its money input was of limited use.

Further evidence of the superior importance of spare time relative to money comes from observing the input choices of the environmentalists EWS and the pro-KWR Citizens' Initiative. Both had practically zero opportunity cost of spending money. The Citizens' Initiative's expenditures were covered by KWR, and EWS planned to acquire funds from sponsors. But however cheap their money was, EWS and CI did not spend large sums. This indicates that the lobbying productivity of money is low. Spare time, however, was a precious lobbying input. The environmentalists' stake was so high that they spent all their spare time campaigning. The Citizens' Initiative did not spend nearly as much time, because their stake was much lower.

Rent seeking theory has, until now, mainly regarded lobbying effort as a homogeneous good. In order to model complementarity between time and money, one can define x_i as lobby i's effective or aggregate lobbying output. This output is

then a composite of time x_i^T and money x_i^M. Complementarity implies: [24]

$$\frac{\partial^2 x_i \left(x_i^T, x_i^M\right)}{\partial x_i^T \partial x_i^M} > 0.$$

We could go even further by modeling extra money, unmatched by extra time, as completely useless. Then, with suitable choice of units, time and money would be complementary for $x_i^T > x_i^M$, but $x_i = x_i^T$ for $x_i^T \leq x_i^M$. In our application, EWS and CI had spare time and money available as substitutes, while KWR could only spend money (either on expenses or personnel).

Epstein and Hefeker (2003) model a contest between two parties who have two inputs, or instruments, available for lobbying. The instruments are complementary, with one input being essential and the other optional. However, in our application it seems more appropriate to model both spare time and money essential to EWS and CI. Arbatskaya and Mialon (2010) axiomatize the contest success function for a multi-activity contest between two players.

Schoonbeek (2007) models a contest between two parties who can either compete themselves, using one instrument, or hire a delegate who can use two instruments, as in Epstein and Hefeker (2003). In our application, CI could be seen as KWR's delegate. However, there are several differences between the contest in Schoonbeek (2007) model. First, CI had a stake in the contest, whereas Schoonbeek's (2007) delegates do not have any stake. Secondly, KWR paid all of CI's monetary expenses, whereas in Schoonbeek's (2007) model a player offers the delegate a contingent fee. Thirdly, in Schoonbeek's (2007) model a delegating player does not compete, but KWR itself also competed in Schönau. Finally, EWR had spare time and money at its disposal, whereas in Schoonbeek's (2007) model it would only have one input.

The second reason for the small lobbying effort by the electricity firm KWR is that they experienced the Goliath effect: the size of their lobbying effort worked against them. It would be interesting to model the possibility that success probability becomes declining in own effort. One can introduce the Goliath effect for KWR in the contest success function from Sect. 3.1.2, while retaining the simple Tullock (1980) form for the environmentalists and the Citizens' Initiative's efforts by setting:

$$f_E \left(x_E\right) = x_E,$$

$$g \left(x_K, x_C\right) = g_K \left(x_K\right) + x_C, \ g_K \left(x_K\right) = \frac{\left(x_K + 1\right)^r}{r} - 1,$$

---

[24] As long as it is not of the strict Leontief type.

with $0 < r < 1$, so that $g_K'(0) = 1$ and $g_K'' < 0$. A further distinction can be made between a weak Goliath effect, where g_K is monotonically increasing in x_K, and a strong Goliath effect, where g_K is decreasing for large x_K.[25]

When modeling the Goliath effect, David should also be taken into account. EWS could only play on the Goliath effect because they had limited means themselves. Thus, David players should be equipped with a budget constraint.

Another point to note with respect to lobbying activity is that KWR paid for all the expenses run up by CI. Thus, the support mechanism analyzed by Dijkstra (1998) was at work, but it was differentiated with respect to lobbying inputs. There was full support for one lobbying input (money), but no support for the other (time). This is arguably the maximum support that KWR had to offer. Had KWR paid CI for their time, they would have destroyed the very nature of this highly productive input. Full support of money input can therefore be regarded as a corner solution. Lobbying activity by CI was very important for KWR, so they supported the Initiative as much as they could.

Although KWR and CI were on the same side and KWR supported CI, both KWR and CI had positive lobbying efforts. This limits the class of contest success functions applicable to the Schönau contest. We have noted in Sect. 3.1.2 that with the simple Tullock (1980) contest success function, KWR remains inactive in the contest when they have supported CI.

The difference between the simple Tullock (1980) function and the referendum campaign is that in the Tullock function, lobbying efforts by KWR and CI are perfect substitutes: they are added up and treated as if they came from one agent. However, lobbying effort by KWR and CI was in fact complementary. KWR supplied the factual information and conveyed the image of experience and reliability, whereas CI made an emotional appeal to the voters.

Finally, we saw that the environmentalists classified voters into "Yes", "No" and "undecided", and targeted specific voter groups. The Citizens' Initiative saw it as their main task to mobilize lukewarm support. This points to the need for including heterogeneity of voters in a contest model for a referendum campaign. For instance, as is common practice in voting models, voters can be placed in a continuum between the "Yes" and "No" alternatives. The closer a voter's position to the lobby's alternative, the easier it will be for the lobby to obtain this vote. Another element to be included is that a lobby should not only get a voter to prefer its option, it should also increase this preference to a level where the voter will actually go and vote.

---

[25]Note that the CSF with the Goliath effect is not homogeneous of degree zero: A doubling of everyone's effort would not leave p unchanged, indeed it would reduce p. Homogeneity of degree zero is often seen as a desirable property of a CSF (e.g., Skaperdas 1996; Münster 2009).

8 Conclusion

After the introduction of a simple contest success function by Tullock (1980), the theory of the rent seeking contest has expanded in many ways. By far the largest proportion of the contributions are hardly motivated by empirical considerations. This can be partly explained by the difficulty of performing empirical research into rent seeking activities. However, one promising field of empirical research has been overlooked so far. These are referendum campaigns.

In this paper, we have analyzed a referendum campaign between environmentalists and an electricity firm with its allies in the small German town of Schönau. This campaign can fruitfully be analyzed as a contest. The players interviewed present a consistent picture of the relations between efforts, stakes and success probability. The contest did have a number of special features that have not been modeled before, but this is more a reason for modeling these features as well rather than rejecting the applicability of the contest model.

The issues worth modeling are first, that lobbying inputs should be diversified into money and spare time. Time has emerged as the more productive and the key strategic variable. We are convinced that this is a central feature of many political campaigns; especially when they take place in a regional or local setting. But even national election campaigns rely heavily on the time input of (party) members, who voluntarily organize campaign booths on the marketplace etc. Secondly, the electricity firm seems to have suffered from a "Goliath effect", rendering its efforts progressively less productive. Thirdly, we found evidence of complementarity between efforts by lobby groups on the same side. Finally, in a rent seeking contest for a referendum, voter heterogeneity and turnout should be taken into account.

References

Arbatskaya, M., & Mialon, H. M. (2010). Multi-activity contests. *Economic Theory, 43*, 23–43.

Baik, K.-H. (1994). Effort levels in contests with two asymmetric players. *Southern Economic Journal, 61*, 367–378.

Baik, K.-H., & Kim, I.-G. (1997). Delegation in contests. *European Journal of Political Economy, 13*, 281–298.

Ben-Bassat, A., Dahan, M., & Klor, E. F. (2015). Does campaign spending affect electoral outcomes? *Electoral Studies, 40*, 102–114.

Benito, B., Bastida, F., Ríos, A.-M., & Vicente, C. (2014). The causes of legal rents extraction: Evidence from Spanish municipalities. *Public Choice, 161*, 367–383.

Beviá, C., & Corchòn, L. C. (2015). Relative difference contest success function. *Theory and Decision, 78*, 377–398.

Che, Y.-K., & Gale, I. (1997). Rent dissipation when rent seekers are budget constrained. *Public Choice, 92*, 109–126.

Christin, T., Hug, S., & Sciarini, P. (2002). Interests and information in referendum voting: An analysis of Swiss voters. *European Journal of Political Research, 41*, 759–776.

Clark, D. J., & Riis, C. (1998). Contest success functions: An extension. *Economic Theory, 11*, 201–204.

Congleton, R. D., Hillman, A. L., & Konrad, K. A. (2008). *40 years of research on rent seeking*. New York: Springer.

Cornes, R., & Hartley, R. (2005). Asymmetric contests with general technologies. *Economic Theory, 26*, 923–946.

Cornes, R., & Hartley, R. (2007). Aggregative public good games. *Journal of Public Economic Theory, 9*, 201–219.

Cornes, R., & Hartley, R. (2012). Risk aversion in symmetric and asymmetric contests. *Economic Theory, 51*, 247–275.

Davidson, S., Fry, T. R. L., & Jarvis, K. (2006). Direct democracy in Australia: Voter behaviour in the choice between constitutional monarchy and a republic. *European Journal of Political Economy, 22*, 862–873.

Decheneux, E., Kovenock, D., & Sheremeta, R. M. (2015). A survey of experimental research on contests, all-pay auctions and tournaments. *Experimental Economics, 18*, 609–669.

Del Rosal, I. (2011). The empirical measurement of rent-seeking costs. *Journal of Economic Surveys, 25*, 298–325.

Dijkstra, B. R. (1998). Cooperation by way of support in a rent seeking contest for a public good. *European Journal of Political Economy, 14*, 703–725.

Dijkstra, B. R. (1999). *The political economy of environmental policy: A public choice approach to market instruments*. Cheltenham (UK): Edward Elgar.

Epstein, G. S., & Hefeker, C. (2003). Lobbying contests with alternative instruments. *Economics of Governance, 4*, 81–89.

Erikson, R. S., & Palfrey, T. R. (2000). Equilibria in campaign spending games: Theory and data. *American Political Science Review, 94*, 595–609.

Graichen, P. R. (2003). *Kommunale Energiepolitiek und die Umweltbewegung: Eine Public-Choice-Analyse der "Stromrebellen" von Schönau*. Frankfurt/New York: Campus Verlag.

Graichen, P. R., Requate, T., & Dijkstra, B. R. (2001). How to win the political contest: A monopolist vs environmentalists. *Public Choice, 108*, 273–293.

Herrera, H., & Mattozzi, A. (2010). Quorum and turnout in referenda. *Journal of the European Economic Association, 8*, 838–871.

Hillman, A. L. (1989). *The political economy of protection*. London: Harwood Academic Publishers.

Hillman, A. L., & Riley, J. G. (1989). Politically contestable rents and transfers. *Economics and Politics, 1*, 17–37.

Hillman, A. L., & Ursprung, H. W. (1988). Domestic politics, foreign interests, and international trade policy. *American Economic Review, 78*, 729–745.

Hirshleifer, J. (1989). Conflict and rent-seeking success functions: Ratio versus difference models of relative success. *Public Choice, 63*, 101–112.

LeDuc, L. (2002). Opinion change and voting behaviour in referendums. *European Journal of Political Research, 41*, 711–732.

Liston-Heyes, C. (2001). Setting the stakes in an environmental contest. *Journal of Environmental Economics and Management, 41*, 1–12.

Loehman, E., Quesnel, F. M., & Babb, E. M. (1996). Free-rider effects in rent-seeking groups competing for public goods. *Public Choice, 86*, 35–61.

Long, N. V. (2013). The theory of contests: A unified model and review of the literature. *European Journal of Political Economy, 32*, 161–181.

Münster, J. (2009). Group contest success functions. *Economic Theory, 41*, 345–357.

Nti, K. O. (1998). Effort and performance in group contests. *European Journal of Political Economy, 14*, 769–781.

Nti, K. O. (1999). Rent-seeking with asymmetric valuations. *Public Choice, 98*, 415–430.

Powell, B. (2012). Coyote ugly: The deadweight cost of rent seeking for immigration policy. *Public Choice, 150*, 195–208.

Schneider, F., & Naumann, J. (1982). Interest groups in democracies-How influential are they? An empirical examination for Switzerland. *Public Choice, 38*, 281–303.

Schoonbeek, L. (2007). Delegation with multiple instruments in a rent-seeking contest. *Public Choice, 131*, 453–464.

Skaperdas, S. (1996). Contest success functions. *Economic Theory, 7*, 283–290.

Tullock, G. (1967). The welfare cost of tariffs, monopoly and theft. *Western Economic Journal, 5*, 224–232.

Tullock, G. (1980). Efficient rent seeking. In J. M. Buchanan, R. D. Tollison, & G. Tullock (Eds.), *Toward a theory of the rent-seeking society* (pp. 97–112). College Station: Texas A&M Press.

Tullock, G. (1997). Where is the rectangle? *Public Choice, 91*, 149–159.