

Power Constraints on Collective Action in Transition: Irrigation Systems in Bulgaria

Insa Theesfeld¹

Abstract

In Bulgaria's irrigation sector prevails a large discrepancy between formal and effective governance institutions. The irrigation facilities are largely deteriorated and only a small percentage of the fields equipped with irrigation devices is actually irrigated. The government failed with its formal attempts to solve the problem by establishing collective action management in the irrigation sector. Water user associations were only formally created. In practice, they are neither functioning nor familiar to the farmers in the respective village. There seems to be no common ground where collective action can grow. Instead, local actors use power asymmetries to maintain and strengthen their opportunistic strategies. Power abuse is assumed to have a strong and direct impact on the individual actor's decision in favor of or against collective action.

Inspired by the Distributional Theory of Institutional Change (Knight 1992), an innovative approach is elaborated on to empirically reveal power resources and compare them with their theoretical examination. The conducted approach marks a step toward a better operationalization of the concept of power.

Using statistical procedures, it is tested if there are differences in the assessment of the power resources between different subgroups. However, the power resources and their ranking are robust against the impact of belonging to different territorial, social and agricultural producer groups. The power resources hold the following mean ranks: 1) unrestricted access to information is assessed as most important followed by 2) personal relationship, 3) trustworthiness, 4) cash resources for bribing, 5) menace, and 6) physical power and violence. In order to improve existing and effective local institutions a profound understanding of their development is needed. The abuse of the six power resources affects the choice of governance structures in the irrigation sector, such as water appropriation or maintenance rules. The power resources provide, in particular, an indication of possible constraints for improving existing institutions of local resource governance. In addition, the ranking indicates the effects of power resources on other actors, as it expresses the perceived importance of power resources.

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1 Introduction

In Bulgaria's current irrigation sector we observe a large discrepancy between formal and effective institutions for resource governance. Collective action management solutions have been propagated for more sustainable resource use from the Bulgarian government and the World Bank in recent years. The Bulgarian government enacted two new laws: the Bulgarian Water Law, implemented in January 2000, and the Water User Association Act, which came into force in March 2001. The aim was to reform and decentralize the former centrally planned water sector and to increase the involvement of local actors. Most of the established water user associations, however, were only formally created. In practice, they are neither functioning nor familiar to the farmers in the respective villages. Regardless of these formal efforts, little collective action in the irrigation sector has been observed in Bulgarian villages. Present formal attempts seem to find no common ground where collective action can grow.

Instead we observe ongoing deteriorating of the facilities, and only a small percentage of the fields equipped with irrigation devices is actually irrigated. Chaotic water appropriation rules and insecure and ineffective property rights prevail (Penov et al. 2003).

Irrigation water and infrastructure are common-pool resources. Recently, common-pool resource scholars call to take distributional aspects and power relations into account when analyzing institutional change in common-pool resource management (Meinzen-Dick, Raju and Gulati 2002: 652; Agrawal 2001: 1650-1656). The way benefits are distributed among various actors is decisive and the respective political weight of the latter can influence the likelihood of institutional change (Baland and Platteau 1998: 649). When social dilemmas are solved and new rules implemented, some people benefit more than others. Indeed, some may even benefit at the expense of others. Local actors use power asymmetries to maintain and strengthen their opportunistic strategies.

Information asymmetry, incongruity of formal and informal rights, and low social capital as transition-specific features build the basis for power abuse, which is defined as the individual expression of the opportunistic behavior of different actors. Certain characteristics of irrigation transactions, which also reflect the resource characteristics and infrastructure settings, can support the power abuse strategies of individual actors. Power abuse in this study is a transition-specific feature that has a strong and direct impact on the individual actor's decision in favor of or against collective action. Furthermore, it has a negative impact on social capital development, which would facilitate collective action. Power abuse represents an explanatory variable, i.e. a determinant, for Bulgaria's institutional change in an irrigation sector in transition (Theesfeld 2004).

In this paper, I will investigate on the power resources which allow actors to keep powerful positions and to benefit from them. Power resources of local actors in the irrigation sector are empirically revealed and compared with their theoretical examination in the Distributional Theory of Institutional Change (Knight 1992). An empirical approach marks a step toward a better operationalization of the concept of power. Together with a statistical model, this approach weighs each power resource. In particular, this ranking indicates the effects of power resources on other actors, as it expresses the perceived importance of power resources.

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2 Distributional Theory of Institutional Change

The Distributional Theory of Institutional Change (Knight 1992; 1995) seems to fulfil the requirements of a theory that is able to explain the phenomenon of institutional change in a transition country and, moreover, the complexity of interactions in the irrigation sector. Knight's (1992: 126) approach focuses on power asymmetries of actors as the main determinant of institutional change. Knight argues that institutions should better be explained as a by-product of strategic conflicts over distributional gains than in terms of a Pareto-superior response to collective goals or benefits.

The asymmetries of power in a community are those factors that influence the capacity of strategic actors to determine the content of institutional rules. Knight (1992: 41) defines power as follows: "to exercise power over someone or some group is to affect by some means the alternatives available to that person or group". The institutional development is determined by the parties' relative abilities to force others to act in ways contrary to their unconstrained preferences. This explains why institutional development becomes an ongoing bargaining game between actors (Knight 1992: 127).

To explain interactions as bargaining problems, Knight (1992: 128) transforms the Prisoner's Dilemma game into a bargaining problem (Table 1). It is a game with two alternatives for each player and two equilibria which differ in their distributional consequences, favoring one or the other actor (Knight 1995: 107).

Table 1: The basic bargaining game

Player A	Player B	
	L	R
L	Δ_A, Δ_B	$x, x + \varepsilon_B$
R	$x + \varepsilon_A, x$	Δ_A, Δ_B

Source: Knight (1992: 129)

If we set $\Delta_{A, B} < x$, there will be two equilibrium outcomes, the R, L and the L, R strategy combination that can solve the bargaining problem. The Δ values are the breakdown values, i.e. the payoffs the actors receive if they fail to achieve one of the equilibrium outcomes or in other words a measure of the costs of non-coordination. Setting $\varepsilon_{A, B} > 0$, the ε value represents the distributional advantage belonging to one of the actors if a particular equilibrium outcome is chosen. The main goal for all actors is therefore to achieve ε .

The different actors are characterized by different payoffs. If breakdown values are unequal ($\Delta_A > \Delta_B$ or $\Delta_A < \Delta_B$) we must assume an asymmetric bargaining power. The strategic and powerful actor can bind the rational choice of the other actor by adhering to a strategy, which means a distributional disadvantage for the latter (Knight 1992: 127). This single interaction is repeated later on with other actors having a similar power distribution. Repetition creates stabilized expectations and common knowledge, if actors are clearly identifiable and if features are characteristic for a large part of the society. Under these conditions a self-enforcing informal institution can be established (Knight 1997: 698). The powerful actor in turn estimates the usefulness of formalizing this norm (Knight 1992: 182). When either the relative bargaining power changes or the distributional consequences, institutional change will emerge once again, and institutions will be adapted to the currently prevailing power distribution (Knight 1992: 145-151).

The bargaining power of the actors is a function of their resource provision (Knight 1992: 42) and thus, we can limit the sources of power asymmetries to differences in resources of the actors, which are described in the next paragraph.

In game theory, the term 'power' stands for the fact that one actor is able to survive several rounds of the game without a co-operative solution. This could be due to his stock of assets, or it might stem from the fact that he would bear relatively lower opportunity costs (Knight

1992: 132). This power resource can be named *exit costs* (Schlüter 2001: 91) and describes the breakdown values, which measure the costs of non-coordination. *Risk behavior* is the second power resource. Risk behavior is closely linked to resource availability. A higher provision with resources leads to a higher level of risk acceptance (Knight 1995: 109). Knight (1992: 44-47) points out that uncertainty hampers the establishment of institutions that can produce distributional advantages. Uncertainty leads the actors to an increasing discount of the future. The more we discount our future, the more we will base our present institutional choices on short-term distributional gains (Knight 1992: 46; Knight and North 1997: 352). Accordingly, *time preference* represents another power resource. Bargaining is expensive and those actors with higher patience, i.e. with a lower time preference, will have advantages in the bargain (Knight 1992: 135). Another power resource is *credible commitment*. The crucial point is to convince a social actor to accept the commitment of another actor (Knight 1995: 108-109). By a binding commitment, an actor determines the choice of others (Knight 1992: 129). *Sanction power* enables actors to push their alternative, but this is mostly unequally distributed. Sanctioning is a mechanism that ensures commitment. In general, sanctions reduce the expected benefits of non-compliance and make compliance a more beneficial long-term strategy (Knight 1992: 179). The *organisability of a group* is mentioned as a power resource by Knight (1992: 197-202), particularly at the political level. The bargaining power of actors depends on their ability to organize and act collectively. It is a crucial ability of group leaders to maintain discipline and unity and to resolve the free-riding problem, which reduces the groups' bargaining power. *Information* represents the key power resource (Knight 1992: 41). Information and information asymmetries are important in influencing actors' evaluations of individual alternatives, hiding institutional alternatives, or adding new alternatives (Knight 1992: 46). In environments of imperfect information, advanced education, and privileged access to specific media and sources of information, or greater experience become increasingly important. Therefore, we should expand the variable information to the notion of *knowledge* which comprises information and skills. We should not neglect additional determinants, which represent sources of power asymmetries. Thus, the relative *transaction costs* of an alternative are a power resource (Schlüter 2001: 99). Transaction costs represent rather an aggregated category including aspects of other power resources, such as access to information or sanction power. Transaction costs change the distributional consequences of the bargaining outcome for an actor, as it affects the payoffs of co-operation. *Positional power* is an additional power resource. Positional power could come from the strategic position, which gives an actor for example access to important information, controlling power over assets or the opportunity to carry out credible threats (Shleifer and Treisman 1998: 20). A special form of positional power refers to the positional power of existing networks. The bargaining power of existing **networks** is a significant source of power, which is of extreme importance in transition countries. The nomenklatura effect is especially obvious here and refers to the fact that the former communist elite continues to hold positions of power (Balcerowicz 1995: 54, 160, 355).

3 Methodology

The study is based on six months of empirical fieldwork subdivided into three phases spanning two and a half years. In addition to interviews with experts in Sofia and with representatives of the regional administration, two kinds of case studies were conducted: 1) In the first research phase, 17 village case studies provided an overview of the irrigation situation in the villages and allowed for a rough analysis of the main hypotheses. 2) In the two following research phases, four in-depth village case studies were carried out. Two irrigation command areas were selected. In each area, two villages were chosen with one village located directly behind the water dam (top-ender) and the other further back – at the middle or tail-end of the canal and river system.

With the help of explorative and qualitative methods in the first two research phases, I analyzed the institutional change in Bulgaria's irrigation sector. Among other aspects, driving

forces and constraints for institutional options to govern the common-pool resource were investigated. I revealed power resources of local actors in the irrigation sector, which were assessed as decisive by the local actors. Further, I validated these resources (see Table 2). In the third empirical phase, interactive interview techniques were applied. A set of six cards representing the main power resources of local actors, which came out of the previous analysis, was handed out to 78 interviewees in the four case study villages. Besides village affiliation (Village A, N=18; Village B, N=22; Village C, N=20 and Village D, N=18), interviewees were further classified into two subgroups. The first group included both local community leaders (N=17), such as the mayor, the co-operative manager, certain tenants, the spokesman of the Turkish minority or very active agricultural producers, whom other community members attested leader functions, and non-leaders (N=61). The second group represented subsistence farmers (N=44) and agricultural producers (N=34). Interviewees could arrange and rearrange the cards until they were satisfied and would present their rankings. As compared to the questionnaire technique, this technique ensures that interviewees choose more consciously and are able to reflect what they answer. The interviewees were asked to rank the features of actors in the irrigation process in descending order.

4 Empirically Derived Power Resources

In analyzing power, various actors must be compared. A major difficulty is that one power resource might be offset by another resource of an opposed actor (Morris 1987: 144). Moreover, power cannot be directly studied; it can only be inferred from other evidence. It was difficult to verify Knight's resource provisions as power resources: First, the important factor is not a person's resource possession and potential use of power, but their actual exercise of it. Thus, an actor's willingness to put his power resource (and not the potential) into the bargain is decisive. Second, not the exercise of power is decisive, but an actor's subjective perception to determine the power of the opposed actor. Therefore, we cannot simply measure a resource, because the resource is determined by the effects it produces on other actors (Morris 1987: 139).

In general, only a few empirical efforts have been made to assess the relative merits of the different theories of institutional change (Knight and North 1997: 349). The comparison of the theoretical examination of power with the empirical research on power is a particular challenge. Williamson (1996) points out that power has not been an operational concept but rather a tautological concept. In his view, the discussion of power is an exercise in *ex post* rationalization, i.e.: "Power is ascribed to that party which, after the fact, appears to enjoy the advantage" (Williamson 1996: 23). Williamson's critique invokes the propensity to myopically examine power and the missing unit of power analysis. Scholars agree that the problem of empirical studies on power has not yet been solved satisfactorily (Morris 1987: 124). To cope with this challenge, Morris (1987: 145-151) insists on a profound understanding of the culture and society and rejects studying power in isolation. This study tries to contribute to the empirical analysis of power by investigating the power resources of local actors in their social context and their daily work in the Bulgarian irrigation sector. Inspired by the Distributional Theory of Institutional Change, an innovative comprehensive approach is elaborated on to empirically analyze power resources. The conducted approach is a step toward making the concept of power operational. This approach combines several stages: 1) filtering and exploring relevant power resource, 2) revealing and validating these power resources, and 3) having them valued and ranked recurrently by the respective actors. The subsequent section outlines the empirically derived power resources and compares them with their theoretical examination.

Table 2: Empirically derived power resources

Empirical power resources	Comparability with theory	Effects on the bargaining model
Access to information	Possessing information as a key power resource (Knight 1992)	Distributional consequences of bargaining outcomes
Personal relationship		Relative bargaining power
Trustworthiness	Credible commitment as a key power recourse (Knight 1992)	Relative bargaining power
Cash resources for bribing		Distributional consequences of bargaining outcomes
Menace	Credible threats of retaliation as a minor power factor (Knight 1992)	Relative bargaining power
Physical power and violence		Relative bargaining power

It is not surprising that the empirical study confirms possession of information and the possibility to govern information as power resources (Theesfeld 2005). The local actors focus on a slightly different aspect, namely accessibility, by naming the variable *unrestricted access to information*.

Personal relationship is here understood as good personal relationship to the ‘right’ person. When we recall that we analyze rural communities, it is not astonishing that social networks are highly appreciated. Actors who cultivate good personal relationships to decision makers in the irrigation process are more powerful.

Trustworthiness is closely linked to credible commitment and is one of the key power resources also highlighted by Knight (1992).

Corruption is a strategy occurring quite frequently in irrigation systems, because irrigation institutions create many such opportunities. *Cash resources for bribing* can change the distributional consequences of bargaining outcomes and are, consequently, a power resource. The power resource *menace* ranges from the ability to threaten people with social sanctioning, including social exclusion, libel and slander to fears of harming business relations, extortion or violence. Menace as a power resource is the threat posing power to keep people in fears and misgivings. For Knight (1992: 136), threat is no direct power resource as he does not consider it explicitly. In the empirical context of this study, fears and misgivings turn out to be present and therefore the ability to credibly menace others is a power resource.

Physical power and violence is still common practice in Bulgaria. Physical strength and use of violence is a power resource of local actors. The participative observation provided much evidence that this power resource is still important, such as brawls in the pubs or in the fields.

5 Nonparametric Modeling for the Assessment of Power Resources

The 78 probationers ranked six power resources of local actors by importance in descending order. These power resources are the six dependent variables listed in Table 3. Some of those variables are correlated, such as ‘menace’ and ‘physical power and violence’. However, they are not combined to one power resource, as this would lead to a loss of the precise gradation by the local actors.

Table 3: Structured variables and statistical tests

Independent variables	Dependent variables and labels					
	Unrestricted access to information	Personal relationship	Trustworthiness	Cash resources for bribing	Menace	Physical power and violence
	INFO	PERE	TRUST	BRIBE	MENACE	VIOL
Village A	Kruskal-Wallis	Kruskal-Wallis	Kruskal-Wallis	Mann-Whit. (6 pairs)	Mann-Whitney	Mann-Whitney
Village B						
Village C						
Village D						
Leader	Mann-Whitney	Spearman		Mann-Whitney		
Non-leader						
Subsistence farmer	Spearman			Mann-Whitney		
Agricultural Producer						

Nonparametric procedures are performed, because this is appropriate if rank data in an ordinal scale are available for analysis (Daniel 1978; Bortz et al. 2000). For the purpose of this analysis, the Spearman correlation coefficient, the Kruskal-Wallis H test and the Mann-Whitney U test are computed. To facilitate orientation, Table 3 gives an overview of variables and statistical tests performed. Tied values occur when two or more observations are equal. For instance, more probationers scored 1 or 2 on the variable PERE. In practical empirical work, those ties often occur (Bortz et al. 2000). The statistical programs used, deliver results corrected for ties.

5.1 Spearman Correlation Coefficient

The Spearman correlation is a commonly used nonparametric measure of correlation between two ordinal scaled variables. Two prominent methods for examining the relationship between pairs of ordinal variables are available – Spearman’s rho (ρ) and Kendall’s tau (τ). Since Spearman’s rho is more commonly used it is preferable to report this statistic unless there are obvious reasons for thinking otherwise. The raw data fulfill the assumptions required for this test.³ The Spearman correlation is a nonparametric version of the Pearson correlation coefficient, based on the ranks of the data rather than on the actual values. For all the cases, the values of each of the variables are ranked from smallest to largest, and the Pearson correlation coefficient is computed on the ranks. Values of the coefficient range from -1 to $+1$. The sign of the coefficient indicates the direction of the relationship and its absolute value indicates the strength, with larger absolute values indicating stronger relationships. The significance levels depict the probability of obtaining results in the population as extreme as the one observed in the sample. I used a two-tailed test which refers to a null hypothesis in which the direction of an effect is not specified in advance. The Spearman coefficient is computed to test in a first run the relationship of the assessment of ‘leaders’ and ‘non-leaders’ and in a second run the relationship of the assessment of ‘subsistence farmers’ and ‘agricultural producers’.

³ A) The data consist of a random sample of n pairs of numeric or nonnumeric observations. Each pair of observation represents two measurements taken on the same object. B) If ties occur among the X’s or among the Y’s, each tied value is assigned the mean of the rank positions for which it is tied (Daniel, 1978: 300).

The correlation coefficient of 0.943 for the first run shows a relatively strong positive correlation of both groups. Thus, there is a tendency for ‘leaders’ and ‘non-leaders’ to assess the variables in a similar way. For the second run, the Spearman coefficient also reveals a strong positive correlation between ‘subsistence farmers’ and ‘agricultural producers’. Accordingly, there is a high tendency that these subgroups assess the variables similarly.

5.2 Kruskal-Wallis H Test for More Than Two Unrelated Samples

The Kruskal-Wallis one-way analysis of variance by ranks is the most widely used nonparametric technique for testing the null hypothesis stating that several independent samples -- here four villages -- have been drawn from the same sample. It is the nonparametric equivalent to one-way ANOVA.⁴ The Kruskal-Wallis test is considered more powerful than the Median test, another nonparametric multisample test. The Kruskal-Wallis test assumes that the underlying variable has a continuous distribution and the sample tested is similar in shape.⁵ Also, the data fulfil the other assumptions required by this test.⁶ The Kruskal-Wallis test is preferred when the available data are measured on at least the ordinal scale (Daniel 1978: 200). If the p-values are less than 0.05, the null hypothesis for the Kruskal-Wallis test, which is outlined in the following, can be rejected.

H₀: The four populations distribution functions are identical or there is no difference in the assessment of one variable between the villages.

H₁: The four populations do not all have the same median or there is a difference between the village distributions.

The Kruskal-Wallis test is computed six times. One run for each dependent variable, representing the assessment of one power resource. The independent variable ‘village’ denotes the four different case study villages. Table 4 summarizes the p-values. Only for the variable BRIBE, the p-value is <0.05. This leads to rejection of the null hypothesis. Accordingly, a significant difference in the assessment of BRIBE between the VILLAGE samples exist. All the other p-values show no difference in the assessment of the variables for the villages at the 0.05 level of significance.

Table 4: Kruskal-Wallis p-values

	Run I	Run II	Run III	Run IV	Run V	Run VI
Variables	INFO	PERE	TRUST	BRIBE	MENACE	VIOL
Significance (p-values)	.101	.573	.402	.019	.606	.231

Although, the Kruskal-Wallis test depicts the significant difference of BRIBE, it does not precisely specify between which of the four samples. To answer this question in detail, it has to be tested which samples in pairs differ from one another. According to statistical procedure, this is done in a second step with the Mann-Whitney U test.

5.3 Mann-Whitney U Test for Two Unrelated Samples

The Mann-Whitney test compares the number of times a score from one of the samples is ranked higher than a score from the other sample rather than the number of scores which are above the median. The latter is the statistic procedure of the Median test which is therefore considered less powerful. The Mann-Whitney test is a nonparametric equivalent to the T test. It tests whether two independent samples are from the same population. The assumptions

⁴ ANOVA stands for ‘analysis of variance’

⁵ The data were successfully tested for their continuous distribution with the Chi-Square test.

⁶ A) The data for analysis consist of k random samples of sizes n₁, n₂, ... n_k. B) The observations are independent both within and between samples. C) The variable of interest is continuous. D)The measurement scale is a least ordinal. F) The populations are identical except for a possible difference in location for at least one population. (Daniel, 1978: 2001)

required for the Mann-Whitney test are fulfilled.⁷ Two-sided nonparametric analyses is performed which test null hypotheses in which the direction of an effect is not specified in advance. This implies the following hypotheses:

H_0 : The populations have identical distributions.

H_1 : The populations differ with respect to location.

In Table 3 an overview is given of the eleven different runs of the Mann-Whitney test. The first and second runs of the test specify the results of the Spearman correlation. In the first run, the two-sample data 'leaders' and 'non-leaders' are compared. It is questioned if there is a significant difference in the distribution in the assessment of 'unrestricted access to information' between the populations 'leaders' and 'non-leaders'. The asymptotic significance, the p-value of 0.025 leads to the rejection of the null hypothesis (with a significance level of 5 %). Accordingly, there is a significant difference between 'leaders' and 'non-leaders' in the mean ranking of the ordinal scaled variable INFO.

In the second run, the Mann-Whitney test is used to test the null hypothesis that there is no difference in the assessment of 'cash resources for bribing' between the populations 'leaders' and 'non-leaders'. With an asymptotic significance level of 0.931 H_0 cannot be rejected.

A third run tested the null hypothesis that there is no difference in the assessment of 'cash resources for bribing' between the populations of 'subsistence farmers' and 'agricultural producers'. A probability of 53 % indicates that the null hypothesis cannot be rejected. There is no significant difference between these groups in the assessment of BRIBE.

In Village D, a tenant cultivates a large percentage of the village agricultural land. His decisions on the village have even further impact than those of the mayor. Moreover, he enforces his production techniques, including his irrigation practices, against the villagers with physical power. These findings lead to the hypothesis that villagers in Village D will add more weight to the power resources MENACE and VIOL in the irrigation sector than villagers from the other case study villages. Therefore, the Mann-Whitney test is computed for the null hypothesis that the population of Village D and the population in all three other villages have identical distributions in the assessment of MENACE. The outputs of the statistic procedure indicate that with a p-value of 0.233 H_0 cannot be rejected. The statistical inference for the variable 'physical power and violence' is similar. The null hypothesis that the population of Village D and the population in all three other villages have identical distribution in the assessment of VIOL cannot be rejected.

One result of the Kruskal-Wallis test was the significantly different assessment of the variable BRIBE in the four villages, which can be further analyzed in pairs with the Mann-Whitney test. The p-values show that there are significant differences between the assessment of BRIBE in villages A and B as well as between villages A and C. Likewise, the differences between the assessment of BRIBE between villages D and B as well as between villages D and C are significant.

According to the analyzed sample, the statistical inferences of the nonparametric modeling could be summarized as follows:

- 1) The relationships of the assessment of 'leaders' and 'non-leaders' and of the assessment of 'subsistence farmers' and 'agricultural producers' are in both cases strong and similarly directed.
- 2) With the present sample, significant differences in the assessment of the power resources between the different subgroups could not be proven. Exceptions are INFO showing significant differences between 'leaders' and 'non-leaders' and BRIBE revealing significant differences between the various case study villages.

⁷ A) The data consist of a random sample of observations in both population 1 and 2. B) The two samples are independent. C) The variable observed is a continuous random variable. D) The measurement scale employed is a least ordinal. E) The distribution functions of the two populations differ only with respect to location, if they differ at all (Daniel, 1978: 82).

- 3) No proof could be obtained for the assumptions drawn from qualitative research that subgroups rank differently, such as a higher ranking of MENACE and VIOL in Village D.

6 Conclusions

Based on empirical work, six power resources of local actors in the irrigation sector are revealed. Some of those are similar to the ones discussed in the Distributional Theory of Institutional Change, others may complement the theoretical debate. I attempted to statistically weight each power resource and to develop a feeling for their influence. Theory usually stops at listing important determinants but the relation between them is lacking. Morris (1987: 144) already points out that we have to compare the power resources and add different weight on them.

Using statistical procedures, it is tested if there are differences in the assessment of the power resources between different subgroups. However, sample analysis show that living in different villages, being a leader or not and being a subsistence farmer or an agricultural producer had no significant influence on the ranking of power resources. The latter emphasizes that the power resources and their ranking are robust against the impact of belonging to different territorial, social and agricultural producer groups.

The power resources hold the following mean ranks: 1) unrestricted access to information is assessed as most important followed by 2) personal relationship, 3) trustworthiness, 4) cash resources for bribing, 5) menace, and 6) physical power and violence. This clear gradation of power resources at the local level is important to explain observed phenomena in the irrigation sector, such as the collection of water fees without maintaining of the irrigation system, the existence of water user associations on paper without the real participation of the water appropriators, or the frequent violation of the formal water appropriation rules.

The abuse of power resources affects the choice of governance structures in the irrigation sector, such as water appropriation rules or the foundation rules for water user associations (Theesfeld 2005). In line with Bulgaria's EU accession, foreseen for 2007, the country is confronted with numerous judicial reforms and approximation of legislation. New challenges will appear for agro-environmental policies and corresponding institutions that facilitate their effectiveness. But, rather than designing optimal new institutions, the existing ones have to be improved. Therefore, a profound understanding of the reasons for the existing rules-in-use is necessary.

This study provides empirical evidence that prevailing power abuse and opportunistic behavior of individual actors who strive for personal profits – these continue to be pressing issues in the rural communities and, in particular, in the irrigation sector.

The importance of power resources could be relevant when implementing national policies at local level as they contribute to success or failure of such policies. The WUA Act for example, does not seem to provide an adequate answer to these major cleavages in rural society. On the contrary, options for opportunistic behavior still exist. The ranking of power resources in this study indicates possible constraints for improving existing institutions of local resource governance.

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