

REGIONAL TRANSPORT NETWORKS AND INSTITUTION BUILDING : THE ROLE OF CO-OPERATION

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1. INTRODUCTION

Since the beginning of the sixties in western Europe car mobility and car ownership have increased considerably. Transport flows are still increasing rapidly, and even on the long run for instance for the Netherlands annual growth figures of 3 % or more are envisaged.

Unfortunately, the growth of mobility is not without problems. Mobility and especially car mobility has a deteriorating effect on the accessibility of economic centres and inner cities. Secondly, transport does influence environment and liveability negatively. The problems did result in a change of transport policy in many countries. Managing this mobility boom has become a challenge for most European governments, especially in urban areas.

In the paper it will be argued that co-operation, as a kind of institution building, can be an option to deal with transportation problems and that several variables influence co-operation. First, it is concluded that it is the government which has to deal with the problems. Second it is showed that fiscal federalism offers a theory which can be used to build an administrative structure. In this theory, (voluntary) co-operation gets an important role. Third, it is argued that the possibility and effectiveness of voluntary co-operation is influenced by a number of variables. Finally, the situation in the Netherlands is discussed and recommendations will be given to increase chances for and effectiveness of co-operation.

2. THE ROLE OF THE GOVERNMENT

The first question to be answered is : “Why has it to be the government who deals with the transport problem?” To answer this question, the difference between private and public goods is essential. With respect to pure private goods, exclusion is easy and competition is large. The prize mechanism functions. In the case of public goods, however, exclusion is difficult or impossible to achieve and competition is absent. The prize mechanism does not function. (Witbreuk, 2000)

In the case where the management of regional transport networks (infrastructure) is at stake, the transport network is the “good” to be managed (or to be produced). Exclusion of individuals of the use of the transport network is difficult to achieve. It will be very expensive to keep individuals from using the roads. The second characteristic of a pure public good, absence of competition, is

more dubious. In fact, when no one (or very few individuals) is using the transport network, competition is absent. In this case, the transport network can be classified as a pure public good. However, when many individuals use the network, crowding may appear. Congestion may be the result (Button, 1993; Ostrom et al, 1994). In that case, the transport network may be classified as a common pool good. A common pool good may be defined as a good characterised by a difficulty with respect to exclusion and a presence of competition (Witbreuk, 1997) Hence, the transport network may be a public good at first, but shifts towards the category of common pool goods as more individuals use the network. The good is lying somewhere at the continuum between pure public good and common pool good (Oakerson, 1981; Oakerson, 1992).

It can be concluded that, to deal with the mobility problems, it is the government who has to take action. And many countries did change their transport policy in order to reduce car mobility growth. Besides, governments recognised that tasks and competencies with regard to transport policy were distributed among various administrative levels. This fact was impeding an effective and coherent policy formulation and implementation. Consequently, in many countries (Witbreuk et al, 1998) discussions were held about the appropriate level of formulating and implementing transport policy, the role of various organisations with respect to the policy and the way in which tasks and competencies were distributed and the way they should be distributed. Hence, the question arises how to build an administrative organisation to deal with transport and its problems most efficiently. To answer this question, the theory of fiscal federalism is useful.

3. FISCAL FEDERALISM AS A RATIONALE FOR INSTITUTION BUILDING

Oates' theory of fiscal federalism (Oates, 1991) can be used to build the appropriate institution. Fiscal federalism is an economic theory, arguing that every public good has its own optimal level of provision and production (Oates, 1991; Ostrom et al, 1994b). Fiscal federalism argues that every public good should be provided (and produced) at the level coinciding with the needs and preferences present at that level. Needs and preferences may differ between locations or regions and therefore a decentralized provision may meet the local preferences better than a centralized provision. Tuning the administrative provision level at the spatial area of the users will result in an optimal allocation of provisions. This is the principle of fiscal equivalence, meaning that individuals (households or firms) and groups (neighborhoods or communities) get what they pay for and pay for what they get (Oakerson, 1987; Denters et al, 1996). A lack of fiscal equivalence undermines the local community of interest. This argument does have a decentralising influence.

However, realising an administrative organisation for the provision of every public good would result in a multiple layer of administrative organisations. This might lead to high costs of organisation and decision-making. Limiting the number of organisations and combining them may yield economies of scale (Oates, 1991; Oakerson et al, 1989). These economies of scale may exist with regard to both provision and production. This distinction between provision and production may result in an administrative organisation choosing to provide a community with some provisions but not producing themselves. It may contract a private organisation which has to take care of the production. The possibility to realise economies of scale is a well-known argument against decentralisation and often used as a justification for centralisation.

Secondly, it will almost be impossible to limit the costs and benefits of public goods to the spatial area of the providing authority. This is the problem of spatial external effects. These effects may bring individuals or groups to show free rider behaviour. Consuming the benefits and not paying for it. To internalise spatial external effects, the provision should be at a higher level.

These two influences, the possibility to realise economies of scale and the internalisation of external effects, do have a centralising influence.

To conclude, it can be stated that the present institution or administrative organisation is a result of both decentralising forces and centralising forces. The optimal size occurs where any further gains resulting from an increase in size would be more than offset by the losses (King, 1984). Authorities may be of an optimal size even if they are too small to fully exploit economies of scale. The more tastes vary between areas, the smaller the optimal size will be. However, economic arguments are not the only ones influencing the structure of an administrative organisation. It is the politicians who decide. And their opinions can differ considerably from the economic (fiscal federalist) arguments. It is because of these facts that administrative organisations of states differ from one another.

The resulting administrative organisation does not have to be immobile (Oates, 1991). To maintain an efficient public economy structural flexibility and continued availability of alternative arrangements for provision and production is required (Oakerson, 1987). Changing societal or technological circumstances may result in a centralising or decentralising pressure on the organisation. In cases of change, an administrative authority can react by (Ostrom et al, 1994b):

- reorganising itself;
- co-operating voluntarily (with other administrative organisations);
- asking other (higher) administrative organisations for an appropriate fit between interests and organisation.

Hence, changes may bring about a formal change in the administrative structure. When, in case of a centralising pressure, politicians choose not to change or adapt the administrative structure formally, (voluntary) co-operation between administrative providers is an option to overcome changing circumstances and lead to a more optimal provision of the public goods.

4. THE EFFECTIVENESS OF CO-OPERATION

Although (voluntary) co-operation is an option to overcome changing circumstances, the proposition that every actor does prefer the realisation of the common good does not imply that the achievement of co-operation is obvious in case the administrative structure will not be changed. Co-operation to pursue common interests is not self-evident as a result of the temptation to free ride (Olson, 1971; Udehn, 1996). This phenomenon is known as the commons dilemma, and may result in a tragedy of the commons, a tragic situation in which individual rationality leads to an outcome that is not rational from the perspective of the group (Witbreuk, 1997; Hardin, 1982; Gardner et al, 1990; Colman, 1982).

On the other hand, co-operation does occur quite often without an external actor forcing it. So, other variables appear to be relevant as well and common pool resources are not necessarily destroyed (Gardner et al, 1990; Blomquist, 1987). The theory of collective action considers the probability and sustainability of co-operation and presents several variables that are of relevance with respect to co-operation.

It can be concluded that, to enable co-operation, both conditions and variables are of influence. In addition some assumptions have to be made. In the first place, several conditions have to be met. In case these conditions are not met, co-operation is very unlikely. Besides, several variables do influence the effectiveness of co-operation.

In the first place, to enable co-operation several conditions have to be met. Actors do have to perceive the situation as an interdependent one in which they have to co-operate to attain a (common) goal, the public good (Alter et al, 1993). If they do not see their situation as being interdependent co-operation is unlikely. Besides, no actor has to be able and willing to attain the goal by itself independent of the behavior of the other actors (Olson, 1971). Furthermore, the actors have to be able to bear the costs of co-operation and have to estimate the benefits of co-operation to

be higher than the costs (Oakerson, 1981; Alter et al, 1993; Argyle, 1993). If this is not the case, they simply will not be able or stimulated to co-operate. Finally, the environment of the actors has to be sufficiently stable (Ostrom, 1992). In case of a very unstable environment, co-operation is less likely because the actors will value present costs higher than future benefits. The future is uncertain, so the benefits are uncertain as well.

In the second place, several assumptions have been made. Actors are assumed to be (subjective) rational actors (Simon, 1976). In case actors are not (subjective) rational, their behaviour may not be in accordance with their interests and co-operation is very uncertain. Besides it has been assumed that personal features of representatives of co-operating organisations have no significant influence on (the effectiveness of) co-operation. Representatives are considered to act in conformity with the goals of their organisation. Finally, it has been assumed that the theory of collective action may be used to describe and explain co-operation between organisations. This assumption is in accordance with Simons view that individuals representing an organisation may be considered to pursue the goals of that organisation (Simon, 1995). Then, co-operation between individuals is comparable with co-operation between organisations.

If the described conditions are met and if the assumptions are taken into account, a systematic framework that can be used to study co-operation may be defined. A systems approach has been used. The environment is considered to be an external variable. It offers both opportunities and limitations (Chisholm, 1989) and has to be stable to a certain degree (Witbreuk, 1997). Otherwise, actors will not co-operate (Alter et al, 1993; Ostrom, 1992).

The effort that has been put in setting up the co-operation depends on the size and severity of the problem (Gardner et al, 1990; Ostrom, 1990). The more urgent the problem, the more likely the occurrence and effectiveness of co-operation. Necessary conditions are that actors perceive the problem as solvable and that co-operation is considered to be a useful tool in solving the problem (Chisholm, 1989).

If co-operation is developing, an organisation will develop too. Therefore, several rules are needed to structure the co-operation in order to increase the chances for effectiveness (Udehn, 1996; Ostrom, 1990).

Co-operating actors can have different (common and secondary) interests and usually will have different capabilities and resources (Olson, 1971; Hardin, 1982). The larger the differences, the more difficult it will be to achieve effective co-operation (Blomquist, 1987; Alter et al, 1993; Chisholm, 1989).

In co-operative games every actor has to interact with the other ones. Interaction does influence co-operation (Udehn, 1996; Gardner et al, 1990; Argyle, 1993). When interaction is progressing, reputations will be formed or changed (Alter et al, 1993; Chisholm, 1989). Behavior in the past of one actor will be used by the others to predict its behaviour in the future. Reliable actors will seek one another and find it more easy to co-operate (Hardin, 1982).

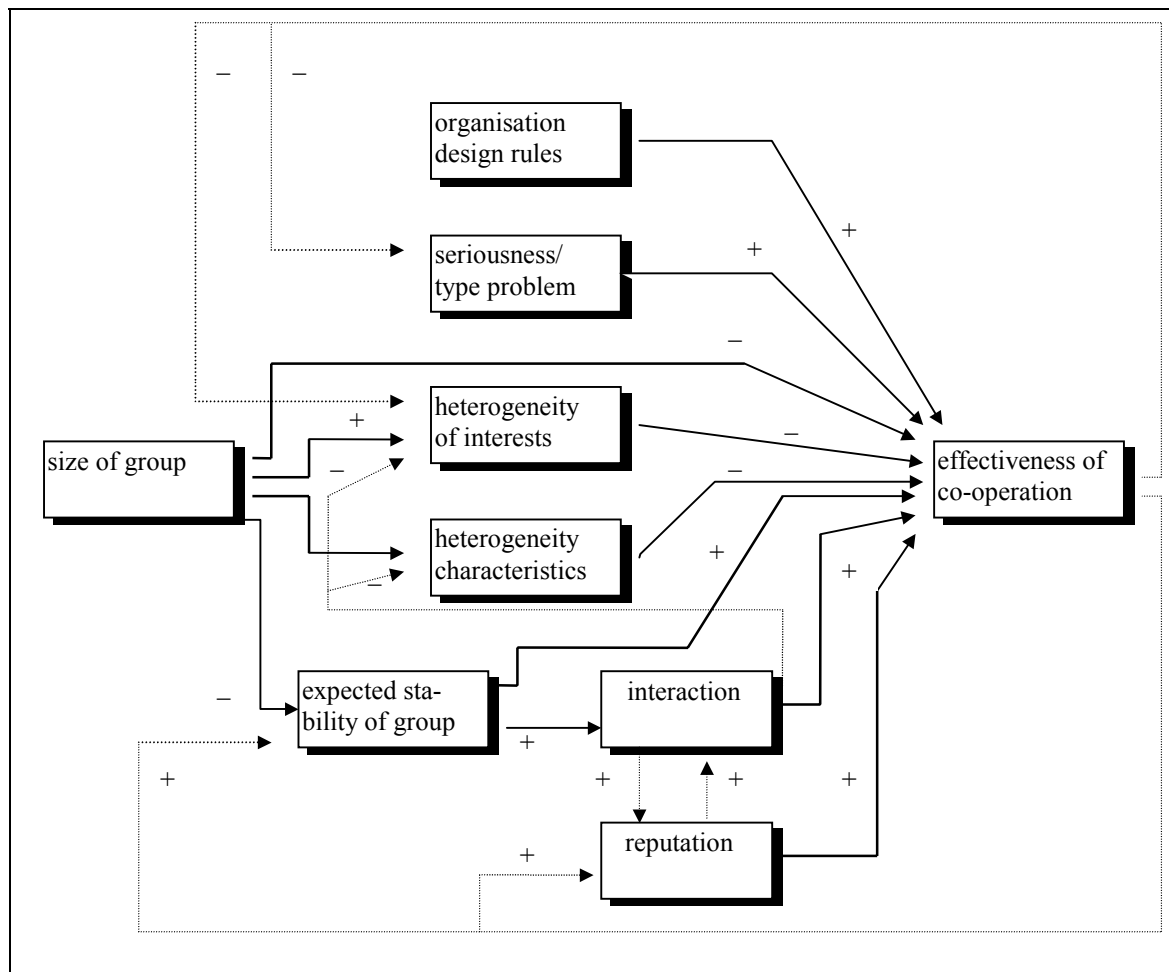


Figure 1 : Theoretical model of co-operation

When the composition of the group is unstable and frequently changing, reputations will not be built up easily and the interaction might decrease. It will hamper the continuity and effectiveness of co-operation. Or, as Blomquist states, “the more stable the group of users, ceteris paribus, the more likely they are to act successfully to preserve and manage the resource” (Blomquist, 1987).

The number of co-operating actors is important as well (Udehn, 1996). A small group has some advantages, since it requires less co-ordination and organisation, and hence is less expensive (Blomquist, 1987). Besides, in a large group free ridership can be more attractive (Ostrom et al, 1994b; Olson, 1971; North, 1994).

The resulting theoretical model consists of a systematic and structural set of hypotheses and is presented in figure 1.

5. RESEARCH DESIGN

In order to validate the model, a research design has been developed and all variables in the model have been operationalised. Operationalisation of variables enables comparative research and testing of theory.

Firstly, because theoretically it is not possible to reject the probabilistic hypotheses presented in figure 1, the hypotheses are determined. In case of interpreting the research results this should be borne in mind.

Then, to test the hypotheses, in the first place regions (cases) where actors (more or less) voluntarily co-operate with respect to a (kind of) public good have been selected. Several criteria have been

used to select these regions. These regions had to experience comparable problems, had to be of comparable size and structure and had to have a comparable legal context. Using these criteria, influence of environment as an external variable and organisation as an internal variable could be considered equal. Three Dutch regions met the criteria (the regions of Twente, Arnhem-Nijmegen and Eindhoven). Hence, a minimum variation of cases has been chosen. The cases were comparable and belonged to the domain of the theoretical model.

After selecting the cases, in each region a variety of research methods has been used. (Literature and documents have been studied, a survey has been conducted and more in-depth interviews have been carried out.)

As stated before, environment and organisation have been excluded from the validation study upon the assumption that conditions were similar. Accordingly, these variables have not been operationalised. As an example of the way variables have been operationalised, the operationalisation of the variable “reputation” will be explained.

The variable “reputation” has to do with the reliability and predictability of (behavior of) (representatives of) actors. Reputation can not just be found in written sources. To gain insight into the reputation of actors interviews or surveys are useful. With respect to this survey items/theses have been constructed. Respondents had to indicate to what extent (0% -100%) they could agree with it. Items/theses were :

1. The other organisations are reliable (will not trick us).
2. In negotiations and discussions the other organisations are honest, frank and sincere.
3. The other organisations fulfil given promises properly.
4. The other organisations do not trust us nor each other and demand every agreement and promise to be put down in black and white.
5. The other organisations seem to forget certain verbal agreements wittingly.
6. Mutual confidence between the co-operating organisations is present.
7. Information the other organisations give is reliable.
8. The other organisations withhold information.
9. In case they will profit more, the other organisations deviate from made agreements and the common plan without consultation.

The degree to which respondents agree with the items has been used to determine the value of reputation. The weight of all items is equal.

$$R_i = 1 - \sum_{k=1}^9 w_k X_{ik}$$

R_i = mean reputation as perceived by respondent i, and

X_{ik} = the in quantitative units converted score of respondent I at item k ; the index k refers to the numbers between brackets (see the items above).

The parameters w_k represent weights, chosen in such a way that the domain of R is equal to the interval $[0,1]$. The smaller the found value (the closer to 0), the better the mean reputation of the concerned participants. The higher the value, the worse the reputation.

The other variables have been operationalised likewise. The dependent variable effectiveness of co-operation has been defined in a number of ways. Four indicators have been constructed : satisfaction of actors, performance gap, expected implementation of proposed measures, and a weighted combination of all these.

A questionnaire, counting 101 items and questions, was the result of the operationalisation and has been spread among 83 municipalities (being all the municipalities belonging to the three regions). The non-response (17 %) was spread proportional. No reason was found to assume that the non-response could influence the results significantly.

6. VALIDATION AND FINDINGS

The model and its underlying hypotheses have been tested using multiple regression analysis. The more the theoretical model fits the empirical data, the better the model-fit. To value the model-fit a distinction has been made between the global fit and internal fit. Global fit concerns a validation of the model as a whole. Internal fit concerns a validation of the internal (causal) structure. To test the internal fit of the model, the hypotheses were tested (one-sided). (For a more extensive overview of the research see Witbreuk, 2000)

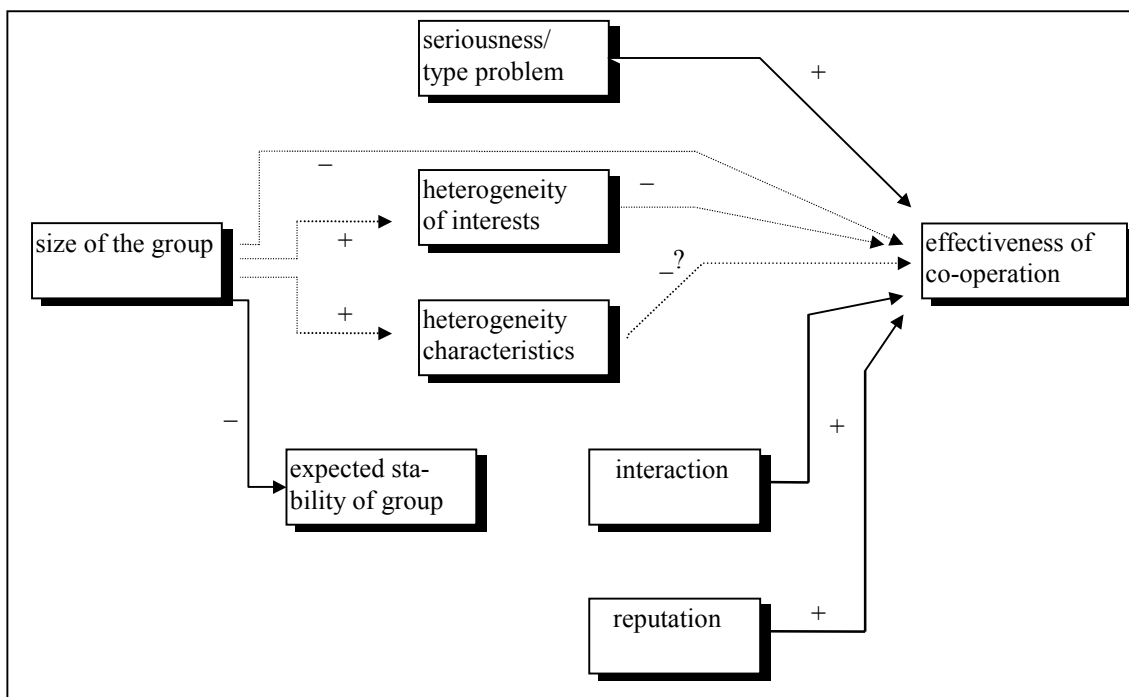


Figure 2 : Testing of the model : conclusions

Figure 2 presents the conclusions that could be drawn with regard to the theoretical model. It can be concluded that the theoretical model and the empirical data fit each other quite well.

From the findings it can be concluded that a “tragedy of the commons” can be prevented. A number of variables can be pointed out that have a positive impact on the effectiveness of co-operation. Consequently, there are opportunities for increasing the probability of an effective co-operation in regional transport policy formulation and implementation. On the other hand, empirical results showed that some variables appeared not to have the impact on effectiveness of co-operation that according to the theory was assigned to them.

7. CASE STUDY: THE NETHERLANDS

7.1 Developments in the Netherlands

Because mobility led to both environmental and accessibility problems in the Netherlands, the Dutch government concluded that the transport policy should be changed to reduce the (growth of) car mobility. To maintain or even improve the environment and accessibility (of the main ports and inner cities) several measures were proposed by the government. Push-measures like price policy and parking policy should reduce the (growth of) car mobility. Pull-measures like the improvement of public transport and bicycle facilities should increase the use of public transport and bicycle.

However, the government realised that problems differed in kind and degree between regions. Therefore, transport policy should differ between regions (although the main aims were alike). The regional scale was according to the government the scale at which transport flows showed a functional coherence. It therefore seemed appropriate to formulate and implement the transport policy on a regional level. However, a regional authority did not exist. The administrative structure in the Netherlands consisted of three levels (state, provinces and municipalities), but not a regional one. Although in some cases it could be argued that the area of a province was equal to the area of a defined region, in most cases the area of a region did not cover the area of the province. Consequently, it could be stated that a regional level, a level between provinces and municipalities, did not exist. This problem was recognised and a discussion was initiated. The government concluded that the tasks and competencies with regard to transport policy were dispersed among the administrative levels. This was impairing an effective and coherent policy. To realise a more coherent approach and a more integral policy a reorganisation of the administrative structure seemed indispensable.

In 1990/1991 the government launched incentives to create new (public) regional transport authorities (transport regions). These transport regions should facilitate the implementation of a more integral policy and a more collective approach of the problems. A transport region was a geographical area. It was a functional coherent area and potentially administrative coherent (Ministerie van Verkeer en Waterstaat, 1991). A transport region was defined as a form of (regional) co-operation between municipalities, tuning their policy with other administrative levels and with public transport firms (and other private parties). This co-operation should develop into a new administrative level (the regional authority) with its own tasks, competencies and financial means. These regional authorities should manage the (regional) transport systems. From 1992/1993, in all parts of the Netherlands municipalities started to co-operate at a regional level, although regions differed considerably in the development of their co-operation. In 1993, approximately 30 transport regions were realized. The central government stimulated these developments by rewarding successful co-operation.

However, the elections of 1994 caused a political change. The new government stopped the process of regionalisation in the more peripheral regions and allowed only 7 (of the former 30) regions to continue. According to the new government, a simple reshuffling of the financial means, competencies and tasks should suffice. A new law (Kaderwet) was introduced. This law was the framework for the 7 urban regions. Among these 7 regions were the regions of Twente, Arnhem-Nijmegen and Eindhoven (see paragraph 5), three regions located not in the Randstad (the western part of the Netherlands that includes Amsterdam, Rotterdam and the Hague), but in the eastern and southern part of the Netherlands. During time, however, even these 7 (more urban) regions became increasingly uncertain about their future. The government decided that the Kaderwet was only temporary, ending in 2004. This decision resulted in discussions within the regions about the desirability of their co-operation. The region of Twente, one of the studied regions, asked the government to the possibility of having the Kaderwet being no longer applicable to Twente in 2000 or 2001. The municipalities co-operating in the region of Twente were tired of putting energy in the co-operation and at the same time being very uncertain about their future. Within this respect it may

be mentioned that a same process of regionalisation in Twente during the period of 1970-1980 resulted in lots of frustration in Twente and nothing being changed as well.

Nevertheless, even in the system where the present administrative structure remains unchanged and the problem “of the inadequate administrative structure” will be solved by a reshuffling of competencies, tasks and financial means, co-operation will remain an essential condition for the attainment of the aims of the policy. Without co-operation, the accessibility and the environmental condition will not be maintained or improved. This has been concluded by the government itself as well. On the other hand, however, rewards for successful co-operation were in the meantime (beginning 1996) abandoned. The central government changed its policy of rewarding successful co-operation and distributed financial means to the lower administrative levels more or less independent of their successes.

7.2 Analysis

From a fiscal federalist point of view some remarkable developments can be mentioned. At first, in the Netherlands the changing circumstances were noticed. It was observed that transport flows were changing (growing) and that mobility did not stick to the borders of a municipality or a province. Government concluded that transport flows did have a functional coherence at a regional level, a level at which an administrative organisation did not exist. To deal with the transport problems, from a fiscal federalist point of view a regional approach seemed appropriate. A local approach would not succeed. This can be illustrated by the fact that municipalities do have competencies with respect to parking policy, a potentially effective tool. However, municipalities are not willing to use parking policy because of a fear of losing customers at the benefit of other inner cities (spatial external effects of a measure). In this case a regional policy may be an attractive and effective option. Parking policy would be more effective if it would be formulated and implemented at a regional level.

From a fiscal federalist point of view the Dutch intent to realise regions was justified. To internalise the spatial external effects and to meet regional needs tasks and competencies should be at a regional level. To realise this the intent of the government to decentralise some tasks and competencies to the region and to have some local tasks and competencies be centralised can be justified.

The following developments in the Netherlands make clear that although economic arguments may be used to defend some choices, political opinion is more important. Although the situation did not change, regionalisation was more or less abandoned. From a fiscal federalist point of view the conclusion may be drawn that, the other two options not being chosen in the Netherlands, voluntary co-operation between the Dutch municipalities has to be the panacea. Besides, lessons from the past taught that without co-operation transport policy was not very successful. Therefore, it would be interesting to know whether co-operation will lead to a more effective co-operation with respect to transport policy, and to study the key factors within the process of co-operation.

8. INCREASING EFFECTIVENESS

Based on the findings of the research some recommendations are given to enhance the probability of an effective co-operation.

In the first place, a continuing interaction is a necessary (but not a sufficient) condition for the development and effectiveness of co-operation. A continuing interaction implies that the future is important and will encourage actors to deal with one another carefully and honestly. Absence of communication (a form of interaction) will impair co-operation. The more frequent, regular and direct the interaction between actors and the lesser the one-sidedness of the contacts, the better the perspectives of an effective co-operation. Hence, it can be recommended to invest a lot of time and

energy in formal and informal contacts with all participants. These contacts have to be as directly, intense and regular as possible.

Secondly, reputation is an important variable as well. When interaction is continuing, reputations will be formed and may be changed. An actor who did not co-operate in the past (or present), will harm itself since other actors will not easily try to co-operate with that actor again in the present (or future). So, it can be recommended to put reputations at stake. To put reputations at stake seems to be an effective means to increase the effectiveness of co-operation.

In the third place, the problem perception of the actors is very important. The effort an actor puts in the development of co-operation is dependent of the way an actor perceives the problem. If an actor does not perceive a situation as a problem, he is likely not to contribute to co-operation furthering management of that particular situation. On the other hand, if he does perceive the situation to be a problem-situation, the solvability and perceived urgency of the problem are important. When the problem is considered solvable and when co-operation is considered to be an effective means, then the more urgent a problem is according to the actor, the more intense he will try to solve the problem. Consequently, the more urgent the problem, the more likely co-operation is to develop. It can be stated that a lot of interaction (contacts, communication) between the actors may create a common problem perception. Hence, implementation of the recommendation to invest a lot of time and energy in contacts will have positive effects with respect to the variable "problem" as well. Besides, a good exchange of information between the participants may be recommended. In case of problem-situations, these actions will contribute to a perception of situations as problematic. Besides, they will result in a good insight into the urgency of the problem and in the usefulness of co-operation as a means. Hence, implementation of these actions/recommendations will contribute to the effectiveness of co-operation.

In the Netherlands, and in other western countries as well, with respect to this variable some problems arise. Although in the more urban Dutch regions, the municipalities do have a common goal with respect to transport policy (the improvement of accessibility and livability/safety) since their transport networks are congested and their environment is affected, within regions differences are present. Although their transport flows are related and their situation is an interdependent one, municipalities located in the more peripheral areas of the studied regions do not identify their situation as problematic. Consequently, they are not really motivated to take measures which should help the more central and urban municipalities. And as long as municipalities do not identify their situation as problematic or do not expect problems on the short term, they will not co-operate the way other municipalities would like to. It is expected that in the Netherlands problems will continue to grow and that in the regions not yet confronted with serious problems prevention will hardly be pursued. Besides, in the regions where problems are already evident, the intentions of the central municipalities are impaired by the reluctant behaviour of more peripheral municipalities.

9. SUMMARIZING EPILOGUE

It is concluded that fiscal federalism can be used to study the administrative structure of a country and developments in this structure. Besides, it can be used to recommend changes in the administrative structure. Maybe unfortunately, fiscal federalist insights are not being used as they could have been in the political discussions with regard to transport policy and administrative changes. Other forces (politicians) do influence the administrative structure of a country as well. This might result in a structure that is not appropriate to overcome changing circumstances. Fiscal federalism offers a way out: co-operation. Unfortunately, co-operation as a less formal institution is not that easy to realise. Research results show that several variables do influence co-operation and its chances for success. Interaction between actors, reputations and problem perception and urgency of the problem are important variables.

With respect to mobility problems it is concluded that the regional transport network is considered to be a kind of public good. The presented model offers a guideline in its management. Increasing the chances for effective co-operation between administrative organisations (municipalities/communities) offers opportunities to reduce the (growth of) car mobility and its negative effects.

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REGIONAL TRANSPORT NETWORKS AND INSTITUTION BUILDING : THE ROLE OF CO-OPERATION

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