Revealed Government Preferences for Modes of Governance in the European Water Sector

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Abstract
The choice of governance made by four European countries in managing their water sector reveals their preferences for modes of governance providing those services. A novel framework, called the modular approach, is presented to support this claim. The framework is based on separating the various types of services to be provided, from the modes of governance that implement those services. The isomorphy property of type of services serves to facilitate competition. A set of feasible modes of governance for water services is constructed, which is the set to be ordered by the government's preference. Provisional conclusions are drawn.

1 Introduction

There exists a large variety in the modes of governance in the European water sector. Is it possible to explain the choice that governments have made in their mode of governance of the water sector? The types of services demanded are not so diverse in the various European countries, but still there is a substantial diversity in governance. Are the attitudes towards competition and cooperation based on national differences in cultural and political traditions, or is a more general explanation possible? These questions will be approached here by means of an analytical framework that allows for deriving a set of feasible modes of governance, which set can be ordered by a preference relation. The approach is not restricted to the water sector, neither to the preferences of a government. It is based on the duality that exists between the service domain and the governance domain, which domains are both ordered according to the extent of interaction, respectively the extent of empowerment. The types of services and the modes of governance converge to institutional modules with norms and symbols valid for each member of its class. This modular approach is supported by the institutional isomorphism mechanism (DiMaggio and Powell, 1983) or by Williamson's (1991) discrete alignment principle, explaining that an organization selects its institutional form by aligning to the best fitting mode of governance. A third characteristic of the framework introduced here is that the analytical building stones are relations rather than commodities.

Section 2 of this paper introduces what is called the modular approach. Section 3 describes the various types of services, gives alternative mode of governance in the water sector, and presents criteria for a possible ordering of policies by the government. Section 4 describes the options chosen by France, England and Wales, Germany and the Netherlands. These choices are evaluated in Section 5.

2 The modular approach to governance

2.1 What is Governance?

Governance is a hot topic today. The World Bank has an established tradition in developing criteria for good governance. They have experienced that good governance in a country is a necessary condition for the enhancement of its social welfare. The World Bank defines governance as the totality of traditions and institutions by which authority in a country is exercised. This includes:

- the process by which governments are selected, monitored and replaced;
- the capacity of the government to effectively formulate and implement sound policies;
- the respect of citizens and the state for the institutions that govern economic and social interactions among them.

Six dimensions of governance are identified:

- Voice and Accountability
- Political Stability and Absence of Violence
- Government Effectiveness
- Regulatory Quality
- Rule of Law
- Control of Corruption

This description of governance focuses on the government of a country. The following definition – that will be introduced and founded in this paper – covers the World Bank's definition. ***Governance*** is defined here as a system of sound modes of governance, where each mode allocates power and resources for realizing characteristic services, and enforces the rules of the game on the people in their various roles. This way of defining I call the modular approach, because it implies a balanced network of modules that are isomorphic in behavior. Since each module – be it a firm or a community – knows or makes its place in society, it can develop according its own identity and responsibility on a decentralized way. The first dash in the World Bank's definition concerns the rules of the game for the government in a country; the second dash requires designing a sound mode of government for specific services; the third dash requires enforcement of the rules of modes of governance by all concerned in the system that generate values. The definition in this paper includes not only national governance, but also corporate governance, or the governance of a public sector such as the water sector.

Such a general and unifying definition as the one introduced here is necessary, because governments – and other decision units – have various options for modes of governance at their disposal. In fact, governments in different countries choose different modes of governance for realizing desired similar types of services and values. So governments have a preference for one or the other mode, that is, they have a preference ordering on the set of modes of governance. That enables us apply the revealed preference method to deriving a government's preferences for modes of governance. This exercise will be executed here for the water sector in some European countries. But first we focus on the conceptual framework.

2.2 Typology of services

Services in the social or public sector economy – such as health care and water services – are usually part of a complex and interdependent network. It may be possible to delineate parts of this network – such as infrastructure – and to treat services in this part independently, for example, by designing a (regulated) market for these services. This vertical disintegration approach has been applied recently in physical network sectors such as energy and telecommunication. If services are being separated from the original network and put in the market, they must have the characteristics that allow them for being processed through the market mechanism. Those services must be marketable. Since a market mechanism is a mode of governance, we see that there is a correspon-

dence between a mode of governance and a service. All services that are marketable have common characteristics that make them marketable: they are isomorphic in that respect.

I define a ***service*** as a relation between a group of performers and a group of receivers, whose interaction generates value. Focusing on the formal aspects of this relation, each group consists of a subset of members of the society, possibly a single agent, and each group satisfies the condition that all externalities among receivers and all externalities among performers of that service are internalized in the group. So a service, $\bar{s} \subset [0,n]^2$, is a subset of the two-dimensional interval space, where n is the number of people in a society. It represents both partners in the relation, the group of receivers and the group of performers, as well as the value generated from their interaction. If we represent a group by its size, then a service is a point, $s \in [0,n]^2$ in the interval space.

Performers / **Receivers**	Community-wide performance (1)	Specific group-performance (2)	Small, specialized performers (3)
Community-wide needs (1)	Community values	Socially performed public services (SGI)	Individually performed public services (SGEI)
Group-specific needs (2)	Community performed social services	Social values	Individually performed social services
Small, independent needs (3)	Community performed individual services	Socially performed services for individuals	Individual values

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Table 1. Typology of services and values for 3 degrees of interaction

Next, the large number of potential services (equal to n^2) is reduced to an operational number, which depends on the context of the model. For that purpose I introduce a limited number $\bar{m}$ of interaction levels. Each level indicates the extent of interaction within a partner in a service or – equivalently – the multiplicity of occurrence of a partner in the service relation. This two-dimensional index[1], denoted by $t(s) = (i, j)$, with $i, j = 1,...,\bar{m}.$, is called a ***type of service***. It assigns a pair of numbers – varying from the highest level 1 with the largest extent of interaction (only the whole community), to the lowest level $\bar{m}$ with a minimal extent of interaction. So if we choose to distinguish three interaction levels ($\bar{m}$ =3), as in Table 1, we get on the diagonal: community values, social values, and individual values. We may extend the number of levels for a

[1] This index is non-decreasing function of the inverse of the size of partners in the relation in society. Given a fixed number n that is the size of the population and a fixed number k being the number of interaction levels for partners in a service, the function t: $[1, n]^2 \rightarrow \{1,\ldots, m\}^2$ is defined by $t(x,y) = (\ x/x'\ ,\ y/y'\ )$, with x'=y'=n/m and x is the integer obtained from rounding off the real number x to the lowest upper integer.

more detailed analysis and we may change the context from an international organization to a local cooperative.

The strength of this approach is that a typology of services is constructed without reference to any institutional characteristic. The government may provide a social service, or a non-profit organization or some philanthropist may do so. It is not the tax-exemption condition, for example, that identifies a social service, although it may be efficient to exempt the provider of a social service paying a commodity tax. That problem can only be analysed by separating the types of service domain from the mode of governance domain.

A second advantage of this approach is that all services of the same type are isomorphic and may be treated equally. The same type of service may cover different actual situations, such as the service of treating a patient, or extinguishing a fire. It depends on the embeddedness of the service, however, whether and how it can be separated from the larger context. We therefore identify a hierarchy of values, which hierarchy has to be respected by the institutional choice realizing these services.

2.3 Typology of transactions and modes of governance

Next we turn to the domain of modes of governance. The basic assumption in this approach is that if a service is to be realized, it has to be the subject of a contract. This contract may be a legal contract, but also be an informal or implicit one. Even if you plan a vacation with friends, you need their informal approval for the way you spend specifically your time together. A *contract* is a reciprocal relation, in which resources are exchanged for delivering a specific service. The parties in the contract relation need not to be the same as the partners in the service relation. That distinction is expressed in the definition of a transaction. .

A ***transaction*** is a contract-relation between two parties, a procurer (the principal) and a provider (the agent or contractor), aimed at providing *a specific service* desired by the procurer in exchange of resources paid by the procurer to the provider. So both the procurer has to be empowered by its constituency in contributing resources, and the provider has to be empowered by its constituency in contributing capabilities. The level of empowerment, or the extent of coercion on the members of a group, is largest if the group is closed and there exists no alternative contract for a member. The following conditions for a transaction are adopted:

(i) Each party contains all and only members of the society who empower that party;
(ii) The level of empowerment of a party is proportional to the size of a party;
(iii) There is a balance of power between both parties, causing the transaction-value to be equal to the value of empowerment for each party.

Then a transaction $\bar{c} \subset [0,n]^2$ is represented by a subset of the two-dimensional interval space, each representing a party in the relation, the procurer (or principal) and the provider (or the agent), with n the number of people in a society. Since we can represent a party by its size, a point $c \in [0,n]^2$ in the interval space represents both the transaction and the transaction-value.

Since many transactions are isomorphic, we can reduce the large number of potential transactions (equal to n^2) by constructing types of transactions. The number of types is determined by the transaction costs, including the cost of legal framework required for facilitating that type of transaction. Assume that there is a limited number, $\bar{m}$, of isomorphic transactions. Then a ***type of transaction*** is a two-dimensional index[2], denoted by $t(c) = (i, j)$, with $i, j = 1,...,\bar{m}$. It assigns a

[2] This index is non-decreasing function of the inverse of the size of partners in the relation in society. Given a fixed number n that is the size of the population and a fixed number k being the number of interaction levels for partners in a

pair of numbers – varying from the highest level 1 with the largest empowerment (only the whole community), to the lowest level $\bar{m}$ with a minimal level of empowerment.

Each type of transaction requires a legal environment, a kind of 'constitution' to specify and support behavioural rules and balancing procedures. A ***mode of governance*** for a type of transaction is the legal and social environment of that type of transaction, facilitating the numerous transactions within that type; it sets the 'rules of the game' for entering into a type of transaction and enforces parties to comply with these rules; it monitors the conditions for a good performance of transaction processes, including a balance of power between transaction parties. It is a two-dimensional index[3], denoted by $m(t(c)) = (i, j)$, with $i, j = 1,...,\bar{m}$, and varying from the highest level 1 with the largest extent of interaction (only the whole community), to the lowest level $\bar{m}$ with a minimal extent of interaction. So if we choose to distinguish three empowerment levels ($\bar{m}$ =3), as in Table 2, we get on the diagonal: government systems, social enterprise systems, and market systems.

Provider group: / Procurer group:	Centralized executive power with comprehensive tasks	Task organizations with specialized executive power (closed cooperative)	Decentralized, specialized private firms (open coop)
Centralized legislative, comprehensive power (the people)	(1,1) Government systems	(1,2) Government agency systems; public enterprises	(1,3) Public outsourcing systems (PPP)
Funding organizations with stakeholders' special interests	(2,1) Federative and indirect political systems; NGOs	(2,2) Social enterprise system; non-profits	(2,3) Stakeholders' organizations; cooperatives
Decentralized, independent, small owners of rights (customers, voters)	(3,1) Direct democracy; legitimizing systems	(3,2) Private task organizations; monopolies	(3,3) Market systems

Table 2: Typology of modes of governance for 3 empowerment levels

This service of providing a sound mode of governance, consistent with the other modes in society, is typically one of general interest. So ***governance*** is a system of modes of governance, where each mode allocates power and resources for realizing characteristic services, and enforces the rules of the game on the people in their various roles. A good mode of governance is based on a system of countervailing power for all transactions, creates an equal playing field for competition, and generates stability, dependability and predictability in the behavior of parties.

A mode of governance belongs to the society's social capital. Two modes have been predominant for centuries: the rules governing public administration and the rules governing the market mechanism in the private domain, which is the classical field of economic order. So there was for a long time a sharp distinction between the two domains and a one-to-one correspondence between a type of transaction and a mode of governance. A greater variety in types of services,

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service, the function t: $[1, n]^2 \rightarrow \{1,\ldots, m\}^2$ is defined by $t(x,y)$ = (x/x' , y/y'), with x'=y'=n/m and x is the integer obtained from rounding off the real number x to the lowest upper integer.

[3] This index of a mode of governance is equal to the index of a type of service, $m(t(c)) = t(c)$, but its refers to another domain and may differ in special situations.

however, asks for a design of new types of transactions and therefore new modes of governance. The discussions about the 'social enterprise', the 'services of general interest', or 'good governance' show that institutional innovation is desired, but nor accomplished yet. Hybrid transactions emerge, which are characterized by a mixture of empowerment levels such as some public-private partnerships. But in my opinion, these are not yet embedded in a fitting and good mode of governance with the stability properties and other properties mentioned above. In this paper a type of transaction identifies a mode of governance. So if hybrid transactions exist, they are tolerated or permitted by a corresponding hybrid mode of governance, irrespective of the performance of such a mode.

2.4 The governance domain

Having identified for a certain context the set S of types of services, $t(s)$, called the ***service domain***, and the set M of modes of governance, $m(t(c))$, called the ***governance domain***, the question to be answered is: which type of contract or – equivalently in this paper – which mode of governance is best suited for a type of service? We first construct a set $G(s)$ of feasible modes of governance for a type of service $t(s)$. A mode of governance $m(t(c))$ in M is ***feasible for a type of service***, $t(s)$, if the extent of empowerment of each party in the transaction covers at least the extent of the interaction of the corresponding partner in realizing the service, that is, $m(t(c)) \leq t(s)$. So the set of feasible modes of governance for the service $s \in R^2$ and its type $t(s)$ is:

(2.1) $$G(t(s)) = \{m(t(c)) \in M \mid m(t(c)) \leq t(s)\}$$

A feasible mode of governance is ***efficient*** if there is no feasible mode with a lower level of empowerment for some party in the transaction. So we can assign to each type of service $t(s)$, an efficient mode of governance, denoted by $g^*(t(s))$ in $G(t(s))$.

Consider, for example, a potential social service identified by a set of receivers and a set of performers. The interaction between both partners will generate a social value. For this value to be realised, the service has to be subject of a transaction between a set of procurers and a set of providers. If agreed upon, the transaction allows the provider to empower the performers to render the desired service. In order to be feasible, the set of interacting receivers has to be a subset of the empowering procurer and the set of interacting performers has to be a subset of the empowered provider. If these conditions are met, the organizational mode is feasible for the desired service. A public agency may satisfy these conditions, as well as a non-profit organization. A for-profit firm, however, may have problems in attracting enough funds to empower the provider and subsequently the performers of the service.

Glaeser (2003) characterizes a non-profit as a concern with the interactions among all the stakeholders that are typically associated with nonprofits: donors, customers, managers and employees. Further, the characteristic of nonprofits which is taken to distinguish them from for-profits organizations is the fact that donors appear in this list of stakeholders while owners do not. If we compare these roles with the roles Glaeser identifies for a not-for-profit enterprise, we see that what he calls 'customers' are receivers here; what he calls 'workers' or 'employees' are mostly performers; his 'donors' belong to the procurer, and his 'managers' belong to the provider. So his model fits in the more general relational and duality approach developed here.

2.5 Creating competition through developing isomorphic modules

Competition requires an equal playing field for the competing units. These units have to be comparables in a relevant sense. The concept of a type of service is based on the isomorphy in a formal characteristic of a service, the level of interaction among members in a partner-group. The measurement of interaction is easy in physical network industries, but it may be hard to measure the extent of interaction for a social service. The concept of a type of transaction is also based on

the isomorphy of a formal characteristic, the level of empowerment by and to members of a party. That may be easier to measure in the case of legal contracts, because contracts can be monitored.

The most important framework of competition is on the lowest level of empowerment, the market mechanism, where the isomorphy of a large multiplicity of firms generate competition and where the authorities try to prevent firms entering into a higher level of empowerment through market power. They safeguard the balance of power among firms and between firms and consumers. At a higher level, other techniques are used such as benchmarking and yardstick competition. At the highest level competition for governmental power by (isomorphic) political parties is well established. Other forms of competition can be constructed.

2.6 Preferences on the governance domain

Preferences are usually defined on the commodity space and indirect preferences on the dual price space. In this relational approach the dual space is the governance domain. All decision makers in the economy may have a preference on modes of governance for a type of service. People who are vulnerable or altruistic may prefer a higher level mode, whereas risk-seeking people may prefer a lower level mode for the same service.

In this paper I focus on the preferences of a government on the governance domain, that is, an ordering $<_g$ on G(s) in M for some service of a higher level. Governments have a preference over modes of governance, which may dominate their preference for services for practical and cultural reasons. These preferences may be deduced from the policy programs of political parties. I suggest a different approach: applying the revealed preference model on a sector in the economy where the government has a choice due to the presence of various feasible modes of governance.

3 The various ways water services are rendered

The water sector, including and wastewater, has attracted much attention recently. Water is essential for life and a large part of the world population has no access to water of good quality, cfr. Shirley and Ménard (2002). Moreover, its supply is scarce is some parts of the world and very vulnerable for pollution. And water is also essential for the economic vitality of a country: the success of agricultural and industrial enterprises depends heavily on the availability of water resources. In some regions, water is so important that it may be a cause of war. Water is abundant in most regions of Europe. Problems concentrate on the sustainability of water sources, on affordable prices, on the increasing demand per capita, and on the quality of an increasing variety in types of water. Meeting these demands asks for adequate governance.

This section makes use of a recent CESifo DICE Report, in which Barraqué and Le Bris (2007), Zabel (2007), Krämer, Pielen and de Roo (2007) and Pietilä, Katko and Hukka (2007) provide a survey of the governance in, respectively, France, England, Germany, and Finland. For the methodology used here I refer to Ruys, Bruil and Dix (2007).

3.1 Types of water services and related values

Water services have a complex character. I distinguish types of water services by technological conditions and according to the level of interaction or the extent of externalities experienced by users or consumers:

Level of interaction:

1. Water governance (laws and regulations): comprehensive community values
    - Protecting raw water basins and resources

    - Public access to affordable and clean drinking water
    - Safeguarding public health
    - Safeguarding agricultural and industrial water needs
    - Safeguarding sustainability of water provision and its financing
    - Safeguarding innovation of water products and water governance
2. Water infrastructure and network transportation: specific social values
    - Dams and (irrigation) canals
    - Piped water supply; water networks and distribution
    - Sewage collection
    - Distribution channels
3. Water production and consumption: individual values
    - Drinking water, included bottled water products
    - Household or grey water
    - Industrial water
    - Waste water and sewage treatment (purification and recycling)

The first of the three groups above refer to community or (inter)national values. According to the EU directive 98/83/EC the supply and quality control of drinking water is at the core of governmental ('public') tasks because it is an important element of national health care. The second category refers to network services, which is the main cause for creating a natural monopoly, and other water infrastructure. The third category contains services that have the smallest extent, connected with either the end users, or with the source. These types of services are interrelated and may form a network or a hierarchy, from upstream to downstream, and from a high level with large, comprehensive services to a low level of specific services with a small extent.

3.2 Possible modes of governance in the water sector

There exists a wide range of modes of governance, from governmental to market oriented. A mode of governance consists of roles with specific competences and legal powers. That enables some role to enter into a transaction – formal or informal – with another role. The modes of governance are ordered below according to the extent of power or legal competence required, going from a regime of politicians to an economic regime. It is a specification of the typology developed in Section 2.3.

Level of empowerment:

1. Public undertakings and institutions (under regime of politicians)
    - Central or state level, international level (EU)
    - Public operators (ministries, agencies, public utilities)
        - Direct public management (régie) with benchmark competition
    - Local or regional level (municipalities; public cooperatives)
        - Small towns
2. Hybrid modes of public-private partnership with consensus or inside regulation
    - Profit making public firms
    - Mixed ownership of private enterprise
    - Private firms with market power (regional monopolies)
        - Inside regulation
        - Yardstick competition
3. Modular modes of public-private cooperation (contractual)
    - Long-term contracts with outside regulation
        - Management contracts (fee paid by public authority)
        - Lease contracts (fee paid from revenues from users)
        - Concessions and licensing (revenues from users)

- Long-term contracts with short term countervailing powers
  - Network of (private) modules with checks and balances
- Short-term contracts (competitive)
  - Outsourcing
  - Service contracts

4. Private undertakings
   - Commercial initiatives
     - Green funds; investors
     - Subcontractors
     - Social enterprises
   - Private user or consumer initiatives and ownership
     - Private non-profit cooperatives (in small towns);
     - On site water production and sanitation by companies
     - On site water production and sanitation by households

The central government has the power to assign a mode of governance to a type of service, or to design a framework of economic order in which that is determined. Assigning a mode of governance implies assigning competences to the various roles in the governance. These competences may be exclusive, shared, or supporting: depending on the complexity of the values to be rendered. The set of feasible modes of governance for some type of service, $G(s)$, has been defined in (2.1), as well as the efficient mode for a type of service. In principle, we could apply Williamson's efficient contracting hypothesis, which predicts a mode of governance chosen by competitive firms. But since the choice of a mode is to a monopolistic government, we cannot transpose that theory and we have to rely on another option. We assume that a government has identified a set of feasible modes of governance and then orders this set according to its own preferences and principles. Since the most centralised mode is always feasible for a government, its set of feasible modes of governance is nonempty for any type of service. The optimal mode depends on the service characteristics, such as the technology and consumers' characteristics. A government will not necessarily choose this optimal mode for a specific type of service, because its responsibility goes beyond the realization of this type of service only.

Obermann (1999) presents a concise survey of the relationships between agents in a regulation process. He analyzes the roles of four types of agents, the government, the (outside or independent) regulator, the undertakings with a public majority share, and the private companies. His conclusion is that all of these roles in the system of independent regulation contain elements of conflicting interests. He warns for a system with insufficient checks and balances that may cause underperformance in the provision of the service of public interest. It is indispensable to examine carefully the economic and political pros and cons of the two regulation systems: inside regulation by means of public ownership or outside regulation by means of setting a regulatory framework for the companies in the industry.

3.3 Government's values and principles

The novelty of this paper lies in the introduction of a government's preference defined on the set of feasible modes of governance for a type of service, apart from the societal preferences for the services to be rendered. The problem I address is a pure governance problem, which comes after the choice about the desired service and - consequently - the type of service has been made. But without governance that choice cannot be realized. Given that type of service, the set of feasible modes of governance can be determined. The government's choice from that set depends on its assessment of the various types of risks involved in the chosen mode of governance: financial, social and political risks. That choice also affects the quality of the service to be rendered. A more centralized (or higher level) mode may have a sure and equitable outcome and is therefore effec-

tive, but at the cost of not being efficient. A more decentralized mode may be efficient, but at the cost of not coordinating the externalities and group interests.

So the government has a set of feasible modes of governance at its disposal. It may choose an efficient mode, but a government may think to have reasons for deviating from this optimal choice. Let us assume that a government orders the domain of feasible modes of governance lexicographically according to the following four categories of criteria, from short-term to long-term political sanctions and public interests:

1. Preventing disasters (short term interest):
    a. Safeguarding the continuity of basic needs
    b. Procuring financial resources;
2. Accommodating cultural, managers' and voters' values:
    a. Effective management by elitist consensus
    b. Consumers' (voters') perceptions
    c. Considering special historical situations and external effects on other sectors;
3. Enforcing governance principles:
    a. Market performance
        i. Competition policy
        ii. Sectorial authorities and watchdogs
        iii. Protection of private ownership
    b. Public administration
        i. The Subsidiarity principle
        ii. The Proportionality principle
        iii. Separation of powers and domains (public from private competences)
4. Sophisticated governance for larger heterogeneity in values (long term interest):
    a. Innovation in modes of governance for realizing new services and vulnerable social values;
    b. Innovation of existing modes of governance for enhancing accessibility, efficiency, connectivity, and transparency (liberalization).

The government's preferences depend on the assessment of the risks and the costs or benefits involved for the society, as assessed by the government. Apart from preventing disasters, the government is hesitant to introduce reforms. In this context, Caselli and Gennaiolo (2006) have observed that the greatest obstacle to reform is the opposition of powerful entrenched interests, who stand to lose from more openness and competition. The economic consequences and political feasibility of reforms aimed at (i) reducing barriers to entry (deregulation) and (ii) improving contractual enforcement (legal reform). Deregulation fosters entry, thereby increasing the number of firms (entrepreneurship) and the average quality of management (meritocracy). Legal reform also reduces financial constraints on entry, but in addition it facilitates transfers of control of incumbent firms, from untalented to talented managers. It improves meritocracy at the expense of entrepreneurship. Caselli and Gennaiolo advise to design a skilful reform path: use legal reform in the short run (allowing for endogenous compensation of losers) to create a constituency supporting future deregulations (undermining the rents of incumbents). So a *caveat* has to be made here, where we don't consider dynamic preferences.

Consumer attitudes on Services of General Interest in the EU are measured in Fiorio e.a. (2007). It is striking that consumer satisfaction about prices and quality is determined by relative change within each country and not on comparison among countries, on which benchmarking methods are based. So politicians will on the short rum pay more attention to this criterion than to the following.

The choice for modes of governance that a government has made reveals its preferences. So we can deduce a government's revealed preference from the choices it has made. The choices that France, England, Germany and the Netherlands did actually make are described in the following section.

4 Government's choices by country

4.1 France

The French model for the management of water services is characterized by decentralized relationships between public authorities and private operators with multilevel financial mechanisms of redistribution to mutualise costs (essentially at the basin level), according to Barraqué and Le Bris.

The Parliament establishes the status of water as part of the nation's common property, sets quality standards, identifies the different uses and conditions to be allowed, and organizes the modality of monitoring and control of the resource. The implementation of protection measures, however, is not particularly good as the construction of wastewater treatment units falls behind, due to a lack of investments.

The municipalities are responsible for the organization of water and wastewater services. They faced, however, a lack of technical and financial resources for service operation. Therefore, they involved private parties, with a preference for delegated management, that is, a management contract (régie interessée), a lease (affirmage) or a concession contract. The public authority owns the assets in the first and second case, pays a fee to the delegate in the first case and receives a fee from the delegate in the second case. The private operators of water services had a national turnover of € 5.1 billion in 2004. The water price was on average about € 3 per cubic meter in 2004, i.e. an annual bill of € 177 per inhabitant. The average bill doubled between 1990 and 2004 due to the increase of levies and taxes. Regional disparity of prices is high. Vioala Water provides water services to 39 percent of the French population, Lyonnaise des Eaux to 22 percent and SAUR to 10 percent.

Financing the renewal of water and wastewater systems is an urgent issue. The 2006 water law allows surpluses to be reserved for the planning of renewal needs. Otherwise, increased use of concession contracts and financing by private operators could be explored.

Since in France, each local public authority may choose a particular contractual form from the set of alternative modes of governance, the French system of management provides an exciting laboratory to analyze the links between organizational choice and performance in local service provision. Chong e.a. (2007) have applied an econometric analysis of the water sector in France and found that the various forms of PPP result in higher prices than direct public management. They observe that this finding is consistent with theories in which high transaction costs, more collusion strategies and lower competition make the use of PPPs inefficient.

4.2 England and Wales

As the water services companies are private monopolies, a strict regulatory regime is required. This involves:

- The Environmnet Agency (EA) responsible for pollution control and water resource management;
- The Drinking Water Inspectorate (DWI);

- The Office of Water Services (Ofwat) responsible for the economic regulation of water companies including the setting of price limits.

The main reasons for the privatization in 1989 were the government policy at the time and the need for large investments to comply with the EU Drinking and Bathing Water Directives and the EU Urban Waste Water Treatment Directive. Privatization would remove the investment requirements from the public borrowing requirements of the government, which were at the time under great strain.

The water companies have to ring fence the water service functions from any other (commercial) activity, as these functions are controlled by Ofwat. They operate under a 25-year licence and own all their assets. As the water companies are largely monopolies despite the attempts to introduce competition, the setting of price limits is an important functi0on of Ofwat. The method of cost comparison is "yardstick" regulation, where the price limit is the sum of the percentage increase in the retail price index and the company's efficiency factor. This K-factor varies between + 6% and – 12%, on the average – 2% in the period 1999-2004.

The conclusions are that the water industry is highly regulated and that competition is restricted. A major aim of privatisation was to free the industry from political interference. It allows the water companies to raise the finance to make the necessary investments independently of the national budget. Manpower has decreased as result of efficiency improvements. Water companies have been forced to fund infrastructure improvements through increased debt rather than raising prices. Still prices for water services have increased significantly as a result of the large investments that the companies had to make to improve the system and to comply with the EU legislation. But these price increases are lower than might have been expected based on the investment needs and operating costs.

4.3 Germany

Germany has sufficient water for all uses. It has diversified water sourcing, using groundwater where possible, spring water and groundwater from infiltration, or surface water. Water pollution control and source protection are relatively effective. Water suppliers often contract with landowners and land-users to ensure that land use and agriculture do not pollute water sources. Water users pay the polluter through the water price, in violation with the polluter-pays principle, because it is cheaper to reduce pollution at its origin than to clean waste water. Water demand is falling from 147 litres per head and per day in 1990 to 127 litre in 2004. The annual invoice per head for water supply was € 82 in 2003, and for sewerage € 124.

In many small towns and villages water supply is organized by municipal agencies or associations under public law. The private law arrangements cover 63% of the water supply in the form of municipal enterprises (20%), public enterprises (10%), public-private companies (30%), or other private undertakings (3%).

Responsibility for the provision of water services lies with municipalities, which are not regulated by the state or the federal government. "The strong position of municipalities is the result of a constitutional standing the municipal self-government has had for the past 200 years, which is reinforced by the federal structure of the state and central government. Just as the municipalities protect citizens and local affairs from interference by state governments, the federal states protect municipalities from interference by the central or federal government or the European Union. The practice of using private-law undertakings as well as multi-utilities has underpinned successful decentralised management at the local and regional level." This view has a strong support in Germany, in view of a recent report by the *Gesellschaft für öffentliche Wirtschaft* (see Cox, 2007).

The state governments set the framework for municipal management rather than regulating them. They use general powers to "police" the behaviour of municipalities and their undertakings, viz., the control of level of debts. Also prices and charges are subject to review and revision by state supervisors. So government regulation boils down to balancing municipal autonomy. It is an application of *the subsidiarity principle*.

Certain types of contracts, which are normally illegal, are allowed in the water sector. These include demarcation agreements; price-fixing on a "most favoured customer" principle; and long-term exclusive partnerships for financing and sharing infrastructure. These contracts must be passed on to the competition authorities, but are assessed with respect of their benefit and necessity and their effect on third party interests according to *the proportionality principle*.

According to Kraemer e.a. (2007), the German water sector is still characterised by high levels of competition, which comes in various forms:

- Competition between organisational arrangements results in a choice for independent management and legal personality of the undertaking;
- "Benchmark" competition applied on the performance of undertakings;
- Competition through the media and political opposition parties;
- Competition between providers of water-related goods and services in the upstream markets;
- Competition between engineering, construction, and plant management business for delegation or concession contracts;
- Competition between professionals in the sector for recognition and reputation.

Together with the framework of public control described above, these forms of competition may be regarded as "functional equivalent" to the concept of utility regulation.

The small and medium-sized structure of the German concept of governance may be well fit for replication in the development countries. It is a clear alternative to the French professional water management concept, or the Anglo-Saxon concept of utility regulation.

4.4 The Netherlands[4]

Nederland literally means the low country, partly based on the sediments of the Rhine and Meuse rivers, which land had to be recovered from the sea. Also rain is abundant, so there is plenty of raw water, sweet and salt. Such a picture is too rosy, however, because the water resources are very vulnerable. Both the river Meuse and the river Rhine were very polluted, but thanks to the European directives a salmon was recently spotted in the Rhine again.

Around 1900 water facilities were held at a decentralized level by provinces, municipalities, and some private firms. In 1957 the Water Supply Act was introduced, in which the owner of a *waterleidingbedrijf,* a water company, was required to comply with the directives of the central government relating to water quality and quantity. These standards were specified in the *Waterleidingbesluit* 1960, which act is still the basis for central supervision. The increasing demand for water forced the government in 1975 to introduce elements of central planning, viz., the development of the infrastructure in a 30-years perspective. This act also allows the provinces to reorganize the supply of drinking water within their territory "in order to promote efficiency". Provincial reorganizations require approval of the central government and implied a transfer of the concession. The result was that the number of water companies decreased from 100 in 1980 to 7 in 2007.

In the nineties, the water companies Nuon and Delta converted into multifunctional firms, combining energy facilities with the supply of both drinking and industry water. In line with the international trend, the government started in 1994 the MDW-project for utilities, aimed at embracing

[4] This section heavily draws from discussion notes by Theo Raaijmakers (2006).

markets, and redefining (de-) regulation. Since almost all drinking water firms are incorporated as privately held companies, the shares of which are held by provinces and municipalities, privatisation means transferring shares to private parties. Separation between ownership and exploitation was also considered. The trend reversed, however, in 1999 when a parliamentary majority rejected privatisation and commercialisation of the water sector. The Netherlands Parliament thought that quality and price of drinking water is best secured by public investment and that the interdependence between ownership and operations would hamper transparency and accountability. So only bodies under public law may own and control drinking water firms. At the same time, the supply of other types of water is left to the market.

As a result, the management of the water companies grew stronger and the democratic supervision on the company's outcome diminished or even disappeared. The water companies could accumulate substantial financial reserves and the fact that executive pay exceeded by far the prime minister's remuneration became a political issue. Finally, it became apparent that (public) shareholders' conflicts could jeopardize proper focus on public interest. Since there is no supervision agency in the water sector, a national *benchmark* has used to assess the efficiency of the water companies. The strong concentration and cooperation between the few companies, however, does not guarantee diligent analysis of their results.

This picture may be too grim, however, because the price of drinking water in the Netherlands is low and the quality is good. Dijkgraaf e.a. (2007) have compared 2005 financial data between the Netherlands and England. The average price per cubic meter is € 1.30 vs. € 1.46; the average household bill € 146 vs. € 196, and the metering coverage 97% vs. 26%.

5 Revealed values and preliminary conclusions

The high level of aggregation analysis allows only for qualitative and tentative conclusions, based on the observations of the experts in the previous section.

The following priorities can be inferred:

France:
For the highest level of services (1) in Section 3.1, the values under (3.b) in Section 3.3 are dominant and result in the modes under (1) in Section 3.2.
For lower levels (2 and 3) in Section 3.1, the need for financial resources caused the governance principles under (3) to be dominated by values under (1) in Section 3.3, favouring the PPP-modes under (2) in Section 3.2.
The separation of domains has always been a French principle, so separation of public responsibility from private management was relatively easy to implement in France. This contrasts with mixed ownership of water companies, but then the separation principle was overruled by the first criterion.

England and Wales:
Financial distress forced the government to give priority to the values under (1) in Section 3.3, resulting in the privatization modes. The regulation mode under (2) followed the values under (2) in Section 3.3.

Germany:
A strong tradition in adopting the Subsidiarity principle, value (3.b.iii) of Section 3.3, urged the government to apply modes under (2) for all types of services.

In Germany the subsidiarity and proportionality principles are deeply rooted. That explains their decentralized municipal management structure, together with their preference for effective management by its elitist consensus.

The Netherlands:
All types of services in Section 3.1 have long been entrusted to the government under mode (1). Although the values under (3) pressed heavily to change from mode (1) to the modes (2) or (3), the values under (2) were too strong and prevented any reform.

Both the privatized solution and the mixed enterprises require a consensus between the management, the owners, and the regulator. It allows weak competition and uses benchmark or yardstick methods. The hybrid modes reveal serious transparency and supervision problems. Profits that public-owned firms make are in fact equivalent to a commodity tax on water services without parliamentary approval. Still, modes of effective management by elitist consensus are revealed to be preferred in all countries above more sophisticated modes of governance.

It is evident that an appropriate institutional framework is an important factor in achieving financial autonomy and good governance, which is represented by value (4) in Section 3.3. However, other values often dominate the government's preferences. Madhoo (2007:127) observes that the design of a comprehensive policy framework for sustainable water resource management should provide incentives for better financial accountability and sound pricing policies, reflecting as closely as possible the scarcity value of water. I agree with him, but I also have to conclude that practice in this matter is stronger than theory.

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