UNIVERSITY OF SOUTHAMPTON

POLITICAL AND ECONOMIC ANALYSIS OF REGULATION: THEORY AND APPLICATION

by

Massimo Di Domenico

Doctor of Philosophy

Faculty of Social Science

Department of Economics

Submitted September 2001

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF SOCIAL SCIENCE
ECONOMICS

Doctor of Philosophy

POLITICAL AND ECONOMIC ANALYSIS OF REGULATION: THEORY AND APPLICATION

by Massimo Di Domenico

The work presented in this thesis relates to the general theory on the privatisation and regulation of public utilities with particular concern to political economy. Generally speaking, the theory of privatisation and regulation has been considered from either an economic perspective stressing the asymmetry of information between the regulator and the regulated firm and attempting to identify optimal regulatory policy, or from a more political perspective which regards pressure groups or other political actors as the main determinants of policy. Relatively little has been done towards the construction and analysis of models in which economic and political aspects of regulation have been incorporated and investigated. And it is in this area that this thesis makes a contribution. Starting from the now-standard economic model of regulation (Laffont-Tirole) in which the government is essentially not modelled, but taken as a benign despot, I introduce a variety of more political elements. In particular, political parties that are motivated in a variety of ways, electoral competition and strategic behaviour by parties, the endogeneity of political entry, and the possibility of expressive political behaviour. In this way, the idea of the regulation of public utilities has been reviewed and modified to fit in a more complex political structure in which individual consumer/citizens act both as voters in expressing political demands and as customers expressing economic demands.

In the attempt to indicate the applicability of these ideas, I also consider the case of the recent history of the regulation of local public utilities in Italy. On the basis of qualitative and quantitative data collected by questionnaire I illustrate the interactions between the political and economic forces in determining the evolution of these local public utilities.

I would like to express my gratitude to Professor A.P. Hamlin

CONTENTS

LIST OF FIGURES

INTRODUCTION

The idea for this PhD dissertation builds on my personal interest in the evolution of public utilities and, generally, the evolution of State intervention in the regulation of the economy.

The main economic analysis of the general themes on privatisation, liberalisation, and the regulation of public utilities provides a literature focussing on the way privatisation has been implemented, the liberalisation of markets has been structured, and how to regulate such privatised sectors. It was immediately evident to me that the majority of both theoretical and empirical works were basically related to narrowly economic issues, leaving aside what I think is an important aspect of these topics - the political and institutional issues involved in privatisation and regulation. While there is clearly a considerable amount of research that focuses on political aspects of these issues, we are still some way from a fully rounded analysis that incorporates both economic and political aspects of the regulation process.

The basic idea of this dissertation was then to attempt to bring together some relevant ideas from the literature on political economy and to apply them in the context of the standard economic model of regulation - the Laffont and Tirole model. I wanted to investigate, in stages, how the addition of political structure could affect the standard regulation model. Chapter 1 begins this process by introducing into the regulation model the idea of a political party with political discretion, and by viewing alternative motivations that might describe the political party – ranging from the benchmark case of the perfectly benevolent party through the more novel case of the partially benevolent party, to the case of the ideologically motivated party.

Chapter 2 then takes the further step of introducing competition between political parties in an election process, so as to view the impact of elections and electioneering on parties of the three types introduced in chapter 1. In particular, my main concern was to begin to consider the complex relationships existing in the regulation system where the citizens can exert both political pressure via the electoral system and economic pressure through their role as consumers of the output of the regulated firm. So that individual citizen/consumers give rise to both economic and political demands that feed into the process. This theme is developed further in chapter 3 where, the model of competitive politics developed in chapter 2 is applied to the regulation model of chapter 1.

The analysis of political economy theory has lead me to consider some issues that are currently under debate in that literature. Chapter 4 is concerned with two such issues – the distinction between expressive and instrumental accounts of voting and political behaviour, and the endogenous determination of candidates in political elections. In this chapter I try to analyse how these issues might relate to the issue of regulation, and to the particular case of the regulation of public utilities at the local and regional level.

The final chapter 5 introduces a more empirical discussion of a case related to the provision of services by local public utilities in Italy. This is an interesting case study from my point of view because the recent Italian experience involves considerable changes in the nature of the political structure of regulation (the relationship between the local political authorities and the local public utilities), in the legal structure of the local public utilities and in the economic behaviour of these utilities. This empirical study was not designed explicitly for the purposes of this thesis, but is part of a larger research project which I am working on at Bocconi University and supported by the Italian Ministry of Research. Here I consider just a part of that research and attempt to use the qualitative and quantitative data gathered to illustrate and support some of the ideas developed in the earlier chapters of the thesis.

It is very difficult to even imagine empirical data that could be used to measure or test some of the ideas discussed in the models presented here – especially in relation to some of the political aspects of the model. Certainly chapter 5 does not attempt to formally test any hypotheses. Rather it tries to delineate and illustrate some line of reasoning that could, indirectly, give some empirical support to the theory introduced in the previous chapters.

1. THE POLITICAL ECONOMY OF REGULATION

1.1. INTRODUCTION

The analysis of regulation may be considered under two different visions. The first is the classical economic theory of regulation which has already produced a vast literature[1]. The second considers regulation from a more political point of view. In this second area there is a smaller, but rapidly growing, literature[2]. The first and most important task of this chapter is to provide a framework that allows of the integration of these two literatures. In order to do this, I will begin by outlining the Laffont-Tirole (1993) model that now provides the standard benchmark economic model of regulation, and then extend this model to include a number of political dimensions. The extensions I propose are related to those discussed in a recent article by Laffont (1996) who also generalises the economic model of regulation to account for some simple constitutional rules in order to consider simultaneously the political and economic aspects of the regulation of a natural monopoly model under conditions of asymmetric information.

The structure I will outline considers the case in which government, as well as its citizens, may have preferences over policy outcomes. The nature of the relationships between the government and the other agents in the model are then of crucial importance. In particular we can consider two parallel types of relationship: on the one hand, what might be termed the economic relationship between the government, the regulatory agency, the regulated firm and the consumer; and, on the other hand, what might be termed the political relationship between the citizen, the government, the regulated firm and the agency.

A second important task of this chapter is to begin to consider how different structures of political motivation - that is, different assumptions about the motivation of political actors - could influence the regulatory system as it operates through the economic relationship. In particular, starting from the simple benevolent dictator theory in which the government

---

[1] It is interesting to mention Armstrong, Cowan and Vickers (1994), Berg and Tshirhart (1988), Bishop and Kay (1988), Foreman-Peck and Millward (1994) ,Laffont and Tirole (1993) as reference books both for basic and advanced analysis on regulation.

[2] For example Barzel (1989), Fiorina (1982), Kikeri, Nellis and Shirley (1992), Levy and Spiller (1994), North (1990), Romer and Rosenthal (1986), Spiller (1990), Williamson (1988), Willig (1994).

is assumed both to be motivated to act in the interests of citizens and to have the power to take whatever action may be required, we will consider three rather different political models:

1. A modified benevolent dictator model in which voting or other political behaviour has some impact on the objective and the behaviour of the government.
2. A partially benevolent model where the political party in power maximises the welfare of that portion of citizens who support that party, rather than the whole citizenry.
3. An ideological model where the ruling political party is concerned only with its own utility.

These models will be considered initially in the framework of a simple one-party model of politics. That is, I will not consider elections in which political parties compete for office. This will come later, but for the moment I want to concentrate on the impact of re-specifying political motivations as a preliminary step towards a more wide-ranging political analysis of regulation.

The remainder of this chapter is organised in three main parts. The next section reviews the basic Laffont-Tirole model of regulation (hereafter, the L-T model) in its standard form and incorporating a benevolent dictator theory of politics. The more novel aspect of the research is begun in section 1.3, where alternative approaches to political motivation are introduced and discussed. Section 1.4 then begins the process of bringing the economic and political aspects together by modifying the original L-T model by introducing a single political party and varying its motivational structure. The one-party models of political regulation outlined will then provide the basic starting point for further analysis in later chapters.

1.2. THE ECONOMICS OF REGULATION: THE LAFFONT-TIROLE MODEL

The purpose of this section is to review the economic model of governmental regulation of industries. In particular I will consider the L-T model, which includes the possibility of regulatory capture[3].

The economic theory of government intervention may be divided into two main branches. The first, public interest theory, stresses the idea that the government intervenes in the

[3] The presentation, and notation, therefore draws heavily on Laffont and Tirole (1993) particularly sections 11.1-11.3. I do not explicitly include the analysis of regulatory capture in this introductory review of the model - see Laffont and Tirole (1993) section 11.4.

economy to correct market imperfections such as monopoly pricing or environmental externalities. The second, "capture" or "interest group" theory, models the idea that government policy may be determined by interest group pressure.

1. Laffont-Tirole take the agency problem as central. Agency models introduce an important additional element of inefficiency into the analysis. And this form of inefficiency is relevant to both economic and political relationships. This inefficiency is due to the loss of control by the principal and the fact that the agent can extract an informational rent. The L-T model is set in this context. In particular, it considers the regulation of a natural monopoly subjected to control by a regulator. The firm has a private informational advantage over the regulator because it knows the level of cost reducing activity and the technological parameters of production. For this reason the firm will generally extract an informational rent. The other actors in the model are the congress or government (which acts as the principal) and the regulatory agent that has to supervise the firm's activity on behalf of the government. In this framework the congress assumes the role of the benevolent dictator - seeking to maximise social welfare that is defined in terms of the sum of all surpluses in society, subject only to the constraints imposed by technology and the availability of information. This represents an excessive simplification of reality by avoiding any detailed description of the political relationships that influence congress. Laffont and Tirole justify this assumption in several ways, saying that:

- the model allows us to focus on the implications of agency itself rather than the politics of congress;
- the model could be interpreted broadly to consider the regulatory agency as the government and the congress as the citizens, so that it might capture some aspects of the political agency problem;
- the model could be applied to cases where the congress does not seek to maximise social welfare but, rather, tries to control the outcome deriving from the regulatory process.

In these ways the model can be seen to allow of a wide range of interpretations without considering them explicitly. Nevertheless, I believe that it is interesting to introduce political institutions into the model more explicitly so as to focus directly on the interaction between political and economic considerations.

1.2.1. General Structure of the Model

The model considers the relationship between the firm, the regulator and the congress. For each of these agents, I specify the following definitions, which also serve to introduce relevant notation.

The firm

The firm produces the marketable output q at cost:

$$C = (\beta - e)\, q$$

where β is a technological parameter and e is 'effort', or cost reducing activity. I will assume that β can take either of two values: high ($\overline{\beta}$) with probability (1-v) and low ($\underline{\beta}$) with probability v.

It is assumed that:

$C_\beta > 0$; if β is high the technology is inefficient in the sense of more expensive;

$C_e < 0$ and $C_{ee} \geq 0$; so that effort reduces cost at a decreasing rate.

It is also possible to introduce the firm manager's disutility of effort expressed in monetary term Ψ(e), where Ψ′ (e) > 0 (effort is costly to managers), and Ψ″(e) >0 (convex function). The cost C, the output q and the price P(q) are all assumed to be verifiable.

The key issue in this model of regulation is the problem of asymmetric information in the form of moral-hazard and adverse-selection. The asymmetric information problem arises because the regulator does not know the technology of the firm or the cost reducing effort of the managers. The parameter β is private information to the firm, and this aspect of the problem represents the adverse-selection issue. At the same time, the level of effort e is also unverifiable and this represents a moral-hazard problem, setting up perverse incentives for the firm.

Revenues, costs and transfers.

The government receives all of the firm's net revenue R(q) but pays a transfer t to the firm. The managers' utility function becomes then:

(1) $$U = t - \Psi(e)$$

To accept the regulation constraint, the effort costs must be covered by the monetary transfer t. Of course this sort of relationship must assure the firm at least the level of utility that is available in any outside option. I normalise this firm's outside opportunity or "reservation utility" to 0. Consequently the firm's individual rationality (IR) constraint is:

(2) $t - \Psi(e) \geq 0$

$U \geq 0$ represents the firm's "rent" or "surplus".

It is assumed that both firm and regulator are risk-neutral with respect to income.

The regulator

The model considers the regulator as the intermediary in charge of controlling the firm's activity. It receives rewards in the form of income, s , from the congress.

The regulator's utility function is then:

(3) $V(s) = s - s^* \geq 0$

where s* represents its reservation income. For simplicity I assume that the regulator's activity is necessary to regulate the firm's price and cost. That is why the government pays at least s* to the agency in each state of nature. It is important to specify the complex activity of the regulatory agency. Usually we say that the regulator obtains information about the firm's technology. A signal σ carries that information. Then I may specify the following probability system: ξ is the probability that the regulator receives the true information ($\sigma = \beta$) and (1-ξ) is the regulator's probability of learning nothing ($\sigma = \varnothing$). Considering this probability together with the probability of the parameter β being low or high, it is possible to configure four states of nature:

- with probability ξ v the regulator receives true information about the technology $\underline{\beta}$;
- with probability (1-ξ)v, the technology is $\underline{\beta}$, but the regulator does not have the true information and believes the firm to be efficient with probability v;
- with probability ξ (1-v) the regulator receives true information about the technology $\overline{\beta}$;
- with probability (1-ξ) (1-v) the technology is $\overline{\beta}$, but the regulator does not have the true information and believes the firm to be inefficient with probability (1-v).

In the simplest version of the model, the parameter ξ is exogenous: e.g. the agency's investigation activity to discover the firm's technology is given and is included in its budget.

It is also important to specify the report function $r \in \{\sigma, \varnothing\}$. The regulatory agency must report to the congress $r = \varnothing$ if it has learned nothing ($\sigma = \varnothing$). If the regulator learns the truth it may either report the truth, $r = \beta$, or report, falsely, that it has learnt nothing, $r = \varnothing$.

The model considers a situation without collusion between the regulator and the congress.

The consumer

The utility of the consumer is simply defined as

(4) S(q) - P(q) q

where S(q) represents the benefit or surplus derived from the consumption for the good q, and P(q) q the expenditures for that consumption.

The congress

The congress' role is to maximise social welfare which is given by the sum of consumer, firm and regulatory agency surpluses. That is:

(5) $$W = U + V + [S(q) - P(q)q - (1+\lambda)(s + t + (\beta - e)q - P(q)q]$$

or

$$W = [S(q) + \lambda P(q)q] - (1+\lambda)(s^* + (\beta - e)q + \Psi(e)) - \lambda U - \lambda V$$

where the terms in the squared bracket in the second expression represents the generalised consumer's surplus, whereas the rest of the formula introduces the cost of the project given the distortion term λ. In particular the term λU and λV are the social costs associated with the rents that firm and agency earn. Of course the congress does not want to leave such rents with these agents. The congress' only observable variables are the cost C, the output q (or the price p = P(q)) and it also receives the report from the regulatory agency, r. It does not know the firm's technology parameters β or the agency's signal σ. The congress maximises the expected social welfare W by designing the incentive schemes s(C, q, r) and t(C, q, r) for the agency and the firm respectively.

The process could be timed in the following way: initially the relevant information is learnt, simultaneously, by all the agents in the system. That is, the congress, and the consumers learn that β belongs to $\{\underline{\beta}\,;\overline{\beta}\}$; the regulatory agency learns σ and the firm learns β. The probability distributions are common knowledge[4].

---

[4] The cumulative distribution function is $F(\beta)$ (with $F(\underline{\beta}) = 0$, $F(\overline{\beta}) = 1$) and $F(\beta)$ has a continuous and strictly positive density $f(\beta)$ on $[\underline{\beta}, \overline{\beta}]$. The firm then, assumes only the two values $\overline{\beta}$ and $\underline{\beta}$ with probability (1-v) and v respectively.

The congress then designs the incentive schemes for the firm and the agency. Next, the regulatory agency makes a report while the firm chooses effort and price. The story finishes with the transfer to the firm, as specified in the regulatory contracts.

Shadow costs. The presence of shadow costs of public founds are indicated by λ. That is, the government expenditures are covered by the introduction of distortionary taxes on capital, labour and consumption. These distortions then, have to be introduced in our model. So that, for example, financing the firm's deficit of £1 imposes a cost of £λ>£1 on society as a whole.

Benevolent regulator assumption. I assume that the regulator's objective is to maximise the total surplus given by the sum of surpluses of the firm plus taxpayers plus consumers in the society, taking into account the distortion created by the shadow costs.

Regulatory contracts. When a regulatory contract has to be set out, the power for contracting is split between the regulator and the regulated firm. In order to avoid signalling problems, I assume that the regulator designs the regulatory contracts. The signalling problem arises when an informed party takes a relevant role to design a regulatory contract.

Incentive Scheme. The incentive schemes in this model are essentially based on cost data. In particular, I assume that the government pays the regulated firm a fixed fee and a fraction of the cost that the firm has sustained. That is:

$$t = a - bC$$

where a is the fixed fee and b is the fraction of cost C that is borne by the firm. The term b is an important parameter of the incentive scheme approach. It represents the power of the incentive scheme and it assumes a value between 0 and 1.

1.2.2. The full information case ($\sigma = \beta$)

This case depicts the situation in which the congress drives the firm's rent to zero because the parameter β is known accurately. Maximising (5) with respect to U, e*(β) and q*(β) we obtain for all $\beta \in \{\underline{\beta}; \overline{\beta}\}$

(6) $$U(\beta) = U^*(\beta) = 0$$

(the * indicates the socially optimal policy),

(7) $$\Psi'(e) = q$$

and

(8) $$\frac{p-(\beta-e)}{p} = \frac{\lambda}{1+\lambda}\frac{1}{\eta(p)}$$

Equation (7) states that marginal cost and benefit of effort are equal whereas equation (8) simply re-states the Ramsey pricing formula. It is important to specify the case for each value of β. We indicate with $\underline{q}^*(e)$ and $\overline{q}^*(e)$ the Ramsey output when the marginal cost is $\underline{\beta}-e$ or $\overline{\beta}-e$ respectively. Clearly $\underline{q}^*(e)$ and $\overline{q}^*(e)$ are non-decreasing functions of e.

In the full information environment, of course, the maximisation of social welfare depends on effort $(\underline{e};\overline{e})$. Anticipating the next paragraph, under asymmetric information the efficient firm's allocation is unchanged relatively to a symmetric information case. The problem arises when we consider the inefficient effort $\overline{e}$. In this case there will be a distortion which depends on the divergence between $\overline{e}$ and the optimal level $\overline{e}^*$. In the full information situation this divergence does not exist and the result is optimal. The expected social welfare $W^{FI}(\overline{e})$ (that is the welfare determined when the congress has not learned β yet, but will do so) is by definition determined by choosing $\overline{e}$ equal to $\overline{e}^*$, that is:

(9) $$W^{FI} \equiv W^{FI}(\overline{e}^*)$$

1.2.3. The asymmetric information case ($\sigma = \varnothing$)

In this case, the basic regulatory aim is to prevent efficient firms from claiming to be inefficient, and so extracting a rent. I indicate with $(\underline{e},\underline{q},\underline{t})$ and $(\overline{e},\overline{q},\overline{t})$ the efforts, output levels, and transfers to types $\underline{\beta}$ and $\overline{\beta}$ in a situation where the firm takes advantage over the congress because of its asymmetric information. To prevent such advantage, I have to modify the full information rationality constraint by adding an incentive constraint:

(10) $$\underline{t} - \Psi(\underline{e}) \geq \overline{t} - \Psi(\overline{e} - \Delta\beta)$$

In this way I avoid the possibility that the efficient firm produces at cost $\overline{\beta}-\overline{e}$, exerts effort $\overline{e}-\Delta\beta$ but obtains the transfer $\overline{t}$ from the congress. In this case the inefficient firm does not obtain any rent and $\overline{t} = \Psi(\overline{e})$.

Denoting with $\underline{U}$ the efficient firm's rent, I can derive the following equation at the optimum:

$$\underline{U} \equiv \underline{t} - \Psi(\underline{e}) = \bar{t} - \Psi(\bar{e} - \Delta\beta) = \Psi(\bar{e}) - \Psi(\bar{e} - \Delta\beta)$$

or

$$\underline{U} = \Phi(\bar{e}) \tag{11}$$

where $\Phi(\bar{e}) = \Psi(\bar{e}) - \Psi(\bar{e} - \Delta\beta)$ is an increasing and convex function. It is trivial to see that with an increase of $\bar{e}$ (the inefficient firm receives more incentive), the efficient firm's rent increases accordingly. The expected social welfare function for the congress is then:

$$\max_{\{\underline{q},\underline{e},\bar{q},\bar{e}\}} \{v[S(\underline{q}) + \lambda P(\underline{q})\underline{q} - (1+\lambda)(s^* + (\underline{\beta} - \underline{e})\underline{q} + \Psi(\underline{e})) - \lambda\Phi(\bar{e})] + (1-v)[S(\bar{q}) + \lambda P(\bar{q})\bar{q} - (1+\lambda)(s^* + (\bar{\beta} - \bar{e})\bar{q} + \Psi(\bar{e}))]\} \tag{12}$$

This process leads us to the equilibrium points $\underline{q} = \underline{q}^*$ and $\underline{e} = \underline{e}^*$ for the efficient firm. This case depicts a situation in which there is no difference when compared with the full information case, and both quantity and effort are perfectly coincident with the optimal values. However, the case for the inefficient firm is different. This is because the incentive constraint (11) binds on the inefficient firm's effort $\bar{e}$, in order to reduce the efficient firm's rent. That is:

$$\Psi(\bar{e}) = \bar{q}^*(\bar{e}) - \frac{\lambda v}{(1+\lambda)(1-v)}\Phi'(\bar{e}) \tag{13}$$

where

$$\bar{e} < \bar{e}^*$$

Because the Ramsey output $\bar{q}^*(\bar{e})$ is increasing in e, the above result implies that:

$$\bar{q} < \bar{q}^*$$

More generally, fixing exogenously the inefficient firm's effort at e, the expected welfare under asymmetric information becomes:

$$W^{AI}(e) = \max_{e} \{W^{FI}(e) - \lambda \quad v\Phi(e)\} = W^{FI}(\bar{e}) - \lambda v\Phi(\bar{e}) \tag{14}$$

(the strict concavity of W^{AI} depends on the strict concavity of W^{FI}).

In this situation the corresponding market price is higher than under full information.

The general idea expressed in this model is that in the absence of asymmetric information, the firm cannot extract rent and so the firm's output can be socially optimal. In effect, in this case, the benevolent dictator can simply run the firm. With asymmetric information, the firm has an informational advantage and the problem becomes one of designing a regulatory regime to motivate the firm to use its informational advantage for general benefits instead of increasing its monopoly rents.

Having reviewed the basic L-T model, I may now introduce some relevant modifications that take account of the more political aspect of regulation. In particular, in the next section I will consider a new actor, the political party, and alternative specifications of political motivation.

1.3. THE POLITICS OF REGULATION: POLITICAL MOTIVATIONS

In the following sections I take the first steps towards modifying the economic model of regulation to introduce an explicitly political component. In particular, the model will begin to focus on the political relationship between the citizen/consumer and the congress, and the impact of this relationship on the economic relationship between the congress, the regulator and the firm.

The fundamental idea is that while the firm produces goods or services which benefit directly the consumer, this is not the only effect. At the same time the consumer is also a citizen reacting to the firm - and its regulation - politically. The citizen/consumer's satisfaction or dissatisfaction may be expressed by a political preference that operates via the activity of the congress. This political preference may then influence the relationship between the congress, the regulatory agency and the firm.

The consumer is therefore involved in this process both as a consumer and as citizen/voter. If she is not satisfied by the current system because, for example, she does not approve of the firm's production, she could try to effect change by expressing this disapproval politically. Of course, there are many forms of political expression, and the models discussed here will not attempt to represent all of them. Indeed, as a first step, it will only consider a very simple relationship between political and economic activity. So that the following model represents only a first step toward more complex ones.

The analytical starting point is to consider only one political party, but different relationships between the motivation of that party and the interests of citizens. This might be thought of as viewing the degree to which government is responsive to pressure from

public opinion, without actually modelling the mechanism by which public opinion impacts on government. In this way, the intention is to begin to look into the black box called "congress" within the standard L-T model, in order to see how the political relationships interact with the economic relationships, and how the economic result may be influenced.

The structure of the remainder of this chapter is first to provide an account of political motivation and then to construct a simple one-party model of politics that builds on the discussion of political motivation and extends the L-T model of regulation. This model will then be used to explore alternative specifications of the responsiveness of political motivations to citizens' interests.

Traditional economic theory treats the political agent, for example the congress, as a benevolent dictator having as their only concern the social welfare function. The mainstream Public Choice/Political Economy literature has rejected such an assumption of public spiritedness and focused on what might be termed the electioneering approach[5]. In this approach political agents are motivated to win elections and, therefore, gain office. Sometimes this is explained in terms of some "surplus" available to the party in power, sometimes simply in terms of a desire for office *per se*. In this type of model the central question is whether the structure of electoral competition gives us reasons to believe that the policies delivered by electioneering political agents (such as parties) will maximise, or even promote, social welfare.

An alternative to the electioneering and benevolent dictator approaches is based on the idea of the ideological party. In this case parties have fixed political agendas of their own, sometimes called ideological preferences. Alesina (1988)[6], for example, constructs a model of two party competition where the parties have fixed policy positions, in a system of rational voters. This model has been extended and reconsidered by Alesina and Rosenthal (1995), where the policy outcome depends on the effective composition of the legislative and on the affiliation of the executive and therefore on bargaining between the parties - this is the basic idea of 'mixed' government. Alesina and Rosenthal consider the

---

[5] Again the literature on this argument is very vast. For the purpose of this article I focus principally on the following authors: Brennan and Buchanan (1977, 78, 80, 85), Downs (1957), Feenstra and Bhagwati (1982), Oates (1981),Shumpeter (1950), Wilson (1989).

[6]For dated references I also mention: Brennan and Hamlin (1993), Calvert (1985), Downs (1957), Hotelling (1929), Mill (1863), Shumpeter (1950), Wittman (1977).

strategic voting activity of citizens who may support one party in the legislative contest and the other party in the presidential election in order to achieve a policy outcome that might be seen as a compromise between the ideological positions of the two parties. The idea of ideological party preferences is taken to the extreme by Besley and Coate (1996) where each person (with their given political preferences) is also, at least potentially, a party/candidate.

Each of these approaches is extreme in the sense that political parties are seen as monolithic and motivated by a single goal - social welfare, winning office, or a substantive ideological goal. A more recent approach - that I shall extend here- seeks to model parties as more moderate. A first step in this direction is taken by considering the idea of the partially benevolent party, as introduced by Laffont (1996). Such a party serves the interests of a specified sub-set of the population of citizens. It is natural to think of this sub-set as the party's political supporters. But the partially benevolent party idea could be interpreted differently - as a balance between a perfectly benevolent party and an ideological party. There is a related ambiguity in the use of the word "partial" in describing the partially benevolent party - in one sense this might imply that the party is only partly benevolent (and therefore partly non-benevolent, perhaps ideological); while in a second sense the word "partial" might be taken to mean biased so that the party is not "impartial" in its treatment of citizens. In the following analysis I am more concerned with the second sense of partial, that connects with the idea that the political party is biased and benevolent only on that section of the citizenry that supports it.

The principle comparisons that I will be concerned with here will be between the fully benevolent model of the political party, the partially benevolent model, and the ideological model. In the remainder of this chapter I will be concerned to lay out the different motivational structures of these models, and explore their implications in a simple model of one-party political regulation. In this way, I seek to explore one dimension of the political structure - the benevolence-ideology dimension. But clearly, this involves abstracting from the analysis of inter-party competition and, particularly, the analysis of elections. These topics, and the interaction between the electioneering dimension of political parties and the benevolence-ideology dimension, will be considered later.

1.4. A ONE-PARTY MODEL

As far as possible, I will maintain the form of the L-T model. In particular, the specification of the firm and the regulatory agency will be essentially identical to that reviewed above. The differences between the models relate to the specification of consumers and the congress/political party.

The firm

As before, the firm produces the marketable output q at cost C, given the technological parameter β. The firm's utility is then given as the sum of the government transfer t and the manager's effort expressed in monetary term $\psi(e)$. The firm's individual rationality (IR) constraint is then $t-\psi(e) \geq 0$.

The regulatory agency

As before, the regulatory agency receives rewards from the congress for its activity, denoted by s. The only significant novelty is that I now account explicitly for the financing of this reward, as well as the payment to the firm. That is, the rewards given to the agency and the firm are financed with the fixed tax T levied on consumers where $T=s+t$.

The tax is taken to be a simple lump-sum tax levied equally on all citizens. I shall assume that there is no possibility of the government attempting to achieve political support by changing the structure of taxation, since consideration of tax policy issues would take us too far from the main issue at hand.

The consumer

The model now supposes two types of consumers (type 1 and type 2) with a proportion α of the population of the first type, and $(1-\alpha)$ of the second type. Type 1 consumers derive a benefit $\theta_1(q)\, S(q)$ from consuming the good q produced by the firm, while type 2 consumers derive the benefit $\theta_2(q)\, S(q)$ with $\theta_1 \neq \theta_2 > 0$. In particular the parameters $\theta_1(q)$ and $\theta_2(q)$ are function of the quantity q with $\theta_1' > 1$ and $0 \leq \theta_2' \leq 1$. The two groups of citizens have different needs or preferences concerning the good produced by the firm; type 1 citizens having a stronger preference for q than type 2. These differential preferences across the two groups of consumers will influence their political activity .

At the beginning of time α is a random variable[7] in the interval [0,1]. Consumers' surplus is then specified for each group of consumers as:

$$V_1 = \alpha\,\theta_1(q)\,(S(q)-P(q)q)-(1+\lambda)[T-\alpha\,\theta_1(q)P(q)q] \geq 0 \quad (15)$$

$$V_2 = (1-\alpha)\,\theta_2(q)\,[S(q)-P(q)q]-(1+\lambda)[T-\theta_2(q)\,(1-\alpha)\,P(q)q] \geq 0$$

This specification of consumers into two groups allows a number of ways in which I may specify the motivations of the political party in power.

The political party

It is important to repeat that I am not considering political elections - there is only one political party - so the ruling party is not concerned with the threat of the loss of office. However, the political party may be concerned about the level of political support it receives from the citizens, and the nature of this support will depend on its policy which in turn directly influences the welfare of citizens.

The case of the purely ideological party; that is, the case in which the party has its own ideological preferences that it would seek to satisfy when in power, might be though of as a version of the Leviathan model of Brennan and Buchanan (1985), where the assumption of a benevolent dictator is replaced by an assumption of a self-interested dictator[8]. Obviously a purely ideological party, without constraints imposed by elections or other institutions, will simply follow whatever policy coincides with its own ideology, regardless of the implications for consumer/citizens. Clearly, then, a model of such ideologically motivated parties will be of little interest in the setting of a one-party model, and I will not pursue this case in any detail here, although I will return to it when I move on to consider multi-party politics with elections.

In the models to be discussed, politicians are concerned to regulate, through the regulatory agency, the firm, but in order to view the different cases I must allow for endogenous political decision making. For this reason, I introduce the following politician's surplus function:

$$U_2 = d(q,\mu_2(e_2(q))) \geq 0 \quad (16)$$

where q is the firm's production, e_2 is political effort and μ_2 is the monetary disutility function of that effort (with $dU_2/dq < 0$ and $dU_2'' < 0$; $dU_2/de_2 < 0$ and $dU_2'' < 0$).

---

[7] See Laffont (1996) who introduces this way of modelling the division between the groups of consumer/citizens.

[8] See also Calvert (1985) for discussion of the ideological party assumption.

The main difference between the L-T model, and the models introduced here is that the political party/congress is no longer necessarily a monolithic and neutral actor. This important change will have an effect on the optimal form of regulation under asymmetric information.

It is easy to see that in order to enforce the optimal level of output q*, the politicians in power would have to expend some level of political effort, e_2*. However, this efficient level is not obtained when there is asymmetric information in the system. It will be demonstrated, below, that with complete information the party in power will behave efficiently whenever it is at all responsive to public pressure - that is whether it is fully or partially benevolent. Production is then socially efficient because the firm's managers cannot gain a rent, and the regulatory agency will report all the relevant information about the firm's cost to the government. At the same time, politicians cannot appropriate any rent and so their activity is also efficient (i.e. U_2= 0).

By contrast, the asymmetric information case allows both productive and political inefficiency. The basic L-T model accounts for the rent that the firms could earn because of its informational advantage. But the asymmetry of information can also benefit the politicians in power. With asymmetric information the politicians can gain a rent by varying their effort with respect to the socially optimal level of effort. For example, with an inefficient firm the party should improve its control activity over the firm if it wants to have the support of the citizens. If the firm's activity is efficient though, the party in power could behave inefficiently. The party in power may decrease the political effort (e_2) gaining a rent from the consumer. In particular the citizens believe that the party's activity is efficient because of the firm's performance.

1.4.1. The benevolent dictator case revisited

I begin with the case of the fully benevolent party/congress in the face of the new specification of consumers. The fully benevolent party seeks to maximise the social welfare function expressed as the sum of the surpluses associated with the firm, the regulatory agency, and the two groups of consumers\citizens. That is:

(17) $$W = \alpha\theta_1(q)[S(q)-P(q)q\ ]+(1-\alpha)\theta_2(q)[S(q)-P(q)q]-(1+\lambda)[s+t+(\beta-e)q-$$

$$\alpha\ \theta_1\ P(q)q-(1-\alpha)\ \theta_2\ P(q)q]+\ U+V+U_2$$

with the following IR constraints for the firm and the two groups of citizens:

$U \geq 0$;

$V_1 = \alpha\theta_1(q)$ [S(q)-P(q)q]-T ≥ 0 ;

$V_2 = \theta_2(q)$ (1-α)[S(q)-P(q)q]-T≥ 0.

As in the basic L-T model, the surpluses are shown net of the cost component $(1+\lambda)$ [·] where λ represents again the shadow price of public funds.

It is possible to rewrite the (17) more simply as:

(18) $$W = [\alpha\ \theta_1 + \theta_2(1-\alpha)][S(q) + \lambda P(q)q] - (1+\lambda)(s^* + \Psi(e) + (\beta - e)q)] - \lambda U - \lambda V + U_2$$

The benevolent dictator maximises (18), trying to eliminate the rents gained by the firm. The party knows only the cost C, the output q (or the price p = P(q)) and receives the report r from the regulatory agency (i.e. there is no collusion between the agency and the firm). The incentives s(C, q, r) and t(C, q, r) are introduced in order to maximise the expected SWF for different states of the nature.

It is clear from (17) and (18) that, under full information, the party cannot decrease its political effort below the optimal level e_2^* so that the party can not gain any rent, because it is perfectly observed by the citizens. In a similar way to the manner in which the government controls the firm and the regulator, public opinion effectively controls the party in power.

However, under imperfect information the party's activity is not fully observed by the citizens and the party could behave inefficiently to increase its own surplus. To represent this new version of the model, I indicate with γ the activity of the party in power. With complete information the citizens collect the true information $\gamma=e_2$, while with asymmetric information the citizens may collect either the true information $\gamma= e_2$, or nothing $\gamma=\varnothing$. This mirrors the informational structure that applies to the firm.

At time 0 all the agents in the model collect the relevant information simultaneously. This means that the party and the consumer understand that β belongs to $\{\underline{\beta}, \overline{\beta}\}$ (with $\nu = \Pr(\beta = \underline{\beta})$ and $1-\nu = \Pr(\beta = \overline{\beta})$), while the regulator learns σ, the citizens γ and the firm β.

The party pays s=s* to the agency and it obtains the same information of the agency, at the social cost $(1 + \lambda)$ s*.

The maximisation of the (18) then determines:

(19) $$\frac{[\alpha\ \theta_1(q^*)+(1-\alpha)\theta_2(q^*)]p-(\beta-e)}{p}=[\alpha\ \theta_1\lambda+(1-\alpha)\theta_2\lambda]\frac{1}{1+\lambda}\frac{1}{\eta}+$$

(i)

$$-[\alpha\ \theta_1'+(1-\alpha)\theta_2']\ [S(q^*)+\lambda\ P(q^*)\ q^*]\frac{1}{(1+\lambda)p}$$

where $\theta_1' = d\theta_1/dq$ and $\theta_2' = d\theta_2/dq$

(ii) $\Psi'(e)=q \Leftrightarrow e=e^*$;

(iii) $U=0$;

(iv) $V_\alpha \geq 0$:, $V_{1-\alpha}\geq 0$;

(v) the project is undertaken if $[\alpha\theta_1+(1-\alpha)\theta_2][S(q)+\lambda P(q)q]-(1+\lambda)[\Psi(e^*)+(\beta-e^*)q]\geq 0$;

(vi) $U_2=0$;

(vii) $dU_2\backslash de_2=d'(\cdot)\ \mu'_2(e_2) \Leftrightarrow e_2=e_2^*$.

The result (i) shows a price-cost margin that takes into account the two groups of consumers[9]. It is interesting to see how the margin depends also on the θ's. The citizens preferences over the quantity q determines the maximisation result of the party in power. (ii) considers the optimal effort for the firm and the (iii) sets utility equal to zero because it is costly to leave a rent to the firm. (iv) analyses the individual rationality constraints, while (v) specifies the conditions to start the project. Condition (vi) stresses that the party is under the control of the citizens, allowing the party to gain no rent. In this case the political effort is efficient (condition (vii)).

1.4.2. The partially benevolent party case

This is the case where the party in power maximises a SWF that takes into consideration only the section of citizens that supports the party (for example those of type 1). It is implicit that this type of citizens will continue to sustain the party if the regulation of the firm is efficient. The relevant partial SWF is indicated as

(20) $$W^{PB}=\alpha\ \theta_1\ [S(q)-P(q)q]-(1+\lambda)[s+t+(\beta-e)q-\alpha\ \ \theta_1\ P(q)q]+U+V+U_2$$

[9]See Laffont (96) for a distinction between discriminatory and non discriminatory optimal price of the two groups of consumers.

The partially benevolent party then, maximises (20) trying to reduce the inefficient rents earned by the firm and the agency (U, V). At the same time, the party in power does not gain any rent if there is complete information ($U_2 = 0$).

The party maximises (20) taking into account the individual rationality constraint for the portion of citizens not belonging to its supporters (those of type 2) that is:

(21) $$\max_q W^{PB} = \alpha\ \theta_1[S(q) - P(q)q] - (1+\lambda)[s + t + (\beta - e)q - \alpha\ \theta_1\ P(q)q] + U + V + U_2$$

s.t.

$$\theta_2(1-\alpha)[S(q) + \lambda P(q)q] - (1+\lambda)[s + t - (1-\alpha)\theta_2 P(q)q] \geq 0$$

$U \geq 0$

It is then possible to obtain:

(i) $$\frac{\alpha\theta_1\ p - (\beta - e)}{p} = \frac{\alpha\theta_1\lambda}{1+\lambda}\frac{1}{\eta} - \alpha\ \theta_1' \frac{1}{(1+\lambda)p}[S(q^*) + \lambda p(q^*)q^*]$$

with $\theta_1' > 1$.

(ii) $\Psi'(e) = q \Leftrightarrow e = e^*$;

(iii) $U=0$;

(iv) $V_{1-\alpha} \geq 0$;

(v) Do the project iff $\alpha\ \theta_1\ [S(q)+\lambda P(q)q]-(1+\lambda)[\Psi(e^*)+(\beta-e^*)q] \geq 0$;

(vi) $U_2 = 0$;

(vii) $dU_2 \backslash de_2 = d'(\cdot)\ \mu'_2(e_2) \Leftrightarrow e_2 = e_2^*$.

These results are broadly similar to those in the fully benevolent case. In this case though, (i) considers the price-cost margin as a function only of the portion of citizens that supported the party (parameter $\alpha\ \theta_1$ or $(1-\alpha)\ \theta_2$). The party takes into account only its supporters and the maximisation process is different depending on which group of citizens is considered. The θ's really create a difference between the two groups of citizens.

1.4.3. The cases compared: Complete information

As before, the party in power knows the firm's technological parameters and so the firm cannot gain rent. But for the same reason, the citizens know the party's activity (the effort variable), so that the party will not be able to extract rent either if the party in power is sensitive to the citizens' political satisfaction. This is shown formally below.

I have already introduced the utility function U_2 for the party in power. The party earns a rent when its effort is lower than the optimal one i.e. $e_2(q) \leq e_2^*(q)$.

To analyse the problem it is useful to consider the following probability functions for every state of nature. For an efficient firm's production ($\underline{q}$), the party's behaviour could be efficient or inefficient with the following probability:

y: the probability that the party undertakes the efficient effort $\underline{e_2}$;

1-y: the probability that the party undertakes the inefficient effort $\overline{e_2}$

The implication is that the firm's and party's joint behaviour is quite complex. For example one of the possible states of the nature is represented by a firm's efficient production. This efficient production satisfies the consumer\citizen. The party in power knows that the citizens are satisfied by the efficient production $\underline{q}$ and, for this reason, it is able to reduce its effort to $\overline{e_2}$, thereby earning a rent.

For the purpose of this analysis, I focus only on the inefficient party's behaviour when the firm is efficient and vice versa. I start, as usual, with the benevolent party and then I proceed with the partially benevolent party.

The benevolent party

It is possible to indicate the SWF for the benevolent party as it follows:

(22)
$$W = v(1-y)\{[\alpha\theta_1(\underline{q}) + (1-\alpha)\theta_2(\underline{q})][S(\underline{q}) + \lambda P(\underline{q})\underline{q}] - (1+\lambda)$$
$$(s^* + \Psi(\underline{e}) + (\underline{\beta} - \underline{e})\underline{q}) + d(\underline{q}, \mu_2(\overline{e_2}(\underline{q}))) - \lambda\underline{U}\} +$$
$$(1-v)y\{[\alpha\theta_1(\overline{q}) + (1-\alpha)\theta_2(\overline{q})][S(\overline{q}) - \lambda P(\overline{q})\overline{q}] - (1+\lambda)$$
$$(s^* + \Psi(\overline{e}) + (\overline{\beta} - \overline{e})\overline{q}) + d(\overline{q}, \mu_2(\underline{e_2}(\overline{q}))) - \lambda\underline{U}\} - \lambda V$$

As it is possible to see, I have reproduced the SWT for two states of nature i.e. v(1-y) and (1-v)y.

Differentiating (22) gives :

$\Psi'(\underline{e}) = \underline{q}$

for $\underline{e}$, and

$\Psi'(\overline{e}) = \overline{q}$

for $\overline{e}$;

$d'(\cdot)\,\mu_2'(\underline{e_2}(\overline{q})) = 0$, $d'(\cdot)\,\mu_2'(\overline{e_2}(\underline{q})) = 0$

for $\underline{e_2}$ and $\overline{e_2}$ respectively (corresponding to the efficient levels $\underline{e_2}^*$ and $\overline{e_2}^*$).

Differentiating (22) with respect to $\underline{q}$ I obtain:

$$(23) \qquad \frac{p\ [\alpha\theta_1(\underline{q}) + (1-\alpha)\theta_2(\underline{q})] - (\underline{\beta} - \underline{e})}{p} = \frac{[\alpha\theta_1(\underline{q})\lambda + (1-\alpha)\theta_2(\underline{q})\lambda]}{1+\lambda}\frac{1}{\underline{\eta}} +$$

$$\frac{[\alpha\theta_1'(\underline{q}) + (1-\alpha)\theta_2'(\underline{q})][S(\underline{q}^*) + \lambda P(\underline{q}^*)\ \ \underline{q}^*]}{(1+\lambda)p}$$

where $p = P(\underline{q})$ (it is possible to find an analogous result for $\bar{q}$). The result is similar to (19), but takes into account the different states of nature of the system. In this situation neither the firm nor the party gain any rent because of complete information. In particular $U_2=0$ and $U=0$.

The partially benevolent party

Following the same procedure as for the benevolent party, I find the price-marginal cost function, differentiating (20) with respect to $\underline{q}$, to give:

$$(24) \qquad \frac{p\ \alpha\theta_1(\underline{q}) - (\underline{\beta} - \underline{e})}{p} = \frac{[\alpha\theta_1(\underline{q})\lambda}{1+\lambda}\frac{1}{\underline{\eta}} +$$

$$\frac{[\alpha\theta_1'(\underline{q})][S(\underline{q}^*) + \lambda P(\underline{q}^*)\ \ \underline{q}^*]}{(1+\lambda)p}$$

where $p = P(\underline{q})$ and $\theta_1' > 1$ (the same is true for $\bar{q}$).

Again the result takes into account the different states of the nature of the system. Equations (23) and (24), analogously to equations (19) and (21) - conditions i, allow results to be expressed in term of different states of nature. In this way, it will be easier to verify in which cases inefficiency arises.

So, for both the fully benevolent and for the partially benevolent party, the structure of full information is sufficient to imply efficiency. There is no great surprise in this, but it is worth noting that partial benevolence is all that is required - as long as government is responsive to the interests of at least some of the people it will be forced to be efficient.

1.4.4. The cases compared: Asymmetric information

The benevolent party

The asymmetric information situation is analysed considering the following two cases:

1) $\sigma = \varnothing$ the agency does not know the firm's technological parameter β;

2) $\gamma = \varnothing$ the consumer does not know the party's activity or effort.

The second situation is most interesting for our analysis. The citizen does not know if the party is efficient or not. Because of this lack of information, the party could claim to be an efficient agent when this is not true. This is the reason why it is necessary to introduce in the model an incentive function for the political party. In particular, incentive compatibility is now required for both the firm and the party.

The optimal situation at the level of the firm is represented by:

$\underline{U} = \Phi(\bar{e})$ where $\Phi(\bar{e}) = \Psi(\bar{e}) - \Psi(\bar{e} - \Delta\beta)$

At the level of the party, it is necessary to consider an incentive function $\Phi(\overline{e_2})$ (related to the inefficient effort $\bar{e}_2$). In this case an additional constraint of the form

$$d(\bar{q}\ ,\ \mu_2(\underline{e}_2(\bar{q})) - \Phi\overline{e_2} = d(\underline{q}\ ,\ \mu_2(\overline{e_2}(\underline{q}))$$

is introduced relative to the full information case. The SWF is then expressed by

(25) $$W = v(1-y)\{[\alpha\theta_1(\underline{q}) + (1-\alpha)\theta_2(\underline{q})][S(\underline{q}) + \lambda P(\underline{q})\underline{q}] - (1+\lambda)(s^* + \Psi(\underline{e}) + (\underline{\beta} - \underline{e})\underline{q}) -$$
$$\lambda\Phi(\bar{e}) + \overline{d(\bullet)} + \Phi\bar{e}_2\} + (1 - v)\, y\{[\alpha\theta_1(\bar{q}) + (1-\alpha)\theta_2(\bar{q})][S(\bar{q}) - \lambda P(\bar{q})\bar{q}] -$$
$$(1+\lambda)(s^* + \Psi(\bar{e}) + (\bar{\beta} - \bar{e})\bar{q}) + \underline{d(\bullet)}\} - \lambda V$$

Differentiating (25), I obtain

(26) $\Psi'(\underline{e}) = \underline{q}$ that is $\underline{e} = \underline{e}^*$ for $\underline{e}$;

(27) $$\Psi'(\bar{e}) = \bar{q}^*(\bar{e}) - \frac{\lambda\Phi'(\bar{e})\, v\ (1-y)}{(1+\lambda)(1-v)\, y} \quad \text{for } \bar{e}$$

Giving the results $\bar{e} < \bar{e}^*$ and $\bar{q} < \bar{q}^*$. That is, the effort variable and the quantity are reduced with respect to the optimal condition because in this case it is possible to reduce the firm's rent avoiding that the managers affirm to be inefficient when it is not true.

It is now important to consider the new political dimension added to this model. The following proposition introduces it:

Proposition 1: *With asymmetric information the party earns a rent by varying its effort e_2 from the efficient level e_2^*. This increases the divergence between the price and the marginal cost in the Ramsey formula.*

The idea is that a political dimension completes the model by giving the political body discretion expressed in term of effort. The effort of the political body enters in the model formalising the idea that even a benevolent party will be inefficient when political effort is costly.

The analysis becomes clearer when I differentiate with respect to the party's effort. It is possible to obtain:

(28) $\overline{d'(\cdot)\mu'_2(\overline{e_2}(\underline{q}))} = -\Phi\overline{e_2}'$ for $\overline{e_2}$ (with $\Phi\overline{e_2}' > 0$),

and

(29) $\underline{d'(\cdot)\mu'_2(e_2)} = 0$ for $\underline{e_2}$

Equation (28) shows that, with inefficient effort, the party's utility variation depends on the incentive function Φe_2. As obtained for the firm, the results are $\overline{e_2} < \overline{e_2}^*$. Equation (29) shows a result equivalent to the complete information case $\underline{e_2} = \underline{e_2}^*$.

With asymmetric information then, the party's inefficient effort $\overline{e_2}$ allows the party in power to extract a rent from the citizens. This is the reason why the incentive function Φe_2 is introduced in the model. The incentive function constrains the party's ability to extract rent. Equation (28) shows that the inefficient party's utility is reduced by the component Φe_2, forcing the party to behave efficiently.

The maximisation process of (25) with respect to the quantity variables $\underline{q}$ and $\overline{q}$ determine:

(30) $$\frac{[\underline{p}(\alpha\theta_1(\underline{q}) + (1-\alpha)\theta_2(\underline{q})) - (\underline{\beta} - \underline{e})]}{\underline{p}} = \frac{\lambda[\alpha\theta_1(\underline{q}) + (1-\alpha)\theta_2(\underline{q})]}{1+\lambda}\frac{1}{\underline{\eta}} + \frac{1}{\underline{p}(1+\lambda)}$$

$$\left[\frac{\partial\overline{d(\cdot)}}{\partial\underline{q}} + \frac{\partial\overline{d(\cdot)}}{\partial\mu_2(\overline{e_2})}\frac{\partial\mu_2(\overline{e_2})}{\partial\underline{q}} + \frac{d\Phi\overline{e_2}}{d\underline{q}}\right]\frac{[\alpha\theta_1'(\underline{q}) + (1-\alpha)\theta_2'(\underline{q})][S(\underline{q}^*) + \lambda P(\underline{q}^*)\underline{q}^*]}{(1+\lambda)\underline{p}}$$

(31) $$\frac{[\overline{p}(\alpha\theta_1(\overline{q}) + (1-\alpha)\theta_2(\overline{q})) - (\overline{\beta} - \overline{e})]}{\overline{p}} = \frac{\lambda[\alpha\theta_1(\overline{q}) + (1-\alpha)\theta_2(\overline{q})]}{1+\lambda}\frac{1}{\overline{\eta}} + \frac{1}{\overline{p}(1+\lambda)}$$

$$\left[\frac{\partial\underline{d(\cdot)}}{\partial\overline{q}} + \frac{\partial\underline{d(\cdot)}}{\partial\mu_2(\underline{e_2})}\frac{\partial\mu_2(\underline{e_2})}{\partial\overline{q}}\right]\frac{[\alpha\theta_1'(\overline{q}) + (1-\alpha)\theta_2'(\overline{q})][S(\overline{q}^*) + \lambda P(\overline{q}^*)\overline{q}^*]}{(1+\lambda)\overline{p}}$$

Equations (30) and (31) define price-marginal cost relations that takes into account, with asymmetric information, the party's effort. The main difference between these equations and (23) above is due to the new term in the square brackets in the right hand side.

Equation (30) relates to the case where the firm is efficient, in this case it is possible to obtain:

$$(31a) \qquad (i)\ \frac{\partial \overline{d(\cdot)}}{\partial \underline{q}} > 0;\ (ii)\ \frac{\partial \overline{d(\cdot)}}{\partial \mu_2}\frac{\partial \mu_2}{\partial \underline{q}} > 0;\ (iii)\ \frac{d\Phi \overline{e_2}}{d\underline{q}} > 0.$$

Equation (i) indicates that when the efficient production $\underline{q}$ increases, the party increases the "hidden" benefit declaring, to the other agents in the system, that its activity is efficient when this is not true.

Equation (ii) considers the marginal variation of the effort due to the variation of the efficient quantity. As has been already stated, in this situation, the party decreases its effort in response to an increase in the level of output

The last equation, (iii), shows that the incentive to the party increases with the efficient quantity.

The difference between equation (23) and equation (30) is due to the hidden party's inefficient activity which is not socially efficient. If the conditions (i), (ii), and (iii) are true, the price-marginal cost differential of equation (30) increases, moving away from the efficient equilibrium.

Equation (31) by contrast, represents the alternative situation - where the firm is inefficient. In this case it is possible to obtain:

$$(31b) \qquad (iv)\ \frac{\partial d(\cdot)}{\partial \overline{\underline{q}}} < 0;\ \text{and}\ (v)\ \frac{\partial d(\cdot)}{\partial \mu_2}\frac{\partial \mu(e_2)}{\partial \overline{\underline{q}}} < 0.$$

The situation indicates that the party faces a greater incentive to act efficiently when the regulated firm's production is inefficient. The party then decreases the "hidden" benefit (condition (iv)) and, at the same time, it is constrained to be more active in order to limit the firm's inefficient behaviour (condition (v)). The final result converges toward a social optimal equilibrium because the price-marginal cost margin tends to decrease.

The partially benevolent party

Parallel reasoning is applicable to the case of the partially benevolent party. Again, inefficiency will arise when political effort is costly. The social welfare function for the partially benevolent party in power is:

$$(32) \quad W^{PB} = v(1-y)[\alpha\theta_1(\underline{q})(S(\underline{q}) + \lambda P(\underline{q})\underline{q}) - (1+\lambda)(s^* + \Psi(\underline{e}) + (\underline{\beta} - \underline{e})\underline{q}) - \lambda\Phi\bar{e} + \bar{d} + \Phi\overline{e_2}] +$$

$$(1-v)y\ [\alpha\theta_1(\bar{q})(S(\bar{q}) - \lambda P(\bar{q})\bar{q}) - (1+\lambda)(s^* + \Psi(\bar{e}) + (\bar{\beta} - \bar{e})\bar{q}) + \underline{d}] - \lambda V$$

The results obtainable are then

(33) $\Psi'(\underline{e}) = \underline{q}$ that is $\underline{e} = \underline{e}^*$ for $\underline{e}$;

(34) $\Psi'(\bar{e}) = \bar{q}^*(\bar{e}) - \dfrac{\lambda\Phi'(\bar{e})\, v\,(1-y)}{y(1+\lambda)(1-v)}$ for $\bar{e}$

Finding again the results $\bar{e} < \bar{e}^*$ and $\bar{q} < \bar{q}^*$. Again, these results show that the effort and the firm's quantity are smaller than the efficient levels, this because it is necessary to reduce the inefficient rent that the firm would earn.

As for the fully benevolent party the following proposition for the partially benevolent party is demonstrable:

Proposition 2: *The partially benevolent party takes advantage of its power earning a rent, as for the benevolent party case, decreasing the efficiency of the system. The equilibrium depends on the type of citizens supporting the party.*

Differentiating (32) with respect to $\bar{e}_2$ and $\underline{e}_2$ I find:

(35) $\overline{d'(\cdot)}\mu'_2(\bar{e}_2(\underline{q})) = -\Phi\bar{e}_2'$ for $\bar{e}_2$ (with $\Phi\bar{e}_2' > 0$),

and

(36) $\underline{d'(\cdot)}\mu'_2(\underline{e}_2) = 0$ for $\underline{e}_2$

Differentiating with respect to q I obtain results similar to those of the benevolent party:

(37) $$\frac{[\underline{p}\alpha\theta_1(\underline{q})] - (\underline{\beta} - \underline{e})]}{\underline{p}} = \frac{\lambda\alpha\theta_1(\underline{q})}{1+\lambda}\frac{1}{\underline{\eta}} + \frac{1}{\underline{p}(1+\lambda)}$$

$$\left[\frac{\partial d(\cdot)}{\partial \underline{q}} + \frac{\partial d(\cdot)}{\partial \mu_2(\bar{e}_2)}\frac{\partial \mu_2(\bar{e}_2)}{\partial \underline{q}} + \frac{d\Phi\bar{e}_2}{d\underline{q}}\right]\frac{[\alpha\theta_1'(\underline{q})][S(\underline{q}^*) + \lambda P(\underline{q}^*)\underline{q}^*]}{(1+\lambda)\underline{p}}$$

(38) $$\frac{[\bar{p}\alpha\theta_1(\bar{q})] - (\bar{\beta} - \bar{e})]}{\bar{p}} = \frac{\lambda\alpha\theta_1(\bar{q})}{1+\lambda}\frac{1}{\bar{\eta}} + \frac{1}{\bar{p}(1+\lambda)}$$

$$\left[\frac{\partial d(\cdot)}{\partial \bar{q}} + \frac{\partial d(\cdot)}{\partial \mu_2(\underline{e}_2)}\frac{\partial \mu_2(\underline{e}_2)}{\partial \bar{q}}\right]\frac{[\alpha\theta_1'(\bar{q})][S(\bar{q}^*) + \lambda P(\bar{q}^*)\bar{q}^*]}{(1+\lambda)\bar{p}}$$

Equations (37) and (38) are obtained considering type 1 citizens (i.e. citizens with θ_1 preferences). Analogous results could be find for type 2 citizens.

Generally speaking, these results depends also on the party in power's motivation. The benevolent party determines a social price that takes into consideration all the citizens in the system, while the partially benevolent party determines the relative social price taking into account only the citizens that have supported it. This is an important result. The motivation of the party matters on the equilibrium expressed by the Ramsey formula. Benevolent and partially benevolent parties determines a different price-cost formula as seen above. Asymmetric information further complicate the matter because the parties want to earn a rent affecting the efficiency of the model.

1.5. CONCLUSION

The analytical starting point of the L-T model has been modified to include a political component. That is, I have introduced a political party having its own political preference into the model. The results obtained are quite interesting. First, it has been possible to distinguish between three different party's motivations that define a dimension of politics independent of electioneering. At one extreme of this dimension, the party could be treated as a benevolent dictator, as in the L-T model. The result here differs from the L-T model only because I have introduced two types of citizens with different political preferences - clearly the fully benevolent party treats these two groups of citizens equally, compromising between their preferred policies.

The most obvious alternative to the benevolent party is the purely ideological party which does not respond at all to the preferences of citizens. In the absence of any electoral or other constraints, the ideological party maximises its utility by simply imposing its most preferred policy on the system.

The more interesting alternative to the fully benevolent party is the partially benevolent party. In the partially benevolent case the party in power maximises the social welfare taking into account only some citizens - interpreted as those who support the party. As for the fully benevolent party case, the result obtained shows a price cost-margin in the Lerner index that considers only the portion of citizens that supported the party at the elections.

I have started from the full information case where the agency knows the firm's activity and reports the true information to the party in power. The party in power is also fully observed by the citizens in the system. In particular, the citizens know the regulated firm's productions and derive an opinion on the party in power's activity. The full information case provides the benchmark for the analysis of the incomplete information environment.

Both the firm and the party now enjoy informational advantages which could allow them to earn a rent.

I have seen the case where, according to the firm's activity, there could be a rent for the party. In particular the party in power could gain a rent when, for example, the firm's production is efficient and the party in power, in a no- honest way, declares to be efficient to the citizens. In this case the party earns a rent over the other agents further decreasing the efficiency of the system. Again informational asymmetries creates rents for some particular agents, and the efficiency in the system is different from the optimal solution of a perfect information environment.

Together with informational asymmetries, I have stressed here the importance of politics in the economic model of regulation. I have departed from the economic theory of a benevolent dictator introducing the idea of support from the citizens in the system. The basic analysis of benevolent party considers all the citizens/consumers while the partially benevolent only part of them. The results found are comforting because they confirm that: political decisions matters; the equilibrium is different from that where a simple classic benevolent dictator exists; the equilibrium moves from a social optimum one when the asymmetric information environment is considered.

Starting from these simple results, it will be more easy to consider more complex models where there is more than a party, different political motivation including ideological party, and asymmetric information affecting decisions of the agents.

2. COMPETITIVE POLITICS AND POLITICAL MOTIVATIONS

2.1. INTRODUCTION

The main aim of this chapter is to introduce and discuss political competition between parties. More specifically, I shall be concerned to analyse political or electoral competition under alternative political motivations, and in the setting of a two-party structure. The major elements to be added to the one-party model of the previous chapter therefore relate to the strategic behaviour of parties when faced with electoral competition, and the voting behaviour of individual citizens. Chapter three will then apply this model of political competition in the regulatory environment.

The standard economic approach to two-party competition begins by considering a one dimensional issue space, simple majority voting, and by specifying citizen-voters preferences over policy outcomes[10]. A possible description of voter i's utility could be determined by the following strictly concave function:

$u_i = -(x - c_i)^2$

where x represents the policy outcome and c_i identifies the individuals ideal point in the policy space. Each citizen-voter evaluates the alternative party's political proposals, voting for the party that gives her the highest utility. The particular quadratic functional form represents the idea that, as political outcomes depart from the individual's most preferred policy, utility decreases at an increasing rate, but this is not essential for the basic results of the standard model. More importantly, it is assumed that the voter has a symmetric and single-peaked utility function (as here) because, in this case, the voter always prefers the policy closest to her own ideal point. Of course, this symmetry is an assumption that is not always valid. In our analysis though, I will assume symmetric and single-peaked utility functions. It is also important to say that the concavity of the utility function implies that voters are risk-averse agents.

The analysis developed here considers an electorate composed of a continuum of voters. This leads to the consideration of the distribution of voters' ideal points. For simplicity, I

---

[10]See for example Mueller (1989) chapter 10.

will generally assume that this distribution is uniform over the issue space, unless specified otherwise.

With voters in place, and given the assumption of simple majority voting, the next step is to consider the two parties, and the policy platforms chosen by the parties in the Nash equilibrium of the strategic game that represents the election. For the moment I shall assume that parties can effectively commit to their announced platforms so that voters can confidently expect the winning party to act in accordance with their announced policy platform - the issue of credibility of commitments and the role of repeated elections etc. is not relevant at this stage. In this static, or one-shot context the standard starting point is to assume that parties are motivated purely to win the election, in which case the outcome is the famous median voter theorem in which the parties converge until they each offer a policy platform that is identical to the ideal point of the median voter. This result derives from the seminal works of authors such as Hotelling (1929), Black (1958) and Downs (1957). The main idea is that candidates propose identical platforms because they simply want to win the election. This reflects the assumed simple majority voting. Under simple majority voting with just two parties, the ideal point of the median citizen is an unbeatable platform. Black (1958) introduced the concept of median voter theorem. That is, both the candidates converging to the policy coincident with that of the median voter. Successively, authors such as Hinich (1977), Coughlin and Nitzan (1981), Ledyard (1984) and Tovey (1991) have considered the fact that the convergence might not be coincident with that of the median voter (for discussion see Mueller (1989)).

An alternative model might specify the party's preferences as being rather more similar to the citizens, so that parties are ideological rather than being motivated purely to win the election. In this case, each party has an ideal policy, but also recognises the value of winning the election, and so faces a trade-off between sticking to their own preferred policy and moving away from this policy in order to increase the probability of wining the election (see, for example Alesina and Rosenthal, 1995). The Nash equilibrium that is determined in the game with two parties of this sort is unique (Calvert (1985)), and does not generally involve the complete convergence of the two parties. Rather, each party will adopt a platform that lies between its own ideal policy and the ideal policy of the median voter.

The models to be described in the following sections build on these foundations, in order to view the extent of policy convergence in two-party systems under alternative specifications of the parties' motivations.

2.2. ONE-SHOT NASH-EQUILIBRIUM WITH FULL INFORMATION AND FULLY BENEVOLENT PARTIES

As a starting point, I take the fully benevolent party case, rather that the traditional assumption of parties motivated solely to win the election. As we shall see, this is less of a difference than it may initially appear, since in each case we will expect strong policy convergence.

Citizen i's utility function may now be written as:

$$U_i = u_i(x_1, x_2)$$

so that the citizen's utility depends on the policy proposals set out by the two parties in the system which are identified as x_1 and x_2.

In principle, the utility function for each of the two parties also has to be modified from that outlined in section 1.4 above, to account for the fact of political competition. In particular each party must now set out its political proposal taking into account the opposing party's political proposal. I continue to assume, for the moment, that parties are fully committed to their policy announcements in this one-shot model. As seen in chapter 1, the parties have their own utility functions. Adapting the model to this new two parties' system, this could be expressed as:

$$U_1 = D_1(x_1, x_2, \mu_1(e_1), \mu_2(e_2))$$

for party 1 and

$$U_2 = D_2(x_1, x_2, \mu_1(e_1), \mu_2(e_2))$$

for party 2.

Again, as seen in the previous chapter, I can introduce a general SWF in the FBP case. This could be expressed as:

$$(39) \qquad W^1_{FB} = P(x_1, x_2)[\alpha\theta_1 + (1-\alpha)\theta_2][U_i + \sum_j U_j] + (1 - P(\cdot))W^1_{FB}(x_2)$$

when referring to party 1 (where $W^1_{FB}(x_2)=0$ for simplicity) – and analogously for party 2. In this case U_i is citizens i's utility function, and $\sum U_j$ are the remaining agents' utility functions (as seen in chapter 1, these utilities coincide with the party, the firm and the regulator).

However, in the case of the benevolent party model, the introduction of this strategic element makes no substantial difference. To see this, note that the parties do not care whether they win the election or not - by assumption, they care only about the policy that is implemented and, therefore, social welfare. In this model each party maximises its own view of welfare taking into account the opposite party's proposal. Clearly, the only difference between the two parties that can arise, and so the only basis on which the two parties may choose different policies, lies in their view of social welfare. So, to the extent that the two parties share the same view of social welfare, they must converge to the same policy platform as each other. In essence, there is no real competition in this case since the two parties share a common objective - social welfare maximisation - and no strategic considerations enter in such a way as to prevent the two parties converging fully on the social welfare maximising policy platform.

This is hardly a surprising result. Just as a single benevolent party will operate to maximise social welfare in a full information setting, so two benevolent parties will operate to maximise social welfare in an electoral setting with full information - there is nothing in the mechanics of an election under conditions of full information that serves to distort the outcome away from full efficiency. Nevertheless, this result will provide a useful benchmark.

2.3. ONE-SHOT NASH-EQUILIBRIUM WITH FULL INFORMATION AND PARTIALLY BENEVOLENT PARTIES

We may now move on to the partially benevolent party case; but in order to do so I need to introduce some further notation. To be more specific, I consider two parties and a continuum of citizens located on a one dimensional issue space:

Assumption 1 : The issue space I is represented by the unit interval [0,1]. The voter's belong to the continuum set T, and have preferences that are symmetric and single-peaked over I.

Each voter will therefore choose to support the party that offers the platform closest to the voters ideal point. Given the issue space I and the continuum set T, it is possible to represent the distribution of voter's ideal point, by the cumulative distribution function F.

Assumption 2 : $F : I \rightarrow [0 , 1]$ is continuously differentiable and strictly increasing with

F(0) = 0 and F(1) = 1. The continuous density function f, generated by F, $f : I \rightarrow [0, 1]$, is single peaked or strictly quasi-concave, i.e. there is a unique $\bar{x} \in I$ such that $f(\cdot)$ is strictly increasing on the interval $[0, \bar{x}]$ and is strictly decreasing on the interval $[\bar{x}, 1]$.

For the analysis of the following models, I assume that Assumptions 1 and 2 hold unless stated otherwise. Furthermore, I will denote by $P(x_1, x_2)$ the probability that party 1 wins the election (so that $1- P(x_1, x_2)$ will denote the probability that party 2 wins the election). Furthermore I will assume that $P(x_1, x_2)$ is continuous and twice differentiable in each argument.

It is now possible to analyse the one-shot Nash equilibrium when the political system is characterised by two partially benevolent parties. It is possible to distinguish two situations: on the one hand, the partially benevolent parties could be attracted by the possibility of increasing their support by expanding the set of citizens that they relate to; by contrast, the partially benevolent parties could take their link to the specific portion of citizens that support them as fixed. Let us specify these situations in more detail.

Parties not strictly linked to the voters

The idea here is that while the party is linked to a specific portion of the population, this link is not sufficiently tight to fully determine the party's policy choice. In other words, the party supporters do not fully mandate or control the party's policy, and the party is free to select a policy that best serves the interests of its supporters, given the nature of political competition. In this case, we have the further requirements that :

$$\frac{\partial P(x_1, x_2)}{\partial x_1} \equiv P_1 \leq (>) 0 \quad \text{if and only if } x_1 \geq (<) x_2 \text{ , and}$$

(40)

$$\frac{\partial P(x_1, x_2)}{\partial x_2} \equiv P_2 \leq (>) 0 \quad \text{if and only if } x_1 \geq (<) x_2 .$$

These assumptions serve to affirm that when party 1 $\mathbf{x_1}$'s policy converges toward the policy of party 2 (which is held constant), party 1 increases its probability of being elected by the standard mechanism of capturing voters from the middle ground. The result is that the parties, in order to enlarge the political "consent" by the voters, move towards each other. There is a convergence to the middle position over the political spectrum.

Some easy calculus lead us to the following results:

(41) $$\frac{dW^1_{PB}}{dx_1} = P(x_1, x_2)[\alpha\theta_1(\bullet)U_1' + \alpha\theta_1'(\bullet)U_1 + \sum_j U_j'] + P_1 W^1_{PB}(x_1)$$

for party 1, and

(42) $$\frac{dW^2_{PB}}{dx_2} = P(x_1, x_2)[(1-\alpha)\theta_2(\bullet)U_1' + (1-\alpha)\theta_2'(\bullet)U_1 + \sum_j U_j'] + P_2 W^2_{PB}(x_2)$$

for party 2.

It is immediately possible to compare the situation represented in equations (41) and (42) with the case of the purely benevolent parties (as depicted in equation (39)). In the case of the partially benevolent parties, convergence toward the position of the median voter is complete, as seen for the FBP case. In this sense, it is true that the partially benevolent party is rather like the ideological party discussed above – it has a clear view of its own ideal policy – given to it in this case by the preferences of the sub-set of voters to which it is partial – but it is willing to trade-off this ideal so as to increase the probability of election. According to the (41) and (42), though, the partially benevolent parties have incentives, by the probability to get power, to move toward each other. This because the link to the subset of voters is weak according to the assumptions.

Parties strictly linked to the voters

The idea here is that parties are strictly linked to the portion $\alpha\theta_1$ and $(1-\alpha)\theta_2$ of voters that support them – so that parties have no flexibility in trading off the policy preferences derived from their supporters and the probability of winning the election. The condition has to be modified as follows:

(43) $$\frac{dP(x_1, x_2)}{dx_1} > (\leq) 0 \; for x_1 < (\geq) x_1^*, \text{ and } \frac{d(1-P)}{dx_2} > (\leq) 0 \; for \; x_2 < (\geq) x_2^*$$

I suppose that the parties are now tied to the policy platform that is identified with the median voter of the portion of citizens that support them. x_1^* and x_2^* indicate these median voters preferences for the two groups of voters. In this case party 1 (party 2) decreases its probability to be elected if it move away from the policy x_1^* (x_2^*).

This then is analogous to the case of the fully ideological party in the sense that the party is unwilling to move from its ideal policy in an attempt to increase its probability of winning the election. In the present case, this effect has been modelled in terms of responding to the median demand of its own supporters, with any move away from this toward the median of the electorate as a whole seen as reducing the overall probability of winning. For this to be reasonable, it must be the case that, in this model of partial

benevolence supporters of a particular party are willing to punish their party for any attempt at deviating from the mandated policy by withdrawing their electoral support – this is what is built into the above conditions. Effectively, in this model of rigid partisan politics, maintaining the link between party and supporters is seen as more important than winning the election, or influencing policy. Clearly, then, in a model of this sort, the electoral outcome will depend on the underlying distribution of citizens between the two factions, and on the distribution of ideal points within the winning faction.

The three cases of perfectly benevolent parties, partially benevolent parties with weak ties to their supporters, and partially benevolent parties with strong ties to their supporters therefore provide us with simple models of electoral competition which yield full policy convergence, full/partial policy convergence and no policy convergence respectively.

2.4. NASH-EQUILIBRIUM WITH ASYMMETRIC INFORMATION IN THE BENEVOLENT AND PARTIALLY BENEVOLENT CASES

The previous sections have focused on a two-party system of electoral competition under full information. Given that the ultimate purpose of this discussion is to apply models of electoral competition to the issue of regulation, it is important to integrate into the analysis the idea of asymmetric information.

The presence of asymmetric information is treated by taking into account the inefficient effort that may be introduced by the politicians of the party in office. The idea is essentially identical to that used in the standard L-T model of regulation discussed in chapter 1. As already demonstrated in that context, the asymmetric information problem leads to a situation where the optimal policies are different from those obtained in the full information case, worsening the overall efficiency of the system.

The analytical starting point of this section is represented by Alesina (1988). This article considers the strategic interaction of two ideological parties with rational voters. The analysis was divided into two main parts. The first considered the parties' strategic interaction in a one-shot game. The second part of the article referred to an infinitely repeated game between the parties and the relative Nash-bargaining equilibrium. I reconsider here, briefly, that model finding the main difference with the fully and partially benevolent cases.

The political parties

The parties do not maximise votes or the probability of winning the election. They want to implement a better policy for their respective constituencies. In Alesina's interpretation the party was its own constituency, so that the party was modelled as an individual with policy preferences of its own. In the interpretation here, the party's constituency might be either the whole society or a faction within society depending on whether the party is fully or partially benevolent.

Following Alesina, the parties' objective functions in terms of the policy variable x may be expressed in quadratic form :

$$(44)\quad U_{p1}(x) = \sum_{t=0}^{\infty} q^t u_{p1}(x) = -\frac{1}{2}\sum_{0}^{\infty} q^t (x - c_0)^2$$

$c_0 > 0 \quad and \quad 0 < q < 1$

for party 1, and

$$(45)\quad U_{p2}(x) = \sum_{0}^{\infty} q^t u_{p2}(x) = -\frac{1}{2}\sum_{0}^{\infty} q^t x$$

for party 2, with the following notation:

t = time; q^t = discount factor (equal for the two parties); c_0 = party 1's bliss point (normalised to zero for party 2). In addition, each party places positive value – denoted by a utility payoff of d – on being in power *per se*.

Voting decisions are then based upon the rational expectation of policies that the two parties would follow if elected. These policies are x_1 and x_2 for party 1 and party 2 respectively. The voters rational expectation before election are x_{1t}^e and x_{2t}^e. Elections are at time t (I suppose that election takes place every period). At the end of time t-1, the parties announce their policies for time t: x_{1t}^a and x_{2t}^a .

If voters believe in it then $x_{1t}^e = x_{1t}^a$ and $x_{2t}^e = x_{2t}^a$

otherwise $x_{1t}^e = E(x_{1t}/I_{t-1}) \neq x_{it}^a$

(I_{t-1}= information set available to the voter at time t-1). The electoral outcome is clearly uncertain. A victory for party 1 is associated the probability $P=P(x_1^e, x_2^e)$ with the same characteristics seen for the fully and partially benevolent party cases.

It is interesting to analyse the model with and without policy pre-commitment. Again, I follow the general idea set out by Alesina (1988).

One shot game with pre-commitment

This case simply implies $x_1^e=x_1^a=x_1$ and $x_2^e=x_2^a=x_2$ (I have omitted the subscript t for simplicity).

The Nash-equilibrium of this game is found by resolving the following problem:

Party 1

$$(46) \qquad \max_{x1} u_{p1} = P(x_1, x_2)(-\frac{1}{2}(x_1 - c_0)^2 + d) + (1 - P(\cdot))u_{p1}(x_2)$$

where $u_{p1}(x_2)$ is the utility of the first party when the second party wins the election (for simplicity $u_{p1}(x_2) = 0$).

Party2

$$(47) \qquad \max_{x2} u_{p2} = P(x_1, x_2)u_{p2}(x_2) + (1 - P(\cdot))u_{p2}(x_1)$$

with $u_{p2}(x_1) = 0$

The above maximisation problems give us the optimal policy from the point of view of each party. That is:

$$(48) \qquad x_1^* = \frac{-P + \sqrt{(P)^2 + 2(P_1)^2 d}}{P_1} + c_0$$

where $P_1 = \frac{\partial P(\cdot)}{\partial x_1} > 0$ and $P = P(x_1, x_2)$

for party 1, and

$$(49) \qquad x_2^* = \frac{1 - P - \sqrt{(1-P)^2 + 2\ (P_2)^2 d}}{P_2}$$

where $P_2 = \frac{\partial P(\cdot)}{\partial x_2} > 0$

for party 2.

It is then straightforward to demonstrate that theses two outcomes are convergent[11].

One shot game with no pre-commitment

Now consider the case without pre-commitment in the one shot game. In this case it is obvious that the time consistent equilibrium exists, is unique, and given by $\overline{x_1}^* = c_0$ *and* $\overline{x_2}^* = 0$.

In this setting the winning party, once elected, is completely unconstrained and will, therefore, simply set the policy at its own ideal point. However, the voters will anticipate this behaviour. They know that the parties will not keep any election promises when in office, and will vote accordingly. The voters anticipate what the party is going to do: thus

[11]For more details see Calvert (1985).

$x_1^e = c_0$ and $x_2^e = 0$. Then the party 1's probability of being elected is $P(c_0, 0) = P^*$. This demonstrates that without effective pre-commitment there is no policy convergence in the one shot game.

2.5 Infinitely repeated game with no pre-commitment [12]

In an infinite repeated game the first best outcome without pre-commitment is obtained by solving the following problem:

$$(50) \qquad \max_{x_1, x_2} \lambda[P(-\frac{1}{2}(x_1 - c_0)^2)] + (1-\lambda)[P(-\frac{1}{2}(x_2)^2)]$$

where $0 < \lambda < 1$ represents the weight given to party 1's policy. Alesina (1988) demonstrates that the first best solution arises when the policies of the two parties converge fully, and the efficient frontier is given by the policies $x_1^* = x_2^* = \lambda c_0$.

This result depends on the weight value assumed by party 1. If $\lambda = 1$ the outcome is entirely determined by the party 1's activity. Of course, the two parties will have opposing views on the appropriate value of λ. A point on the efficient frontier is given by determining the Nash-bargaining solution. This implies a choice of λ (say λ^*) such that

i) λ^* is a function of $\overline{P}$ (i.e. $\lambda^*(\overline{P})$);

ii) $\partial\lambda^*(\overline{P})/\partial\overline{P} > 0$;

iii) $\lambda^*(1/2)=1/2$;

iv) $\lambda^*(0) = 0$; $\lambda^*(1) = 1$.

The above results are quite intuitive. Increasing $\overline{P}$ (the probability of party 1 being elected) gives it more bargaining power. It may therefore impose its view on the appropriate value of λ, and therefore on the point to which policies converge, over the other party.

An additional implication is that if a party's bliss point moves away from that of the other, it reduces its bargaining power, so that it has less influence over the eventual policy outcome in equilibrium. In fact $\partial\lambda^*(\overline{P})/\partial c_0 = [\partial\lambda^*(\overline{P})/\partial\overline{P}](\partial\overline{P}/\partial c_0) < 0$.

Alesina (1988) shows that partial, and in some cases complete, policy convergence towards the first best equilibrium will arise as the result of the repeated nature of the electoral interaction of the two parties. In particular, the first best equilibrium noted above can be implemented as a sub-game perfect equilibrium of the game provided that

---

[12] See Alesina (1988) p799-801.

the discount rate is sufficiently low – essentially the parties have to be sufficiently far-sighted for the threat of non-cooperation to be sufficient strong to enforce co-operation. It is in this sense that the indefinite repetition of the electoral game acts as a substitute for commitment, in bringing about the convergence of ideological parties in policy space.

2.6. "ALMOST" ASYMMETRIC INFORMATION AND POLICY OUTCOMES

I move now from the Alesina model to consider a different possible situation. Let us suppose that the party in office has more information than the other agents in the economy. This implies that the party could earn a rent for being in office. The privilege of being the office-holder gives it more utility, which is not observed directly. The opposition party and the voters have no access to this relevant information. In particular, voters do not know if the ruling party's activity is optimal or not. The voter only observes the actual performance of the office-holder, and also knows its pre-election policy platform. She knows that the party tries to maximise its utility given its political ideology. The result may be that the voters will engage in retrospective voting - essentially voting for the alternative party if the actual policy of the party in power is very different from its campaign promises.

As it is possible to note, the results obtained in a system with partially benevolent parties is different from that considered above. In the previous discussion I have treated parties only in respect of their motivation. Here instead, I must consider the different motivations of parties in the context of a political system characterised by competition between two strategic parties that want to win the elections, with rational voters. The parties then, are constrained by the force of electoral competition in their attempts to satisfy their preferences. They are subjected to a trade-off between satisfying their political preferences and winning elections.

Let us suppose that party 1 in office announces the policy x_1^a. But, with asymmetric information the party earns a rent r. The effective policy then, becomes $\hat{x}_1 < x_1^a = \hat{x}_1 + r$, that is the policy benefited by the citizens ($\hat{x}_1$) is smaller than the policy announced by the party because of the rent r. The citizen of course sees a decrease of her utility. The new utility function becomes then

(51) $u_1(\hat{x}_1) < u_1(x_1^a)$

That is, the citizen's utility is smaller than the expected pre-electoral utility. The citizens then compare the announced policy with the real policy and the party's probability to be elected decreases i.e. $P^{AI}(x_1,x_2) < P^{FI}(x_1,x_2)$.

Let us specify the following probability system. In particular, I say that with probability y the party undertakes an efficient activity. That is, the party's only benefit of being in office is given by the efficient value $\underline{d}$ (i.e. the rent r is zero). In other words, the party does not abuse its power when in office. In this case, the optimal values for x_1 and x_2 are the same specified by (48) and (49) above, that is, $x_1=x_1^*$ and $x_2=x_2^*$.

The interesting case is when the party in office abuses of its authority. That is, the party in office takes advantage of the other agents because of asymmetric information. As illustrated above, it earns the rent r and d assumes the inefficient value $\overline{d}$ ($r\neq 0$). In this case equations (48) and (49) become:

$$\hat{x}_1 = \frac{-P+\sqrt{P^2+2(P'_1)^2\overline{d}}}{P_1}+c \qquad (52)$$

for party 1, where $\hat{x}_1$ is the optimal policy with asymmetric information. The citizen yet, continues to expect the announced policy $x_1^a = \hat{x}_1 + r$.

Analogously for party 2 I have

$$\hat{x}_2 = \frac{1-P-\sqrt{(1-P)^2+2(P'_2)^2\overline{d}}}{P_2} \qquad (53)$$

It is clear that $\hat{x}_1 < x^*_1$ and $\hat{x}_2 < x^*_2$ where x^*_1 and x^*_2 are the optimal solutions with full information. The citizens then, are subjected to a policy that disadvantages them. This may influence their behaviour of voting for the party to be re-elected.

2.7. "ALMOST" ASYMMETRIC INFORMATION IN AN INFINITELY REPEATED GAME

It has been considered that the party's behaviour is different period by period. I have assumed that the party changes activity each time. When in office (let us suppose at time t), it tries to take advantage of its position by extracting the rent r. In this case its utility function at time t is given by:

(54) $$-\frac{1}{2}(\hat{x}_1+r-c_0)^2+\bar{d}$$

At time t+1 however, the voter knows that something is going wrong because she perceives a different policy from what announced by the party (i.e. $\hat{x}_1 < x_1^*$). The only action open to the voter is to reduce her political preference for the party in office so that the party's probability to be re-elected fall to P^{AI}. At time t+1 then:

(55) $$P^{AI}[-\frac{1}{2}(x^*_1-c_0)^2+\underline{d}]$$

In this case the party is threatened by the reduction of its probability of being re-elected. Particularly, the party can realise directly that its citizen's political consent has decreased because of the distorted policy. In order to win the elections, its activity must return to close to the optimal. The voters learn that and the party's chance to be re-elected next period becomes $P^{FI}>P^{AI}$. At time t+2 then, the party's utility could be expressed as

(56) $$P^{FI}[-\frac{1}{2}(\hat{x}_1+r-c_0)^2+\bar{d})]$$

At time t+2 it is possible to see that the party comes back to inefficient activity trying to extract again the rent r.

Of course this is no more than a sketch in which the ruling party will risk inefficiency in some periods, but not others when the electoral constraint or threat in binding. I have assumed that the voter has short memory. She remembers only the last period and not more. But it is suggestive of a way in which it is possible to explain the political cycles in democratic countries. It is possible to reconsider the above analysis by introducing an infinitely repeated game. In particular the party risks the unpopularity each period if the following expression is satisfied:

$$[-\frac{1}{2}(\hat{x}_1+r-c_0)^2+\bar{d}]+P^{FI}[-\frac{1}{2}(\hat{x}_1+r-c_0)^2]\delta^2(1+\delta^2+\delta^4+...) \;>$$

$$P^{AI}[-\frac{1}{2}(x^*_1-c_0)^2+\underline{d}]\delta(1+\delta^2+\delta^4+...)$$

The term δ now represents the discount factor (i.e. $\delta=-e^{i\tau}$ where i is the instantaneous rate of interest and τ is the real time between 'periods'). Assuming that $\delta^2=q$, we have:

$$(57) \qquad [-\frac{1}{2}(\hat{x}_1 + r - c_0)^2 + \bar{d}] + P^{FI}\frac{q}{1-q}[-\frac{1}{2}(\hat{x}_1 + r - c_0)^2 + \bar{d}] >$$

$$P^{AI}[-\frac{1}{2}(x^*_1 - c_0)^2 + \underline{d}]\frac{\sqrt{q}}{1-q}$$

So that the parties undertake inefficient activity if by doing that they earn more than by acting 'honestly'. That is, the parties do not follow their announced policy when it is profitable for them to defect in order to extract some rent by taking advantage of the other agents in the economy.

2.8. POLICY CONVERGENCE –FURTHER ASPECTS

Alesina and Rosenthal (1995) offer an alternative perspective in which parties are fully ideological (or 'partisan' in their terminology) in the sense that they will not modify their policy commitments in order to gain office. Rather, in the Alesina and Rosenthal model, the modification comes through further aspects of the political system and, in particular, from the interplay between the legislature and the executive. Essentially, the electorate is sufficiently well informed to behave in such a way as to force the parties to bargain and compromise with each other – most obviously by electing one party to control of the legislature and the other party to control of the executive, so that the overall policy outcome may converge towards the ideal point of the median voter, even if the party's do not converge in terms of their announced policy platforms.

A somewhat similar type of result emerges from the citizen-candidate models of Osborne and Slivinski (1996) and Besley and Coate (1997). In these models each citizen is effectively a potential candidate for office, and each candidate is committed to adopting a policy, if elected, that corresponds to that individuals own ideal point. In this sense the citizen candidate is a perfectly ideological or partisan party. However, these models allow the endogenous entry of candidates and so are not restricted to analysing the two candidate case. Under plurality voting, a single candidate must eventually win, and there is no guarantee that the *actual* outcome of the election will implement the policy associated with the ideal point of the median voter, however the *expected* outcome of the election will converge toward the median voter's ideal point. For example, in the case where exactly two candidates emerge their policy platforms will be approximately symmetric around the median voter's position.

Calvert (1985) offers a different view. His main argument relates to the amount of information in the society. In the presence of complete or almost complete information (that is, with only small amount of uncertainty) about voters' preferences, including the knowledge of the median voter's bliss point, convergence of policy platforms will be "almost" complete for reasons essentially similar to those reviewed above. However, when there is considerable uncertainty about the distribution of voters' preferences and the parties have their policy preferences, a divergent outcome remains possible.

To end this brief review, I would repeat the crucial distinction between the 'partisan' or ideological models of parties on the one hand, and the electioneering models of parties on the other hand. Full (or almost full) policy convergence in the sense of the convergence of policy announcements made by parties in advance of the election, will arise in models which stress the electioneering aspect of parties, where information is full (or almost full), or where the repeated nature of the game provides effective policy commitment. Fully ideological or partisan political parties or candidates, by definition, will not compromise in terms of their announced policy platforms but, nevertheless, there may be convergence of policy outcomes or expected policy outcomes when there is (almost) full information.

2.9. CITIZENS' DEMAND FOR PARTY'S POLICIES

The main task of the next sections is the further analysis of citizens' political behaviour. In the analysis so far I have not paid much attention to the citizen's preferences or behaviour. I have just considered a party's probability of being elected that depends on that preference and behaviour. But I have not specified any explicit relationship between the party's probability of being elected and the citizen's political preference. In this part of the analysis I am going to find that important link. This will allow us to determine a sort of citizen's political demand that strongly influences the party's probability of being elected.

The model begins from the standard assumption that citizens have heterogeneous tastes that could be represented within a spatial model. As summarised in section 2.1 above, each citizen has an ideal point in the relevant policy dimension and suffers a loss of utility to the extent that policy deviates from that ideal point. The ideal points of citizens are distributed along the policy continuum so that any particular policy induces a particular degree of political satisfaction for each citizen. As already said, what I want to determine is the citizen's demand for the party's policy proposal policy and, in this way, the link

between demand and parties probability to be elected. I have already remarked that it is very important for the party to be, in a sense, different from the others. This enables the party to acquire supporters, that is, to have a niche in the political system. If the two parties are identical, this will imply that all citizens will be indifferent between the two parties and so will have no reason to support one rather than the other. It is in this sense that the simple median voter equilibrium is unsatisfactory as a basis for explaining actual voting. The median voter theorem equilibrium is one in which the two parties converge to identical platforms and a rational voter would choose to vote.

From business theory, it has been analysed that when a firm in a market acts in such a way to have a clientele, it means that it will also have a power in that market. That is, the firm has a direct influences on that segment of population and, at least, she could count on that niche. In politics it is possible to suppose a similar situation. Each party tries to differentiate itself from the other parties in the system. This gives the party a sort of direct influence on a niche within the political system and over a section of the electorate. The party knows that the electorate in that niche will support it in the next election. Another analogy is that in the market for commodities product differentiation is something that is not always technically feasible. Products may be technically and functionally identical. The firm's strategy then becomes that of presenting or marketing the product in such a way as to encourage the belief that the product is different from other products – by branding, for example. In an analogous way, parties that converge in policy space may try to convince the electorate of their own distinctive identity. These comments address a central issue for electioneering parties. On the one hand, the pressure to gain votes from the centre on policy grounds leads to policy convergence that threatens to eliminate the reason for voting for all voters. To counteract this, the party will want to differentiate itself from other parties in some way that is not directly related to policy. However, once in power, a party is constrained by the actual contingencies to pursue a policy, and it will be judged both by the success of that policy and by the relationship of that policy to its earlier promises.

This may be illustrated by reference to the one dimensional model already mentioned. It is possible to represent the political spectrum on a line of length 1. As before, the two parties each propose a policy position on that line (earlier indicated by x_1 and x_2). Each citizen chooses between the two alternatives. However, this choice is not costless. In particular, the citizen incurs in cost to decide, and then to vote. This might be thought of as a disutility associated with supporting a party that is not exactly in line with your own

preferences, so that the cost will be larger the further the party's policy is from the citizen's ideal point. I will assume that these costs are expressed in a quadratic form. This assumption is considered just for simplicity[13]. I also suppose that the two policies x_1 and x_2 correspond to two parties location over the spectrum respectively at **a** and **1-b** with **a, b** $\in[0, 1]$. In particular I consider party 1 located at point $a \geq 0$ (correspondent to the policy x_1) and party 2 at point $1 - b$ (policy x_2) where $b \geq 0$ and $1 - a - b \geq 0$. Party 1 is then located to party 2's left. When $a = b = 0$ the two parties are exactly at the extreme of the political spectrum whereas if $a + b = 1$ the two parties are in the same position (In the next sections I will consider which factors determine the parties' location). At this point, it is necessary to introduce an important distinction. The explanation of the parties' location implies two possible conditions: either i) $x_1=a$ and $x_2=1-b$, or ii) $x_1 \neq a$ and $x_2 \neq 1-b$. Condition i) states that the parties' "vision of the world" (i.e. the parties' bliss points *a* and *1-b*) coincide with the policy implemented by the parties (as in the Alesina's no pre-commitment condition). When the parties are pre-committed, however, condition ii) applies. In this case the parties, in order to pursue an electioneering goal, move from condition i) toward positions over the spectrum that increase the political consent from citizens and, therefore, their probability of being elected.

At this stage it is also possible to introduce another variable. I indicate with p_{T1} the social price paid by the consumer/citizen when the party 1's policy is followed. i.e. it represents the cost to the citizen when the policy of that party is implemented (with $\partial p_T/\partial x > 0$ i.e. the social price increases with an increase in the policy supplied).

Considering, then, a quadratic cost for the citizen, she will incur in the cost $p_{T1} + r_p (x_i-a)^2$ to support party 1's policy, where p_{T1} represents the social cost; r_p is the cost parameter relating to the distance between her own ideal policy and what the party actually offers. Citizen i's utility is maximised at x_i on the political spectrum. The difference between the point x_i and party 1's position (point **a**) represents a cost for the citizen (see Fig.1). This is given by the sum of the social price p_{T1} and the cost $r_p(x_i -a)^2$, where the latter is

---

[13]The importance of a quadratic cost model is related to the fact that it is possible to avoid a discontinuous demand function. A non-quadratic cost model could give rise to a discontinuous and non-concave functions. Consequently, the price-competition problem is not well determined. A problem of no-pure strategy price equilibrium exists if the two parties are located close to the centre of the segment. The quadratic cost model helps us to side-step these technical problems see Tirole (1988), page 280.

the ideological distance between x_i and a, i.e. the distance between the party's proposal and the citizen own political ideology.

It is also assumed that the political community considered is composed of N citizens, labelled $i \in \mathbf{N} = \{1,..., N\}$, uniformly distributed on the interval [0 , 1].

It is important to stress that in discussion to date I have assumed an exogenous division of citizens into two groups each of which relates to one of the two parties in the case when the parties adopt partially benevolent motivations. These two groups are indicated with α and 1-α. In this section instead, I consider endogenously the process through which the parties supporters are determined. In particular I assume that the citizens, located on the political spectrum of unitary length are split into two groups. The first locates on the left hand side of the political spectrum. This group of citizens, characterised by θ_1 preference, are more in accordance with the policy of the first party located in the left hand side of the interval. Similarly for the second group to the right side of the interval.

This represents the first case. Where the parties' proposals cover the full spectrum of the voters preferences (section 2.11.2 will concentrate on partial coverage of the spectrum). The voter located in x_i , in particular, has the possibility to vote for either of the two parties taking into account the quadratic costs. This allows us to determine that the citizen with ideal point at x is indifferent between the two parties' proposals when the following equality between costs occurs:

$$p_{T1} + r_p(x-a)^2 = p_{T2} + r_p(1-b-x)^2$$

solving this equation I determine the following result:

$$(58) \qquad D_1(p_{T1}, p_{T2}) \;=\; x \;= a + \frac{1-a-b}{2} + \frac{p_{T2} - p_{T1}}{2r_p(1-a-b)}$$

This is an important result. It gives us, in a sense the citizens' demand for party 1, since it identifies the value of x such that all citizens with $x_i < x$ will prefer party 1. Analogously for party 2 it is possible to obtain:

$$(59) \qquad D_2(p_{T1}, p_{T2}) \;=\; 1-x \;= b + \frac{1-a-b}{2} + \frac{p_{T1} - p_{T2}}{2r_p(1-a-b)}$$

which determines the value of x such that all citizens with $x_i > x$ will prefer party 2. It is easy to see that the two equations identify the same value of x, provided that the parties adopt distinct positions, thereby dividing the population into two groups (see Fig.2). The general meaning of equations (58) and (59) is very straightforward. For example, let us consider the symmetric case where $p_{T1} = p_{T2}$. In this case then, equation (58) simply

explains that party 1 will control all voters at the left of position a and exactly half of the voters located between party 1's and party 2's locations (a and 1-b). The third term then shows how this symmetric division of voters varies when the two prices p_{T1} and p_{T2} differ. Equation (58) shows how, when the social price charged by party 2 increases, the demand for party 1's policy increases. As already expressed, party 1's probability of being elected will increase in accordance with this measure of demand for party 1.

A variation from the above model could be considered to allow abstention. In that version of the model, each party would have its own group of supporters, but these groups would not completely cover the political spectrum. In the model above, I have identified which of the two parties each voter will prefer, and assumed that this preference translates into votes. However, since voting is costly, this assumption may not be appropriate. In fact in the model as specified there are two distinct types of abstention which fit with common intuitions. The first type of abstention relates to indifference or near indifference between the parties. It may be that a particular citizen prefers party 1 to party 2, but still will not vote for party 1 if the preference is not strong enough to compensate for the cost involved. There is also a location on the political spectrum where the voter is strictly indifferent between the two party's proposals, and a voter located here will not vote if there is any cost of doing so. It is easy to see that the closer the two parties are to each other, the less will be at stake for the individual voter in the choice between the parties, and so the number of abstentions for reasons of indifference will increase. This is simply to reinforce a point made earlier in relation to the electioneering party, but this time from the point of view of the voter. This type of abstention is common to all spatial models of voting once a cost of voting of any sort is allowed. But the standard way of introducing a cost of voting is in terms of a fixed cost (perhaps identified in terms of the cost of information gathering, or the cost of physically going to the polls). In this model I allow a cost of voting that depends on the distance between the voter and the party in policy space – to indicate the psychological disutility of voting for someone who does not exactly fit your policy preferences (this over and above the utility associated with the actual policy outcome of the election). The introduction of this variable cost of voting allows the model to make sense of a second type of abstention associated with the intuition of alienation. Consider, for example, the case where party 2 locates towards the centre of the spectrum leaving unsatisfied people at the extreme right. To avoid the issue of indifference, assume that party 1 is located well to the left of the spectrum. In this case, citizens at the extreme right will face relatively large costs of voting for party 2 and so may abstain.

Of course, in practice, any decision to abstain will involve both the indifference argument and the alienation argument in that abstention will be more likely for any given citizen the closer are the two party positions to each other (the indifference argument) and the further is the closer of the two parties from the citizen's ideal point (the alienation argument).

2.10. NASH EQUILIBRIUM AND PARTIES' CHOICE OF POLICY VARIABLE

I have determined the political demand for party 1 and party 2. These demands are principally related to the positions taken by the two parties over the political spectrum. That is, the citizen's demand for parties' proposal increases or decreases depending on the relative difference between the citizen's preference and the policies proposed by those parties. This allows us to find the relationship between the citizen's demand and party's probability of being elected.

I proceed with the analysis by considering which factors determine the parties' location within the political spectrum. In the previous section I have omitted this important aspect by taking as given the parties' locations. It is necessary now to specify which factors determine these locations. In particular I consider a certain location over the political spectrum by the parties. I assume that the parties have a certain "vision of the world" associated to a certain position (a and $1-b$) over the political spectrum. These positions are considered exogenous and again I have to refer to condition i) and ii) of section 2.9 above. In particular I will consider condition ii). For this reason, in the next sections, the model will focus on the possibility for the parties to increase their probability to be elected considering the citizens' location over the spectrum and, particularly, taking as given their position over that spectrum (the location variables a and $1-b$), they implement policies x_1 and x_2 in order to pursue such a goal. That is, the parties are mainly motivated by acquire supports from the citizens over the spectrum and they move from their own bliss points (Section 2.11 instead will focus on the condition i), i.e. the endogenous determination of the parties' bliss points).

Again the analysis will consider the benevolent, partially benevolent and ideological party cases.

2.10.1. Nash equilibrium and the parties' policy choice: the benevolent party case

I have already considered the fully benevolent party case in outline and indicted that the result of full policy convergence is carried over from the case of the purely electioneering

party. This result is retained with the more detailed specification that endogenises political demands and the probability of winning the election.

Party 1 now maximises the following function, taken as given the other party's strategy:

$$(60) \qquad \max_{x_1} W^1_{BEN} = P(D_1, D_2)\{[\alpha\theta_1(x_1, x_2^*) + (1-\alpha)\theta_2(x_1, x_2^*)]U_i + \sum_j U_j\}$$

The novelties in this formula w.r.t. (39) are represented by the function between the demands D_1 and D_2 and the probability function P, and also by the introduction of the quadratic cost for the citizen. The above maximisation process leads us to the following result:

$$(61) \qquad \left(\frac{\partial P}{\partial D_1} - \frac{\partial P}{\partial D_2}\right)\left[-\frac{p'_{T1}}{2r_p(1-a-b)}\right]\{[\alpha\theta(\bullet) + (1-\alpha)\theta_2(\bullet)]U_i + \sum_j U_j\} +$$

$$P(D_1, D_2)\{[\alpha\theta(\bullet) + (1-\alpha)\theta_2(\bullet)]U_i' + [\alpha\theta'(\bullet) + (1-\alpha)\theta_2'(\bullet)]U_i + \sum_j U_j'\} = 0$$

with $(\partial P \backslash \partial D_1) > 0$ $(\partial P \backslash \partial D_2) < 0$ and $p'_{T1} > 0$. I also suppose that the parameters α and $(1-\alpha)$ are given by:

$$\alpha = a + \frac{1-a-b}{2} \qquad and \qquad 1-\alpha = b + \frac{1-a-b}{2}$$

It has been seen already that α and $(1-\alpha)$ represents the portions of citizens that support the parties (in this case I have specified such portion of citizens geometrically by considering and dividing the spectrum line of unitary lenght). Equation (61) differs from the analogous function derived earlier because of the terms

$$\left(\frac{\partial P}{\partial D_1} - \frac{\partial P}{\partial D_2}\right)\left[-\frac{p'_{T1}}{2r_p(1-a-b)}\right]$$

In this case, for given value of the second party's policy (x_2^*), the variation of the policy x_1 determines a variation of P through the variation of the parties' demands D_1 and D_2, and the variation of p_{T1}, given the location a and (1-b) for the two parties. For example, moving the policy variable x_1 toward the centre (purely for electioneering purposes, taking as given the position a), will generally increase the demand D_1. For our hypothesis, the party's probability of winning the election increases as a consequence. The party then moves toward the middle of the political spectrum until there is full convergence with the opponent party. This represents the final equilibrium. For fully benevolent parties the optimal equilibrium is coincident with the median position of the political spectrum.

2.10.2. Nash equilibrium and parties' policy choice: the partially benevolent party case

The main result obtained here is similar to that of equation (61) with the exception of the portions that support the parties. I suppose again that party 1 is supported politically by the portion α having preferences θ_1. The maximisation process then, leads us to the following results:

$$(62) \quad \left(\frac{\partial P}{\partial D_1}-\frac{\partial P}{\partial D_2}\right)\left[-\frac{p'_{T1}}{2r_p(1-a-b)}\right]\left\{\alpha\theta_1 U_i+\sum_j U_j\right\}+P(\cdot)\left\{\alpha\theta_1 U_i'+\alpha\theta_1' U_i+\sum_j U_j'\right\}=0$$

Again, the main difference with the earlier analysis is represented by the important considerations of the endogeneity of the political demands and probability of victory functions. Again there is convergence of the parties positions over the political spectrum.

2.10.3. Nash equilibrium and parties' policy choice: the ideological party case

The ideological or selfish party case is again considered by analysing the parties' optimal policy choice. It is necessary to determine the values of x_1 and x_2 that maximise the parties' objective function, that is:

$$\max_{x_2} \quad (1-P(D_1,D_2)) \quad (-\frac{1}{2}(x_2-c)^2)$$

where 1-P(.), in this case, represents party 2's probability of victory function. The maximisation process here is different from that considered earlier. First of all it expresses a strategic function followed by party 1 and party 2 before the election. This is the case, again, where the two parties' locations are given and it is necessary to determine a Nash equilibrium w.r.t the policies x_1 and x_2. The maximisation process for party 2 gives us, for all d, the following results:

$$(63) \qquad x_2^{\,1}* = c \qquad or \qquad x_2^{\,2}* = c-\frac{4(1-P(\cdot))r_p(1-a-b)}{(P_1-P_2)p_{T1}'}$$

where

$P_1 = \partial P(D_1,D_2)/\partial D_1 > 0$

and

$$P_2 = \frac{\partial P}{\partial D_2} < 0$$

where $P = P(D_1, D_2)$.

The first derivative $\partial P(\bullet) / \partial D_1 > 0$ is positive, since when the political demand for party 1 increases *ceteris paribus*, party 1's probability of being elected increases. For the same reasons the derivative P_2 is negative because when the demand for the second party increases the probability of being elected for party 1 decreases. The two solutions in (63) represent again the pre-commitment and the no pre-commitment cases. Now it is possible to see how the party's optimal policy in the pre-commitment case depends on the location variable a and b, and on the probabilities P_1 and P_2. It is important to stress again the fact that in this situation the parameters a and b are exogeneously given and the parties maximise with respect to these locations.

Following the same proceeding for party 1 gives:

$$\max_{x_1} \quad P(D_1, D_2) \quad (-\frac{1}{2}(x_1)^2)$$

and thus:

$$(64) \qquad x_1{}^1 * = 0 \quad or \quad x_1{}^2 * = + \frac{4P(\cdot) r(1-a-b)}{(P_1 - P_2) p_{T1}{}'}$$

where $P_1 > 0$ and $P_2 < 0$.

Again, the second party moves to the centre as well.

Equations (63) and (64) define then, the Nash equilibrium in term of policy levels, for all d, chosen by the parties in a strategic environment. They represent the policy level that the parties propose during the electoral campaign to acquire a "clientele".

2.11. NASH EQUILIBRIUM AND LOCATION CHOICE

It is possible to find a different Nash equilibrium when the parties choose, first of all, the optimal location (or bliss points – as discussed in condition i), section 2.9) and then, given that location, they choose the policy for electioneering purposes (see condition ii), section 2.9). This could be represented by a two-stage game: in the first stage the parties choose their location simultaneously; in the second one, they choose the optimal policy to be proposed given that location.

In particular the condition ii) states that the parties define the political proposal departing from their own point of view, their own vision of the world. The Nash equilibrium in that case, in fact, is based upon the fact that the parties derive that choice taking as given the location, their optimal preference choice. This section, instead, goes further. That is, each party chooses immediately its location and then, they derive the optimal policy to be proposed.

I start the analysis considering, first of all, the ideological or selfish case and then the benevolent and partially benevolent cases.

2.11.1. Ideological location choice

In a situation of ideological or selfish and pre-committed parties, Calvert (1986) demonstrates that the two parties' outcome tend to be convergent. By contrast, if the parties are not pre-committed, the voter anticipate that the parties, once in office, will change their behaviour. In particular the two parties will tend to pursue their most preferred policy, that is $x_1 = 0$ and $x_2 = c_0$.

I can demonstrate what has been said so far by considering the fact that the party must anticipate that its choice of location has two consequences. The first is a direct impact on its political demand, whereas the second affects the intensity of competition with the other party. It is possible to find an equilibrium in location by maximising the party's utility with respect to its own location (location variable a), taking the opponent party location as given. For party 1 then, for given value of the policy x_1 (i.e. $x_1=x_1^*$), it is possible to find:

$$\max_a u_{p1} = P(D_1, D_2) \quad (-\frac{1}{2}(x^*_1)^2)$$

from which it is possible to derive:

$$(65) \quad \frac{du_{p1}}{da} = \left[\frac{\partial P}{\partial D_1}\frac{\partial D_1}{\partial a} + \frac{\partial P}{\partial D_2^*}\frac{\partial D_2^*}{\partial a}\right](-\frac{1}{2}(x_1^*)^2)$$

The terms in the first bracket of equation (65) describe the two consequences due to the choice of party 1's location. The first term shows a direct effect (demand effect) of choosing a location. The second term represents an indirect effect (strategic effect) derived by the fact that the choice of location influences the probability of being elected through the variation of party 2's political demand. I can derive the following expressions:

$$\frac{\partial D_1}{\partial a} = \frac{1}{2} + \frac{p_{T2}^* - p_{T1}^*}{2r_p(1-a-b)^2}$$

which must be positive on our assumptions. This happens when

$$\frac{p_{T1}^*}{(2r_p)(1-a-b)^2} < \frac{p_{T2}^*}{(2r_p)(1-a-b)^2} + \frac{1}{2}$$

For the strategic effect instead, I have:

$$\frac{\partial D_2^*}{\partial a} = -\frac{1}{2} + \left[\frac{p_{T1}^* - p_{T2}^*}{(2r_p)(1-a-b)^2} \right]$$

which must be negative by construction.

Considering again the term in the first bracket of equation (65), note that this is positive because $\partial P / \partial D_1 > 0$; $\partial D_1 / \partial a > 0$; $\partial P / \partial D_2^* < 0$; $\partial D_2^* / \partial a < 0$. The final result could be negative (i.e. $\partial u_{p1} / \partial a < 0$). The result obtained carries straightforward interpretation. The party increases its demand and so its chance of being elected through the direct effect. This means that the party is moving toward the centre of the political spectrum. It tries to capture the median voter preference in order to increase its probability to be elected. At the same time though, the other party follows the same tactics approaching to the centre. But for the parties' images this is not a good deal. Each of them considers as very important presenting itself as different from the other party. In order to build up an image then, even if there is a convergence to the centre, each party tries to present some elements of differentiation to maximise its number of votes in the next political election.

To be more specific, it would be interesting to verify if the parties' bliss points vary when the location change on the political spectrum. If the answer is positive, it is possible to find particular results. Let us consider the following problem for party 2:

$$\max_b u_{p2} = (1-P)\left[-\frac{1}{2}(x_2^* - c_o(b))^2 \right]$$

that gives:

$$(66) \qquad \frac{du_{p2}}{db} = \frac{d(1-P)}{db}\left[-\frac{1}{2}(x_2^* - c_0(b))^2 \right] + (1-P)[(x_2^* - c_0)(c_0'(b))] = 0$$

Let us suppose that $c_0'(b) < 0$, that is, the movement of the party on the political spectrum moves in the same direction the bliss point c.

It is possible to have the following particular situations:

(i) $x_2^* < c_0$; (ii) $x_2^* > c_0$.

Situation (i) characterises a position of the bliss point c to the left of x_2^* on the political spectrum. The consequence of this situation could determine $\frac{du_{p2}}{db} > (<) 0$, that is, the variation of b could increase or decrease the party 2's utility. If this derivative is positive, the party increases its utility by converging toward the middle of the political spectrum. In

particular, the party increases its benefit by trying to augment the numbers of votes received. By contrast a negative derivative means that the party is strictly linked to its preferred ideology, and will not improve its utility by seeking extra votes.

In situation (ii) the party does not converge to the middle of the political spectrum because the party's ideology is too strong. Moving from the party's preferred position represents too high a cost for the party compared to the benefit that is available by converging to the middle.

The conclusions are that generally ideological parties do not converge easily to the centre of the political spectrum because they are too strongly linked to their ideology.

2.11.2. Benevolent and partially benevolent location choice

If for the ideological case I have found that the parties want to differentiate themselves from their rivals because of their selfish nature, in the fully and partially benevolent cases, the situation is surprisingly different. The parties have as their main goal to maximise the social welfare. This is obtained when the parties converge to the centre of the political spectrum, under the uniform distribution of voters preferences[14].

For the fully benevolent case, differentiating party 1's social welfare function gives us the following first order condition:

$$(67) \quad \frac{dW^1_{BEN}}{da} = \left[\frac{\partial P}{\partial D_1}\frac{\partial D_1}{\partial a} + \frac{\partial P}{\partial D_2}^{*}\frac{\partial D_2(\bullet)^{*}}{\partial a}\right]W^1_{BEN} + P(\cdot)\left[\frac{d\alpha\theta_1(\bullet)}{da} + \frac{d(1-\alpha)\theta_2(\bullet)}{da}\right]U_i = 0$$

(the same applies to party 2).

This may be summarised in the following proposition:

Proposition 3: *Taking as given the complete coverage of the political spectrum by the benevolent parties, the parties converge to the middle of the spectrum. The convergence point also represents the location that maximises the social welfare function.*

To analyse this proposition in more detail, we must consider the citizens' demands of the parties' political platforms. Let us consider the following cases.

---

[14]In the case of the uniform distribution there is no difference between the median voter's position and the position that maximises social welfare. This difference will arise under other distributions, so that convergence will not necessarily be to the median voters location in these cases.

Complete coverage of the political spectrum by the parties

This is the case discussed above and analytically expressed by equations (58) and (59) (see also Fig2). When a party moves toward the centre of the political spectrum, its political demand increases while the second party suffers a reduction in its political demand. The variation of demand affects the parties probability of being elected in the standard way. This process pushes the parties to the centre of the political spectrum.

The second term of equation (67), in square brackets, is also significant. This term represents the marginal variation in the number of citizens supporting party 1 due to the movement along the spectrum of party 1. The term is different from the marginal variation of political demand because of the social price differentiation proposed through the political platforms. In particular we have:

$(d\alpha\backslash da)=1\backslash 2$ and $(d(1-\alpha)\backslash da)=-1\backslash 2$.

It is possible to see that the movement of party 1 toward the centre does not necessarily increase social welfare through a variation of the number of citizens satisfied by the benevolent party. In fact, when party 1 moves toward the centre, α increases but $1-\alpha$ obviously decreases by the same quantity. This is typical of a fully benevolent party that has to take into account the totality of citizens – not just those that will vote for it - when it proposes the political platforms.

A different story applies to partially benevolent parties that are concerned only for a portion of citizens.

Proposition 4: *Partially benevolent parties converge to the middle of the political spectrum because of the maximisation of the Social Welfare Function. The parties maximise the political support from the citizens.*

Party 1's maximisation process leads us to the following first order condition:

$$(68) \qquad \frac{dW^1_{PB}}{da}=\left[\frac{\partial P}{\partial D_1}\frac{\partial D_1}{\partial a}+\frac{\partial P}{\partial D_2}\frac{\partial D_2}{\partial a}\right]W^1_{PB}+P(\cdot)\frac{\partial \alpha}{\partial a}\theta_1 U_i=0$$

(the same for party 2).

The difference between (67) and (68) is that the partially benevolent party's location choice effectively determines the relevant Social Welfare Function by identifying citizens political demands and the constituency that will support the party (in our model, α for party 1, and $(1-\alpha)$ for party 2). In this case the parties converge to the centre of the political spectrum. The difference from the fully benevolent case is that the partially benevolent parties have a stronger incentive to converge to the centre of the political

spectrum in order to increase the parties political support – which is strictly irrelevant to the fully benevolent party.

Partial coverage of the political spectrum

This case is quite different from the case of complete coverage (see Fig.3 and 4). The political demands facing the two parties now reflect the possibility of abstention and in particular, the possibility that moving too close to the centre of the spectrum will alienate voters at the extremes. Equations (58) and (59) can be modified to show this:

$$(69) \qquad D_1(p_{T1}, p_{T2}) = x = a + \frac{1-a-\gamma(a)-b-\beta(b)}{2} + \frac{p_{T2}-p_{T1}}{2r(1-a-\gamma(a)-b-\beta(b))}$$

$$(70) \qquad D_2(p_{T1}, p_{T2}) = 1-\beta-x = b + \frac{1-a-\gamma(a)-b-\beta(b)}{2} + \frac{p_{T1}-p_{T2}}{2r(1-a-\gamma(a)-b-\beta(b))}$$

where $\gamma(a)$ and $\beta(b)$ represents that portion of unsatisfied citizens depending on the positions adopted by each of the two parties, so that any movement of the parties along the political spectrum impacts on abstention, as well as on the distribution of voter support between the two parties.

Let us reconsider equations (67) and (68) for the benevolent and partially benevolent parties, taking into account the following derivatives:

$$(71) \qquad \frac{dD_1}{da} = \frac{1}{2} - \frac{\gamma'}{2} + \frac{p_{T2} - p_{T1}(1+\gamma')}{2r(1-a-\gamma(a)-b-\beta(b))^2}$$

$$(72) \qquad \frac{dD_2}{da} = -\frac{1}{2} - \frac{\gamma'}{2} + \frac{p_{T1} - p_{T2}}{2r(1-a-\gamma(a)-b-\beta(b))^2}$$

$$(73) \qquad \frac{d\alpha}{da} = \frac{1}{2} - \frac{\gamma'}{2}$$

$$(74) \qquad \frac{d(1-\alpha)}{da} = -\frac{1}{2} - \frac{\gamma'}{2}$$

with $\gamma' = \frac{d\gamma(a)}{da}$. It is necessary, now, to consider different values for γ'.

$\gamma'=1$

This is the case determined when the movement of the first party toward the centre "capture" a number of new citizens equals to the citizens lost by this movement. This leads to:

$$(75) \qquad \frac{dD_1}{da} = \frac{p_{T2} - p_{T1}}{r(1-a-\gamma-b-\beta)^2} > 0 \qquad \text{that I suppose positive;}$$

(76) $\frac{dD_2}{da} = -1 + \frac{p_{T1} - p_{T2}}{r(1-a-\gamma-b-\beta)^2} < 0$ negative by construction.

(77) $\frac{d\alpha}{da} = 0$

(78) $\frac{d(1-\alpha)}{da} = -1$

(of course the same reasoning applies to the portion β(b) and the position b for movement of the second party).

Equation (75) shows that party 1's political demand is not influenced by the movement along the political spectrum, that is, the number of citizens captured by this movement is neutralised by an equal number of new citizens who become unsatisfied and so abstain. The variation of political demand then, is entirely determined by a differential of social prices. Equation (76) shows that party 2's demand is influenced by the social price differential but also by the variation of the number of citizens satisfied and unsatisfied determined by the movement of party 1 along the spectrum. The equations (77) and (78) show the variation of citizens α and (1-α) that support party 1 and party 2 respectively.

Taken as given these results determined with $\gamma'=1$, let us consider again equations (67) and (68) for the benevolent and partially benevolent parties.

Proposition 5: *Without complete coverage of the political spectrum, benevolent parties will not generally fully converge to the political centre. In particular, for γ′ the degree of convergence depends on the strategic interaction between the two parties due to the differential of prices, and the variation in abstentions.*

The benevolent party increases social welfare by moving toward the centre of the spectrum, as determined by equations (75) and (76). This positive effect has to be offset by the negative effect caused by the increasing number of unsatisfied and abstaining citizens, as indicated with the equations (77) and (78). For this reason there could not be total convergence to the centre of the political spectrum but partial convergence near the centre of the political spectrum.

For the partially benevolent party we have:

Proposition 6: *Without complete coverage of the political spectrum, partially benevolent parties will generally converge to the centre of the political spectrum.*

The partially benevolent party has a strong incentive to converge – it is much more influenced by the need to win the election that the fully benevolent party, and so the

strategic interaction with the other party, and the competition for votes in the centre of the political spectrum, are of much greater weight.

<u>$\gamma' > 1$</u>

In this case it is possible to obtain

$$(79) \quad \frac{dD_1}{da} = \frac{1}{2} - \frac{\gamma'}{2} + \frac{(p_{T2} - p_{T1})(1+\gamma')}{2r(1-a-\gamma(a)-b-\beta(b))^2} > 0$$

that I suppose positive;

$$(80) \quad \frac{dD_2}{da} = -\frac{1}{2} - \frac{\gamma'}{2} + \frac{(p_{T1} - p_{T2})(1+\gamma')}{2r(1-a-\gamma(a)-b-\beta(b))^2} < 0$$

that is negative by hypothesis;

$$(81) \quad \frac{d\alpha}{da} = \frac{1}{2} - \frac{\gamma'}{2} < 0$$

$$(82) \quad \frac{d(1-\alpha)}{da} = -\frac{1}{2} - \frac{\gamma'}{2} < 0$$

Proposition 7: *For $\gamma' > 1$ neither benevolent nor partially benevolent parties have the incentive to converge to the centre of the political spectrum. This is determined by the fact that the number of citizens supporting the parties decreases when the parties converge. Convergence is therefore partial in equilibrium.*

To understand this proposition it is necessary to analyse equations (81) and (82). These show how the movements of the parties toward the centre of the political spectrum increase the number of unsatisfied and abstaining citizens by more than the increase in support from improved competition in the centre of the political spectrum. Movement toward the centre by a party, ceteris paribus, therefore implies a reduction in political support. The fully benevolent case is analogous to the previous one ($\gamma' = 1$) i.e. the party moves only because of the strategic activity with the opponent party. Again there is a trade-off between the positive variation of social welfare due to the strategic parties' activity and the total number of unsatisfied and abstaining citizens. In this situation the parties do not converge completely to the centre of the political spectrum, and there is a partial convergence in equilibrium.

For partially benevolent parties there is now an analogous situation. The variation of a party's location toward the centre determines the marginal variation in the parties probability of being elected (through equations (79) and (80)), but also decreases the portion of citizens that support the party. As before, the partially benevolent party is more concerned with winning the election than the fully benevolent party, but in this case this

implies only partial convergence since further moves toward the centre, by either party, will reduce its political support.

$\underline{0 \leq \gamma' < 1}$

In this case the threat of abstention is weak and the impact of the fact of incomplete coverage of the political spectrum is correspondingly slight, so that the results become identical to those discussed in the case on complete coverage and no abstention.

2.12. CONCLUSION

It is important now to draw together some themes and trace some interim conclusions. The general background to the discussion of political competition is provided by the median voter theorem and the idea that political competition acts (like market competition) to implement equilibria that are in some sense efficient. In this context, the median voter theorem takes on the role of the fundamental welfare theorem in the market context by arguing that even if political parties are motivated solely by the desire to win power, they will be lead (as if by an invisible hand) to adopt policies that converge on the policy that would be chosen by the median voter. The median voter theorem, and the idea of policy convergence is a very powerful idea, and part of the purpose of this chapter has been to test the robustness of this idea in various circumstances.

First of all, I have specified in detail the meaning of several possible (and plausible) party motivations, introducing the distinction between benevolent and partially benevolent parties alongside the more standard ideological and electioneering parties. I have also observed the relationships between the motivations of the parties and the interests of the citizens who support them. I have then examined the problem of asymmetric information when politicians take advantage of their position of power extracting a rent.

The benevolent, partially benevolent and ideological parties have been inserted in a strategic environment with rational voters. Again the structure has been analysed in the context of both full and asymmetric information. The results obtained so far show that the convergence to the centre of the political spectrum is not always complete in equilibrium. Full convergence depends on the details of parties' political motivations as well as on the possibility of incomplete political coverage and abstention. In this way, perhaps the most important lesson is that the detailed specification of the political motivation of parties, and of the behaviour of individual citizen voters, can make a substantial difference to the predicted outcome of political competition. The median voter

theorem – while still providing a benchmark – does not fully capture the nature of political competition.

The main conclusions obtained, have been determined by introducing the citizens' political demand and its impact on the probability that either party will win the election. I shall not attempt to repeat the various results relating to parties of each motivational type, but will instead re-emphasis one or two key points.

First, fully benevolent parties, because of their essentially altruistic motivation, tend to locate toward the centre of political spectrum and therefore to converge in a wide range of circumstances. Since winning the election is not, in itself, important to this type of party, there is little real political competition between parties, so that this case might be seen as the limiting case of political competition.

Second, partially benevolent parties provide more varied results depending on a variety of details – the extent to which parties are tied to pre-existing groups in the population, the extent to which abstention is a real threat, and so on. It is the case of the partially benevolent party that is most interesting and most novel – when compared both with the limiting case of the fully benevolent party, and with the cases of ideological and electioneering parties.

FIGURE 1

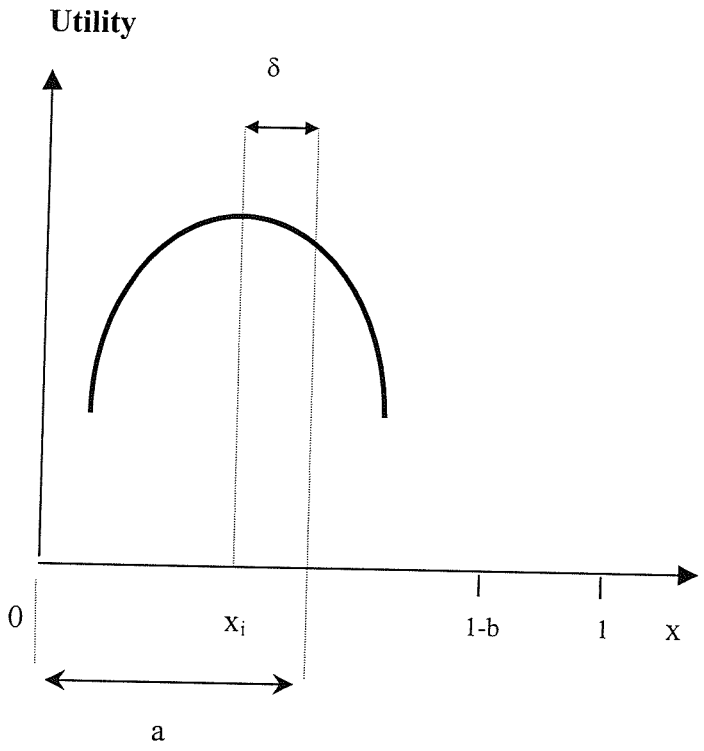


FIGURE 2

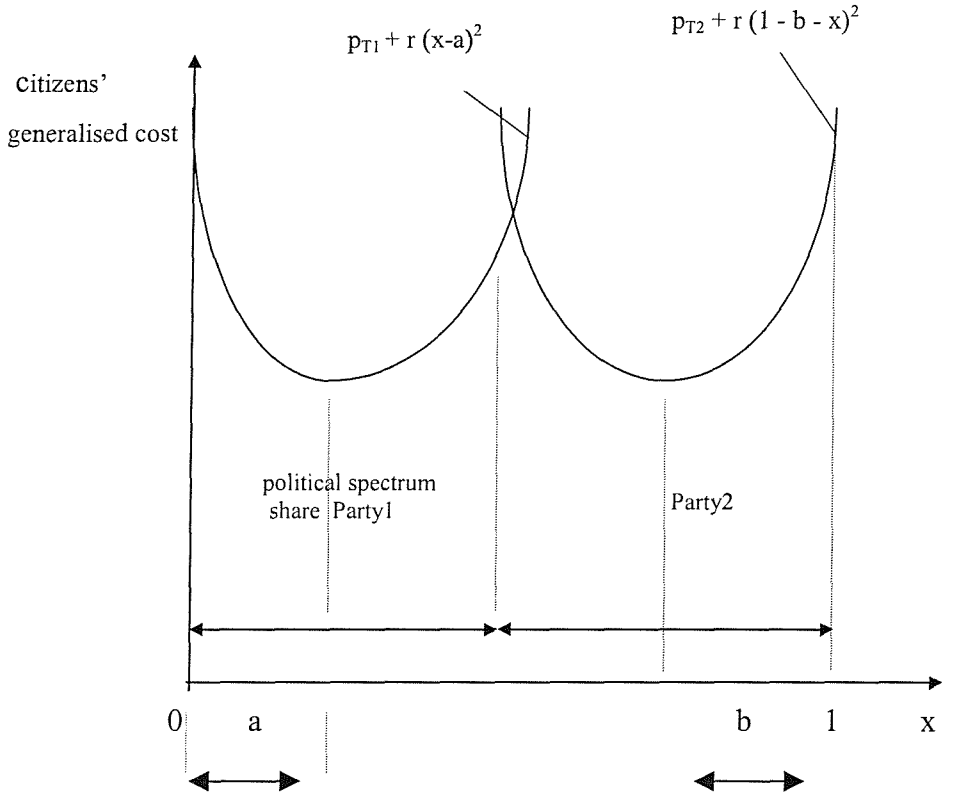

$p_{T1} + r\,(x-a)^2$
$p_{T2} + r\,(1 - b - x)^2$
Citizens'
generalised cost
political spectrum
share Party1
Party2
0
a
b
1
x

FIGURE 3

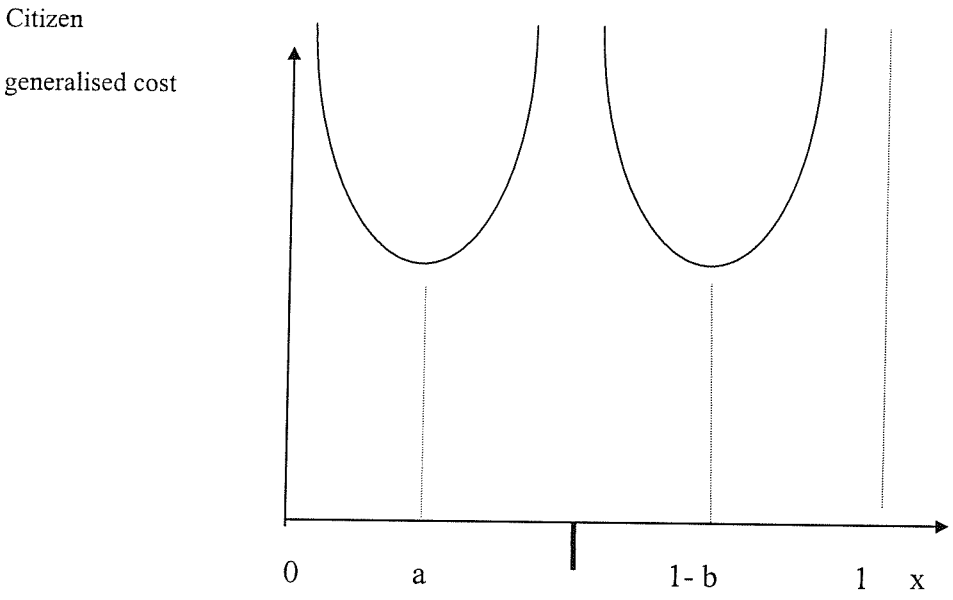
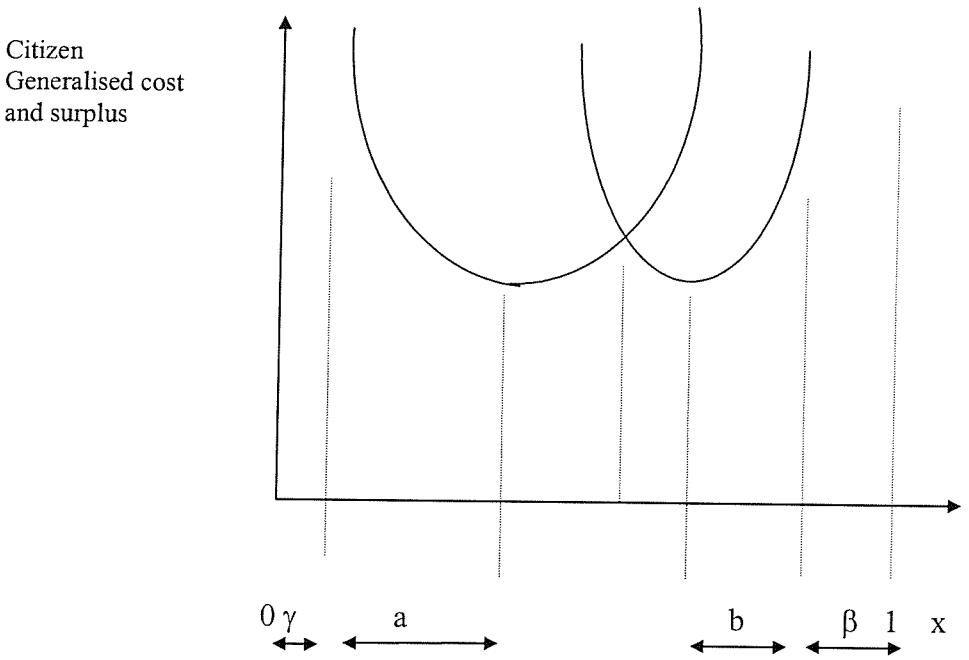


FIGURE 4



3. REGULATION AND COMPETITIVE POLITICS

3.1. INTRODUCTION

The main aim of this chapter is to bring together the various ingredients analysed in the previous chapters. I will, therefore, be concerned to analyse a two-party political system in which the parties may be motivated in a variety of ways, faced with a policy issue of regulating a firm via a regulatory agency. Clearly then, citizens will play both the roles of the consumers of the product of the regulated firm and the voters in the political elections. In particular I am going to compare the benevolent dictator assumption of party motivation with the partially benevolent motivation, to uncover any finding again an important differences between the two cases. I will also include the analysis with the ideological or selfish party. But the parties here are subject to two important constraints: the voter's expectation about the parties' policies that will influence the result of the election, and the opponent party's strategy.

The models that I am going to consider here may be illustrated as follows:

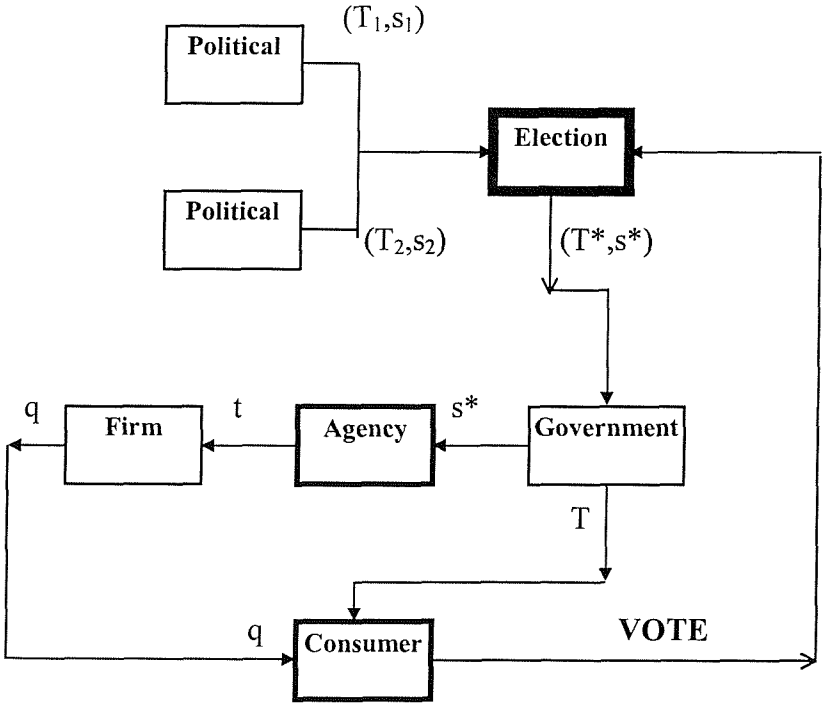


FIGURE 5

The main aspect is represented by the political process (top part of the illustration) that strongly influences the economic environment (bottom part of the illustration). The main link between the two parts – politics and economics - is represented by the election where the parties' proposals are chosen by the citizens. The party which wins the election determines the regulation policy configuring the transfer t to the agency and, indirectly, the quantity produced by the firm and supplied to the consumer. Through the vote the citizens signal if they are satisfied by the party in power's policy. The models that follow try to capture these relationships by setting out the Nash equilibrium determined through party's strategic behaviour, given different assumptions on the motivations of the parties.

This remainder of the chapter mirrors chapter 2 in form and is structured as follows: Sections 3.2 - 3.4 continue the idea of benevolent and partially benevolent parties. Sections 3.5 – 3.7 will then return to the case of ideological parties. Sections 3.8 – 3.10 then reconsider issues concerning citizen demands and policy choice.

3.2. THE BENEVOLENT PARTY CASE WITH FULL INFORMATION

In chapter 1 I considered a model with only one benevolent political party. I specified that the citizens' political welfare depends on the quantity supplied by the regulated firm in the economy (less the relative costs of acting politically). In particular I supposed that when the citizen is satisfied with the controlled firm's output quantity, she reduces her political behaviour (becomes more politically lazy, because she has what she needs). By contrast when she is not satisfied with that quantity, she becomes more politically active, using political instruments[15] to threaten the party's behaviour.

In this chapter I will modify the above system to consider two competitive parties in the model. For simplicity, I suppose that the parties' announced policies are equal to the policies expected by the consumers/voters (citizens).

In this new political system it is necessary to modify the citizen and parties functions relative to the situation where there is only one party. The new citizen's surplus functions then become:

(83) $$V_1 = \alpha\theta_1(q_1,q_2)[S(q_1,q_2) - P(q_1,q_2)q] - (1-\lambda)[T - \alpha\theta_1(q_1,q_2)P(q_1,q_2)q] \geq 0$$

[15]Most obviously the vote, but more generally the adhesion to party activity such as presence at the party meeting, the purchase of party's newspapers and so forth. In the one party case, obviously, there are no elections and the political behaviour of consumers is expressed only by their political activity or consent.

(84) $V_2 = (1-\alpha)\theta_2(q_1,q_2)[S(q_1,q_2) - P(q_1,q_2)q] - (1-\lambda)[T - (1-\alpha)\theta_2(q_1,q_2)P(q_1,q_2)q] \geq 0$

where $\theta_1 (q_1, q_2) \neq \theta_2 (q_1, q_2) > 0$ with $\theta_1' > 1$ and $0 \leq \theta_2' \leq 1$, and α is a random variable in the interval [0,1]. I assume that type 1 citizens' preference on q is stronger than type 2. I also take the case where the type 1 citizen is happier about party 1 because it offers a greater value of q.

Now it is possible to see how the citizen's political preference depends on the political proposals set out by the two parties in the system. Again, the politicians' regulatory activity, through the regulatory agency, is expressed by the following surplus functions:

(85) $U^1_2 = d_1(q_1, q_2, \mu_{21}(e_{21}), \mu_{22}(e_{22}))$

for party 1 and

(86) $U^1_2 = d_2(q_1, q_2, \mu_{21}(e_{21}), \mu_{22}(e_{22}))$

for party 2.

According to the benevolent government model, the first party then maximises the following function which corresponds to its view of welfare

(87) $\max_{q_1} W^1_{BEN} = R_1 = (1-Z)(q_1,q_2)\{(\alpha\theta_1 + (1-\alpha)\theta_2)[S(q_1,q_2) + \lambda P_1(q_1,q_2)q_1] -$

$(1+\lambda)(s^* + \Psi(e) + (\beta - e)q_1) - \lambda V - \lambda U + U^1_2\} + Z(q_1,q_2,T_1,T_2)Wp(q_2)$

with the following IR constraints:

$U \geq 0$

$V_1 \geq 0$

$V_2 \geq 0$

and where $(1-Z(q_1, q_2))$ and $Z(q_1,q_2)$ represent, respectively, party 1's probability of being in power or not (for simplicity I normalise $Wp_1 (q_2)$ to zero).

The voting decisions are based upon the rational expectation of policies that the two parties would follow if elected. These policies are q_1 and q_2 for party 1 and party 2 respectively. The voters rational expectation before election are q_{1t}^e and q_{2t}^e. Election is at time t (I suppose that election takes place every period). At the end of time t-1, the parties announce their policies for time t: q_{it}^a and q_{2t}^a. I suppose that voters believe in them, that is $q_{1t}^e = q_{1t}^a = q_1$ and $q_{2t}^e = q_{2t}^a = q_2$. It is also assumed that

1) Z is time invariant and common knowledge;

2) $0 < Z < 1$ for $q_1 \in R$ and $q_2 \in R$;

3) Z is continuous and differentiable at least twice

4) The following derivatives are satisfied

$\frac{\partial Z(q_1,q_2,T_1,T_2)}{\partial q_1} \equiv Z1 \leq (>) 0$ if and only if $q_1 \geq (<) q_2$, and

$\frac{\partial Z(\bullet)}{\partial q_2} \equiv Z2 \leq (>) 0$ if and only if $q_1 \geq (<) q_2$.

This assumption states that when a party's policy converges toward the other, it increases its chances to be elected by capturing middle voters.

In this model each party maximises its own view of welfare taking into account the opposite party's quantity proposal. Party 1 then maximises its welfare equation (87) taking into account the party 2's proposal quantity q_2. The analytical result then becomes:

$$(88)\quad \frac{[\alpha\theta_1(q_1^*,q_2)+(1-\alpha)\theta_2(q_1^*,q_2)]p_1-(\beta-e)}{p_1^*} = [\alpha\theta_1+(1-\alpha)\theta_2]\frac{\lambda}{1+\lambda}\frac{1}{\eta}+$$

$$-[\alpha\theta_1'+(1-\alpha)\theta_2']\frac{[S(\bullet)+\lambda p_1q_1^*]}{(1+\lambda)p_1}+\frac{Z_1}{(1-Z)(1+\lambda)p_1}\{[\alpha\theta_1(\bullet)+(1-\alpha)\theta_2(\bullet)][S(\bullet)+\lambda p_1q_1^*]+$$

$$-(1+\lambda)[s^*+\Psi(e)+(\beta-e)q_1^*]\}$$

where $\theta_1' = d\theta_1/dq$ and $\theta_2' = d\theta_2/dq$

also:

(i) $\Psi'(e)=q \Leftrightarrow e=e^*$;

(ii) $U=0$;

(iii) $V_\alpha \geq 0$:, $V_{1-\alpha} \geq 0$;

(iv) the project is undertaken if $[(\alpha+(1-\alpha))\theta][S(q)+\lambda P(q)q]-(1+\lambda)[\Psi(e^*)+(\beta-e^*)q] \geq 0$;

(v) $U_2=0$; (vii) $dU_2\backslash de_2=d'(\cdot)\ \mu'_2(e_2) \Leftrightarrow e_2=e_2^*$.

The result (88) shows a price-cost margin that takes into account the two groups of consumers[16]. It is interesting to see how the margin depends also on the θ's other than the party's probability of being elected.

Following exactly the same proceeding for the second party, I obtain

[16]See Laffont (1996) for a distinction between discriminatory and non-discriminatory optimal price of the two groups of consumers.

$$(89)\quad \frac{[\alpha\theta_1(q_1,q_2^*)+(1-\alpha)\theta_2(q_1,q_2^*)]p_2-(\beta-e)}{p_2}=[\alpha\theta_1+(1-\alpha)\theta_2]\frac{\lambda}{1+\lambda}\frac{1}{\eta}+$$

$$-[\alpha\theta_1'+(1-\alpha)\theta_2']\frac{[S(\bullet)+\lambda p_2q_2^*]}{(1+\lambda)p_2}-\frac{Z_2}{Z(1+\lambda)p_2}\{[\alpha\theta_1(\bullet)+(1-\alpha)\theta_2(\bullet)][S(\bullet)+\lambda p_2q_2^*]-$$

$$(1+\lambda)[s^*+\Psi(e)+(\beta-e)q_2^*]\}$$

Now it is possible to see how equations (88) and (89) with respect to equation (18) introduce important modifications relative to the one party system of chapter 1. The main changes are principally due to the probability to be elected Z, and to the strategic party behaviour. For completely convergent policy ($q_1=q_2$), the parties' probability to be elected is the same (and $Z_1=Z_2=0$). In this case equations (88) and (89) are identical to equation (18).

3.3. THE PARTIALLY BENEVOLENT PARTY CASE WITH FULL INFORMATION

I now turn to the full information problem in the partially benevolent party case. To determine the one-shot Nash equilibrium when the political system is characterised by two partially benevolent parties, some straightforward calculus lead us to the following results:

$$(90)\quad \frac{[\alpha\theta_1(q_1^*,q_2)]p_1-(\beta-e)}{p_1^*}=\alpha\theta_1\frac{\lambda}{1+\lambda}\frac{1}{\eta}+$$

$$-\alpha\theta_1'\frac{[S(\bullet)+\lambda p_1q_1^*]}{(1+\lambda)p_1}+\frac{Z_1}{(1-Z)(1+\lambda)p_1}\{[\alpha\theta_1(\bullet)]\ [S(\bullet)+\lambda p_1q_1^*]-(1+\lambda)[s^*+\Psi(e)+(\beta-e)q_1^*]\}$$

for party1, and for party 2:

$$(91)\quad \frac{[(1-\alpha)\theta_2(q_1,q_2^*)]p_2-(\beta-e)}{p_2}=[(1-\alpha)\theta_2]\frac{\lambda}{1+\lambda}\frac{1}{\eta}+$$

$$\{-[(1-\alpha)\theta_2']\frac{[S(\bullet)+\lambda p_2q_2^*]}{(1+\lambda)p_2}-\frac{Z_2}{Z(1+\lambda)p_2}\{[(1-\alpha)\theta_2(\bullet)][S(\bullet)+\lambda p_2q_2^*]-(1+\lambda)[s^*+\Psi(e)+(\beta-e)q_2^*]\}$$

It is immediately possible to compare and to see the differences between equations (90)

and (91) relating to the partially benevolent party structure, with the corresponding (88) and (89) relating to the fully benevolent party case. The most obvious point is represented by the fact that in equations (88) and (89) the benevolent party considers the totality of citizens while the partially benevolent party considers only one section of society. The parties political activities are then important factors influencing the price-cost margin, which are in turn crucial elements in the determination of the systems efficiency (again with identical policies $q_1=q_2$, $Z_1=Z_2$ and equations (90) and (91) collapse to equation (20)).

3.4. ASYMMETRIC INFORMATION

The previous sections have focused on the maximisation problems determined in a full information two-party system. Now, let us analyse the asymmetric information case.

In the presence of asymmetric information, the problem is resolved by taking into account the informational rent earned by the party in office. Again, the analytical proceeding is then comparable to that considered in Chapter 1 for the one party case.

Let us consider the partially benevolent party case, supposing that party 1 is in office. In order to prevent this party from claiming to be efficient when it is not, it is necessary to introduce the incentive constraint $\Phi_1(e_{21}(q_1,q_2,)$ [with $\Phi'_1(\cdot) > 0$ and $\Phi''_1(\cdot) > 0$] to the full information program. The same reasoning applies, of course, to the regulated firm, where an incentive constraint becomes necessary to avoid the firm earning a rent.

As already demonstrated, the asymmetric information problem leads to a situation where prices and quantities are different from those obtained in the full information case, worsening the efficiency of the system.

The asymmetric information case for the partially benevolent party case is also similar to that considered previously. The PBP in power when there is asymmetric information may behave inefficiently, as seen in chapter 1, looking for the extraction of rent to take advantage over the other agents. However, the same can be said for the regulated firm. The inefficiency once again arises because the firm could claim to be inefficient when it is not. The regulatory issue then is to prevent this inefficient situation by introducing an incentive constraint in the full information program.

I conclude this part of the chapter related to the strategic political environment when the system is characterised by two benevolent or partially benevolent parties. The asymmetric information case for the FBP and PBP, together to the regulated firm, is not

pursued in more detail. Many possible issues might arise from this analysis, as specifically seen in chapter 1. In this case could be of a certain relevance considering the political structure for setting the incentive Φ_2 for the parties. Relevant questions may arise: 1) who is going to set the incentives? An independent governmental agency or one that is influenced or "captured" by parties?[17] 2) And what are the implications on the final results considering parties with different motivations?

The asymmetric information problem is solved, in the next section, only referring to the ideological parties case.

3.5. THE IDEOLOGICAL PARTY CASE

The analytical starting point of this section is again represented by Alesina's work (1988) discussed in chapter 2 above. Here I apply that general model of two party competition to the issue of regulation policy. The results obtained determines an equilibrium regulation policy followed within the two-party electoral system with ideological parties.

The analysis is structured in two parts. The first (the remainder of this section) applies the Alesina model to regulation policy. I first specify the utility functions of the agents in the system and then I introduce electoral competition. The second part (sections 3.6 and 3.7) departs from Alesina's work and focuses principally on the asymmetric information problem. I will see that even if the party in office has got more relevant information than the other agents in the system, this does not determine a situation where it is totally unconstrained. I have called this case "almost" asymmetric information environment because the party's relevant information does not give to it a totally and unconstrained supremacy over the other agents. This because the citizen has an indirect control over the firm's production of good and services. The election system, then, limits the party's power and reduces the inefficiency in the system.

3.5.1. The model

Let us re-specify the utility function for each agent before analysing the Alesina model as applied to the regulation problem.

---

[17] See for example Besley and Coate (2000) on this issue.

The political parties

As before, the parties do not maximise the prospect of winning power. They aim to serve their own ideology, or serve their respective constituencies. The utility functions are then:

(92) $U_{21}=U_{21}(s_1,T_1)+d$

for party 1, and, for party 2:

(93) $U_{22}=U_{22}(s_2,T_2)$

where **d** again represents the positive utility payoff (if any) from being in office *per se*, **s** is the sum paid to the regulatory agency, and **T** is the tax levied on the consumer/voter. The party's utility function depends on the tax **T** and the payment **s** because, in this model, I want to consider two relevant effects: a direct and an indirect one. The direct effect is relative to taxation. Of course the consumer will support the party if *ceteris paribus,* she agrees with the party's tax proposal – in particular if it offers a lower tax holding other variables constant. The indirect effect instead, refers to the fact that the transfer to the agency affects the firm's activity (the quantity q) and hence the utility of the consumer. The party's probability to be re-elected also depends on the level of output enjoyed by the consumer, and so there may be a trade off between lower taxes and improved service provision.

The agency

I still suppose that the agency is indispensable in controlling the firm's activity. In other words, the government needs of the agency to regulate the firm's price and costs.

For the agency then I still have

(94) $V= s-s^*$

where **s*** is the reservation income below which the agency does not participate. The agency is responsible for the transfer that the firm is going to receive i.e. the transfer **s** is equal to $s = t+e(q)$ where **t** is the transfer to the firm and e(q) is the agency's effort to control the firm's activity.

The firm

The firm's profit function is

(95) $\Pi = p\,q - c\,q + t$

(p= price; q= quantity, c= cost)

The firm earns profit from sales revenue net of costs and receives the transfer t from the government via the regulatory agency.

The consumer/voter

As in the earlier case, the utility function for the consumer is

(96) $U = S(q) - T - pq$

The consumer receives consumer surplus S(q), it pays pq to the firm and T to the government.

The consumer's taxation T has to satisfy the following government budget constraint

(97) $T \geq s$

For expositional simplicity I assume that T = s. As indicated, I also consider a transfer **t** to the firm via the regulatory agency. I do not further investigate on the nature of this transfer.

Each party proposes alternative policies with respect to the optimal situation T*, s* where the firm produce at MC=P and the agency receives the exact reward required for efficiency. Party 1's (2's) policy is indicated by s_1, T_1 (s_2, T_2).

Following the same reasoning outlined in chapter 2, the parties' objective functions will be expressed in quadratic form:

(98) $$U_{21}(T_1) = \sum_{t=0}^{\infty} q^t u_{21}(T_{1t}) = -\frac{1}{2}\sum_{0}^{\infty} q^t (T_{1t} - c_0)^2$$

$c_0 > 0 \quad and \quad 0 < q < 1$

for party 1, and for party 2:

(99) $$U_{22}(T_2) = \sum_{0}^{\infty} q^t u_{22}(T_{2t}) = -\frac{1}{2}\sum_{0}^{\infty} q^t T_{2t}$$

[where, as before, q^t = discount factor (equal for the two parties); and c_0= bliss point controlled by the party in office. I assume it equals 0 for party 2].

In equations (98) and (99) I have omitted the reward s to the agency. This is because I have supposed the condition T=s. The tax level determination then becomes the crucial variable manipulated by the party to obtain political consent.

The voting decisions are then based upon the citizen's rational expectations of policies that the two parties would follow if elected. These policies are T_1 and T_2, for party 1 and party 2. At the end of time t-1, the parties announce their policies for time t: T_{1t}^a and T_{2t}^a .

If voters believe in it then $T_{1t}^e = T_{1t}^a$ and $T_{2t}^e = T_{2t}^a$

otherwise $T_{1t}^e = E(T_{1t}|I_{t-1}) \neq T_{it}^a$

(I_{t-1}= information set available to the voter at time t-1). The electoral outcome is uncertain.

For party 1 victory is associated the probability

$$P=P(T_1^e, T_2^e)$$

because I have supposed T=s.

It is also assumed that

1) P is time invariant and common knowledge;

2) $0< P <1$ for $T_{1t}^e \in R$ and $T_{2t}^e \in R$;

3) P is continuous and differentiable at least twice;

4) The following derivatives are satisfied

$\frac{\partial P(T_{1t}^e, T_{2t}^e)}{\partial T_{1t}^e} \equiv P_{T1t}^e = P1 \leq (>) 0$ if and only if $T_{1t}^e \geq (<) T_{2t}^e$, and

$\frac{\partial P(\cdot)}{\partial T_{2t}^e} \equiv P_{T2t}^e = P2 \leq (>) 0$ if and only if $T_{1t}^e \geq (<) T_{2t}^e$

These assumption state that when a party's policy converges toward the other, it increases its probability of being elected by capturing middle voters.

3.5.2. Electoral competition

As in chapter 2, it is interesting to consider the above model both with and without pre-commitment. I will present only the main results, since the more general ideas have been discussed in chapter 2.

Pre-commitment case

This case simply implies $T_1^e=T_1^a=T_1$ and $T_2^e=T_2^a=T_2$

(I have omitted the subscript t for simplicity).

The Nash-equilibrium of this game is found by solving the following problem:

For party 1

$$(100) \qquad \max_{T_1} u_{21} = P(T_1, T_2)(-\frac{1}{2}(T_1 - c)^2 + d) + (1 - P(\cdot))u_{21}(T_2)$$

where $u_{21}(T_2)$ is the utility of the first party when the second party wins the election (for simplicity $u_{21}(T_2) = 0$).

For party2

$$(101) \qquad \max_{T_2} u_{22} = P(T_1, T_2)(-\frac{1}{2}(T_2)) + (1 - P(\cdot))u_{22}(T_1)$$

$u_{22}(T_1)=0$

The above maximisation problems give us the optimal taxation policies and the optimal transfers to the agency from the point of view of each party. That is

$$(102) \qquad T_1^* = \frac{-P + \sqrt{(P)^2 + 2(P_1)^2 d}}{P_1} + c_0$$

$$where \quad P_1 = \frac{\partial P(\cdot)}{\partial T_1} > 0$$

for party 1, and for party 2:

$$(103) \qquad T_2^* = \frac{1 - P - \sqrt{(1-P)^2 + 2\ (P_2)^2 d}}{P_2}$$

$$where \quad P_2 = \frac{\partial P(\cdot)}{\partial T_2} > 0$$

As before, it is possible to demonstrate that the two outcomes are convergent.

No pre-commitment case in a finitely repeated game.

Now consider the case without pre-commitment in a finitely repeated game. Following Alesina (1988) for any value of d, the time consistent equilibrium exist is unique and given by $\overline{T_1^*} = c_0$ *and* $\overline{T_2^*} = 0$

The voter anticipates the behaviour of the parties. They know that the parties will change their behaviour and the tax rate when in office in order to follow the party's own most preferred policy, thus $T_1^e = c_0$ and $T_2^e = 0$. Then party 1's probability of being elected is $P(c_0, 0) = P^*$. Without pre-commitment there is no policy convergence (time inconsistent policy convergence).

No pre-commitment case in a infinitely repeated game

Again, I use the method presented in chapter 2. In an infinite repeated game the first best outcome without pre-commitment is obtained by maximising the following function

$$(104) \qquad \max_{T_1, T_2} \lambda[P(-\frac{1}{2}(T_1 - c_0)^2)] + (1-\lambda)[P(-\frac{1}{2}(T_2)^2)]$$

where $0 < \lambda < 1$ represents the weight given to party 1's policy. The discussion of chapter 2 demonstrates that this solution is a first best solution and the efficient frontier is given by the policies $T_1^* = T_2^* = \lambda\ c_0$.

3.6. "ALMOST" ASYMMETRIC INFORMATION

3.6.1 Political party's informational advantage

I move now from the Alesina based model to consider a different situation – as discussed in section 2.6 of chapter 2. Let us suppose that the party in office has more information than the other agents in the economy. This implies that the party could earn a rent for being in office. The privilege to be office-holder gives to it more utility which is not observed directly. In particular the voter doesn't know if the party's activity is optimal or not. The only action that she could take is to analyse the actual performance of the office-holder. She knows that the party tries to maximise its utility given that she has a political ideology to respect. The voter does not know if the actual taxation level relative to the output of the regulated good is optimal or not. But she does know the level of the regulated firm's output (that is why I use the term 'almost' asymmetric information). The voter is sensitive to that regulated quantity. In this way she forms her own convictions about the party's performance.

Let us suppose that the taxation level is $T_1 = r + \hat{s}_1$ where r represents the party's rent when there is asymmetric information. In this case then, the value for t_1 and s_1 are $\hat{t}_1 < t_1 \; and \; \hat{s}_1 < s_1$ (because of the (97)). During the electoral campaign the party promised the quantity q_1 to the elector and the correspondent taxation level T_1. With asymmetric information the party could earn the rent r maintaining the same level of taxation T_1. The important difference from the campaign promises is that, to earn the rent r, the party has to decrease the resources given to the agency and, indirectly, to the firm.

The general effect is that the agency reduces the effective control of the firm. The firm then reduces its output, reflecting its monopoly power.

The results of this is then:

$$(105) \qquad \hat{U}_1 = S(\hat{q}_1) - T_1 - p\hat{q}_1 < U_1$$

that is, the consumer's utility is less than the expected pre-electoral utility. The elector does not know that even if the taxation level is still the same, the party earns r. At the same time, she is sensitive to the quantity produced level q_1. In this case party 1's probability of being re-elected falls, i.e. $P^{AI}(T_1, T_2) < P^{FI}(T_1, T_2)$.

It is possible to demonstrate the reduction of probability in the following way. I set

$t_1 = \Pi_1 - q_1(p-c)$

from equation (95). The first derivative of this function is

$$\frac{\partial t_1}{\partial q_1} = \Pi_1'-(p-c)-q_1p'+q_1c'>0$$

(positive increase of quantity due to the transfer t_1)

I also assume that the probability of party 1 being re-elected increases with t_1, the transfer given to the regulated firm, that is $\frac{\partial P}{\partial t_1}>0$.

I then obtain

$$\frac{\partial P(T_1,T_2)}{\partial t_1}\frac{\partial t_1}{\partial q_1}>0$$

Having considered $\hat{q}_1 < q_1$, then the party1 probability to be re-elected becomes

(106) $$\hat{P}^{AI}(T_1,T_2) < P^{FI}(T_1,T_2)$$

as I wished to demonstrate.

Now, another way to determine the optimal value for s_1 and s_2 with and without asymmetric information is as it follows. I have to specify the following probability system. I assume that with probability y the party undertakes an efficient activity. That is, the party's only benefit by being in office is given by the efficient value $\underline{d}$ (i.e. the rent r is zero). In other words, the party does not abuse its power when in office. In this case then, the optimal values for s_1 and s_2 are the same specified by above, that is, $s_1=s_1^*$ and $s_2=s_2^*$.

The interesting case is when the party in office abuses its authority. That is, the party in office takes advantage over the other agents because of asymmetric information. As illustrated above, it earns the rent r and d assumes the inefficient value $\overline{d}$ ($r\neq 0$). In this case equations (102) and (103) above resolve as:

(107) $$\hat{T}_1 = \frac{-P+\sqrt{P^2+2(P_1)^2\overline{d}}}{P_1}+c_0$$

where $\hat{T}_1$ is the optimal taxation by reference to the quantity $\hat{q}_1 < q_1$. The consumer, however, continues to be charged by the taxation level $T_1 = \hat{T}_1 + r$.

Analogously for party 2 we have:

$$(108) \qquad \hat{T}_2 = \frac{1 - P - \sqrt{(1-P)^2 + 2(P_2)^2 \bar{d}}}{P_2}$$

It is clear that $\hat{T}_1 < T^*_1$ and $\hat{T}_2 < T^*_2$ where T^*_1 and T^*_2 are the optimal solutions with full information and consequently $\hat{s}_1 < s_1^*$, $\hat{s}_2 < s_2^*$ and $\hat{t}_1 < t_1^*, \hat{t}_2 < t_2^*$ returning to the above case where $P^{AI} < P^{FI}$. In this section I have focussed on informational advantage of the party in power. I now turn to regulated firm's information advantage.

3.6.2. Regulated firm's informational advantage

The case analysed in this section refers to a situation where the regulated firm has an informational advantage over the other agents in the system. As seen in the classical analysis, the firm earns an informational rent because it has private information about its technology and effort. This also implies the inefficiency of the system. Again the voter is not satisfied by this situation. She can compare the performance of the firm with the promises made by the party during the electoral campaign. If there is a big divergence, the voter will penalise the party in power, by voting the opposite party. The party in power though cannot control perfectly what the firm does. The best it can do to avoid this situation, is to introduce an economic incentive for the regulated firm in a manner that is similar to that of the perfectly benevolent congress in the standard Laffont-Tirole model discussed in chapter 1. The main difference between the standard L-T model and the model outlined here, is that in this case it is political pressure on the party in power that provides the impetus toward efficiency, rather than the assumed motivation of the government

The model describing this process can be set as follows:

The party maximises, for all d, the following utility function:

$$(109) \qquad \max_{T_1} P(T_1, T_2)\left(-\frac{1}{2}(T_1 - c_0)\right)^2$$

The firm has knowledge of the technological variable β which represents private information for the firm, and an adverse selection problem. This parameter can assume two values: high or inefficient ($\bar{\beta}$) with probability (1 - v), and low or efficient ($\underline{\beta}$) with probability (v).

The party's probability of winning the election is affected by the technological factor: when the firm is inefficient, the probability of re-election falls. Party 1's utility function becomes then:

$$(110) \qquad \max_{\underline{T_1},\overline{T_1}} P(\underline{T_1},\underline{T_2})v\left[-\frac{1}{2}(\underline{T_1}-c_0)^2\right]+P(\overline{T_1},\overline{T_2})(1-v)\left[-\frac{1}{2}(\overline{T_1}-c_0)^2\right]$$

with $\underline{T_1}=\underline{t_1}+\underline{s_1}$ and $\overline{T_1}=\overline{t_1}+\overline{s_1}$ (in this case I have specified the transfer **t** to the firm separating it from **s** to the agency).

It is assumed that the probability functions satisfies the equality:

$$P(\underline{T_1},\underline{T_2})+P(\overline{T_1},\overline{T_2})=P(T_1,T_2)$$

where

$$\overline{P}=P(\overline{T_1},\overline{T_2}) \text{ e } \underline{P}=P(\underline{T_1},\underline{T_2})$$

The maximisation leads to:

$$(111) \qquad \underline{T_1}^1=c_0; \qquad \underline{T_1}^2=c_0-\frac{2\underline{P}}{\underline{P_1}}$$

and

$$(112) \qquad \overline{T_1}^1=c_0; \qquad \overline{T_1}^2=c_0-\frac{2\overline{P}}{\overline{P_1}}$$

(similar results apply for party 2).

The taxation policy followed by the party depends on the probability function and, indirectly, on the technological parameter. In a no pre-commitment situation the parties policy is equal to the parties bliss-points (point c_0). In the asymmetric environment, the firm faces an incentive to exploit its informational advantage. Particularly, the efficient firm states to be inefficient to have more government transfers.

Without information, the firm's profit function is:

$$(113) \qquad \underline{\Pi}=\underline{q_1}(p-c)+\underline{t_1}+\phi(\overline{t_1}-\underline{t_1})$$

where q, p, c e $\underline{t_1}$ represent the quantity produced, the price, the cost and the efficient firm's transfer respectively. The function $\phi(\overline{t_1}-\underline{t_1})$, which represents the rent earned by the efficient firm when it claims to be inefficient, is continuous with $\partial\phi/\partial\overline{t_1}>0$ and $\partial\phi/\partial\underline{t_1}<0$. This rent is a function of the difference between the

inefficient and efficient transfers, that is, the efficient firm's rent increases when the differences between $\bar{t}_1$ and $\underline{t}_1$ increases as well.

It is possible to derive from (113):

$$(114) \qquad \frac{\partial \underline{t}_1^{AI}}{\partial \underline{q}_1} = \Pi'_1 - p + c - \underline{q}_1 p' + \underline{q}_1 c' - \phi_{\underline{q}1}'(\cdot)\left(\frac{\partial \bar{t}_1}{\partial \underline{q}_1} - \frac{\partial \underline{t}_1}{\partial \underline{q}_1}\right)$$

where $\phi_{\underline{q}1}'$ represents the first derivative of the function ϕ with respect to the quantity $\underline{q}_1$. This derivative is $\phi_{\underline{q}1}' < 0$ because when the efficient quantity increases, the efficient firm receives a lower transfer with respect to the inefficient transfer $\bar{t}_1$, that is:

$$\frac{\partial \bar{t}_1}{\partial \underline{q}_1} < 0.$$

By contrast, when the transfer for the efficient activity increases, the firm raises the quantity produced:

$$\frac{\partial \underline{t}_1}{\partial \underline{q}_1} > 0$$

Assuming complete information the (113) becomes:

$$(115) \qquad \frac{\partial \underline{t}_1^{FI}}{\partial \underline{q}_1} = \underline{\Pi}'_1 - p + c - \underline{q}_1 p' + \underline{q}_1 c'$$

Equations (114) and (115) indicate the different variations of the efficient quantity with respect to the transfer $\underline{t}_1$ in situations of symmetric and asymmetric information respectively. In particular, the marginal variation between transfer and quantity in the (114) is smaller than the same ratio in (115). In the asymmetric information situation then, the relationship between the transfer and the quantity produced by the firm is less sharp. That is, the firm is more independent from the transfer that the party in office proposes. For this reason:

$$\underline{P}^{AI} < \underline{P}^{FI}$$

This can be demonstrated by noting that the firm, in the asymmetric information situation, decreases its production from $\underline{q}_1$ *to* $\hat{\underline{q}}_1$ to earn the rent ϕ. The result is equal to the effect obtainable by decreasing the transfer $\underline{t}_1$, that is:

$$\frac{\partial \underline{P}}{\partial \underline{t}_1}\frac{\partial \underline{t}_1}{\partial \underline{q}_1} > 0$$

Assuming asymmetric information, production $\underline{\hat{q}_1}$ is lower than q_1, and as a consequence $P^{AI} < P^{FI}$.

It is possible to say, then, that the party in office has more control over the regulated firm in the perfect information case with respect to the asymmetric one, because

$$(116) \qquad \frac{\partial \underline{P}}{\partial \underline{t_1}}\left(\frac{\partial \underline{t_1}}{\partial \underline{q_1}}\right)^{AI} < \frac{\partial \underline{P}}{\partial \underline{t_1}}\left(\frac{\partial \underline{t_1}}{\partial \underline{q_1}}\right)^{FI}$$

I can conclude that the party in office's probability to be re-elected decreases because of the uncertainty in the system due to asymmetric information. In this way the political system becomes potentially less stable as a result of the inability of the party in power to fully overcome the firm's informational advantage.

Introducing incentive compatibility

I have indicated that parties are penalised if the regulated firm activity is not efficient and this is more likely to happen in the asymmetric information situation. The parties then introduce an incentive to attempt to prevent the efficient firm from claiming that it is inefficient. Referring to the first party (but obviously the same conditions apply to the second party), the policy proposed is determined according to the constraint

$$(117) \qquad \underline{T_1} \geq \overline{T_1} + \Phi(\underline{T_1})$$

where $\Phi(\underline{T_1})$ represents the incentive compatibility constraint that constrains the firm to tell the truth. It is necessary to impose that $\partial\Phi / \partial \underline{T_1} < 0$, that is, the incentive decreases when the taxation and the transfer to the efficient firm increase. In this way it is possible to avoid the efficient firm produces at cost $\underline{\beta}$ but saying that it is inefficient, so obtaining $\bar{t}$ from the government and earning the rent ϕ.

The constraint modifies the party's utility function as follows:

$$(118) \qquad \max_{T_1, \underline{T_1}} \underline{P}\nu\left[-\frac{1}{2}\left(\underline{T_1} - \Phi(\underline{T_1}) - c_0\right)^2\right] + \overline{P}(1-\nu)\left[-\frac{1}{2}(\overline{T_1} - c_0)^2\right]$$

I consider real and positive solutions only. The maximisation with respect to $\underline{T_1}$ gives:

$$(119) \qquad \underline{T_1}^1 = c_0 + \Phi(\cdot); \qquad \underline{T_1}^2 = c_0 + \Phi(\cdot) - \frac{2\underline{P}(1 - \Phi_{\underline{T1}}')}{\underline{P_1}}$$

where $\Phi_{\underline{T1}}' < 0$ is the first derivative of the incentive constraint with respect to $\underline{T_1}$.

The maximisation w.r.t $\overline{T_1}$ determines:

(120) $\overline{T_1^1} = c_0; \qquad \overline{T_1^2} = c_0 - \frac{2\overline{P}}{\overline{P_1}}$

The results obtained in (120) are not different from equation (112) without incentive compatibility. For the inefficient firm is not necessary to demonstrate to be efficient and to receive $\underline{t_1}$. The policy proposed for this firm, then, is unchanged.

3.7. ALMOST ASYMMETRIC INFORMATION IN AN INFINITELY REPEATED GAME

I have shown above that the party's behaviour is different period by period. I have assumed that the party changes activity each time. When in office (let us suppose at time t), it tries to take advantage of its position by extracting the rent r and reducing both the transfers to the agency and to the firm. In this case its utility function at time t is given by:

$$-\frac{1}{2}(\hat{t} + \hat{s}_1 + r - c_0)^2 + \overline{d}$$

At time t+1 however, the voter knows that something is wrong because she receives less output from the regulated firm referred to the optimal state * (i.e. $\hat{q}_1 < q_1 *$). The only action followed by the voter is to reduce her political preference for the party in office i.e. the party's probability of being re-elected fall to P^{AI}. At time t+1, we have

$$P^{AI}[-\frac{1}{2}(T*_1 - c_0)^2 + \underline{d}]$$

In this case, the party is threatened by the reduction in its probability of being re-elected. That is why its activity then returns to the optimal. The voter learns that, and the party's chance to be re-elected next period becomes $P^{FI}>P^{AI}$. At time t+2 then, the party's utility could be expressed as

$$P^{FI}[-\frac{1}{2}(\hat{T}_1 + r - c_0)^2 + \overline{d})]$$

As in Chapter 2, the model is still a simple one. I have assumed that the voter has a short memory. She remembers only the last period and not more. But it is also in this way that I can easily explain the political cycles in democratic countries. Even if it still remains a strong assumption, the voters are short-sighted. They do not remember easily what the party has done in the past (except the last period). It is possible to reconsider the above

analysis by introducing an infinitely repeated game. In particular the party risks unpopularity each period if the following expression is satisfied:

$$[-\frac{1}{2}(\hat{T}_1 + r - c_0)^2 + \bar{d}] + P^{FI}[-\frac{1}{2}(\hat{T}_1 + r - c_0)^2]\delta^2(1 + \delta^2 + \delta^4 + \ldots >$$

$$P^{AI}[-\frac{1}{2}(T^*_1 - c_0)^2 + \underline{d}]\delta(1 + \delta^2 + \delta^4 + \ldots)$$

The term δ here represents the discount factor (i.e. $\delta = -e^{i\tau}$ where i is the instantaneous rate of interest and τ is the real time between 'periods'). Assuming that $\delta^2 = q$, I have:

$$(121) \qquad [-\frac{1}{2}(\hat{T}_1 + r - c_0)^2 + \bar{d}] + P^{FI}\frac{q}{1-q}[-\frac{1}{2}(\hat{T}_1 + r - c_0)^2 + \bar{d}] >$$

$$P^{AI}[-\frac{1}{2}(T^*_1 - c_0)^2 + \underline{d}]\frac{\sqrt{q}}{1-q}$$

The parties undertake inefficient activity if by doing so they earn more than by acting 'honestly'. That is, the parties do not follow their ideology fully because they try to extract some rent by exploiting their informational advantage over the other agents in the economy.

3.8. CITIZEN'S DEMAND FOR PARTIES' POLICIES

Let us now re-introduce the linear model already mentioned in chapter 2 and apply it to the regulation model. The political spectrum is again represented by a line of length 1. There are two parties on that line each of those propose an alternative policy, that is T_1 and T_2. The citizen chooses between the two alternative. But this activity is not costless. In particular the citizen incurs a cost to decide on, and then to vote for, a party. Recall also the variable p_{T1}, the social price paid by the consumer when party 1's policies are followed. The social price is equal, in this case, to the price paid for the quantity supplied by the firm p_1, plus the taxation imposed by the government that is $p_{T1} = T_1 + p_1$ (and analogously for party 2). I also remind the reader that the consumer's utility is $U_i = S(q_i) - T_i - p_i q_i$ with $i = 1, 2$ (equation (95)).

The assumptions and analysis of section 2.9 in chapter 2 are directly relevant here and equations (57) and (58) are repeated here for convenience, since they will be used in what follows:

(122) $$D_1(p_{T1}, p_{T2}) = x = a + \frac{1-a-b}{2} + \frac{p_{T2} - p_{T1}}{2r_p(1-a-b)}$$

As before, this gives us the citizen's demand for party 1's policy. Analogously for party 2 it is possible to obtain:

(123) $$D_2(p_{T1}, p_{T2}) = 1 - x = b + \frac{1-a-b}{2} + \frac{p_{T1} - p_{T2}}{2r_p(1-a-b)}$$

where r_p is the cost parameter relating to the distance between the citizens' own ideal policy and the party's.

Again note that equation (123) is obtained directly from (122), since, in this case, there is no possibility to abstain from voting. The general meaning of equation (122) and (123) is as before.

Equally a variation in the above model could be considered to refer to parties' political proposal that are not able to cover voters' preferences so that abstention is possible. (see chapter 2)

3.9. PARTY'S TAXATION AND PRICE CHOICE

I now proceed with the analysis by considering the parties' location over the political spectrum. In the previous section I have omitted this important aspect assuming as given the parties' location. It is necessary now to specify the determination of such locations.

This section analyses the parties' location when each party maximises her utility function with respect to variables such as taxation or quantity, taking as given the locations. Section 3.10 below, approaches the problem in a different way. Each party maximises its utility function looking at the position on the political spectrum. The result is a location that maximises the parties' utility. This represents a case where the parties react in term of general strategy pursued. The implication of this activity for the parties is stronger than in the case of a single variable choice. That is because the location implies a redefinition of the general parties' policies and not only of a single variable choice.

Again the analysis will be considered specifying the results for the fully benevolent, partially benevolent and ideological party cases.

3.9.1. The fully benevolent party case

Party 1 now maximises the following function:

$$\max_{q_1} \quad W'_{BEN} = (1 - Z(D_1, D_2))\left[\alpha\theta_1 + (1-\alpha)\theta_2\right]\{[S(q_1, q_2) + \lambda P_1(q_1, q_2)q_1 - T_1 +$$

$$- (1+\lambda)(s^* + \Psi(e) + (\beta - e)q_1)] - \lambda V - \lambda U\}$$

The novelties in this function are represented by the political demands D_1 and D_2 and the probability function Z and also, by the introduction of the quadratic cost for the citizen. The above maximisation process leads us to the following:

(124) $$\frac{[\alpha\theta_1(q_1^* + q_2) + (1-\alpha)\theta_2]p_1 - (\beta - e)}{p_1^*} = [\alpha\theta_1 + (1-\alpha)\theta_2]\frac{\lambda}{1+\lambda}\frac{1}{\eta} +$$

$$-[\alpha\theta_1 + (1-\alpha)\theta_2]\frac{S(\bullet) + \lambda p_1 q_1^*]}{(1+\lambda)p_1} + \frac{1}{(1-Z)(1+\lambda)p_1}\left(\frac{\partial Z}{\partial D_1}\frac{\partial D_1}{\partial q_1} + \frac{\partial Z}{\partial D_2}\frac{\partial D_2}{\partial q_1}\right)\{[\alpha\theta_1 + (1-\alpha)\theta_2]$$

$$[S(\bullet) + \lambda p_1 q_1^*] - (1+\lambda)(s^* + \Psi(e) + (\beta - e)q_1^*)\}$$

Indicating with Z, S, and p_1 the functions $Z(D_1, D_2)$, $S(q_1, q_2,)$ and the price function $P_1(q_1, q_2,) = S'_i(q_1, q_2) = p_1$ respectively. It is easy to see that the party's political proposal depends on its probability Z , which is function of the strategic social price p_{T1} and p_{T2} and of the parties' position on the political spectrum. The main difference with the equation (88) above is then represented by the parties' position which influences the policy that the party proposes.

3.9.2. The partially benevolent party case

The result obtained here is similar to that of equation (124), the maximisation process leads us to the following:

(125) $$\frac{[\alpha\theta_1(q_1^* + q_2)]p_1 - (\beta - e)}{p_1^*} = [\alpha\theta_1]\frac{\lambda}{1+\lambda}\frac{1}{\eta} +$$

$$-[\alpha\theta_1]\frac{[S(\bullet) + \lambda p_1 q_1^*]}{(1+\lambda)p_1} + \frac{1}{(1-Z)(1+\lambda)p_1}\left(\frac{\partial Z}{\partial D_1}\frac{\partial D_1}{\partial q_1} + \frac{\partial Z}{\partial D_2}\frac{\partial D_2}{\partial q_1}\right)\{[\alpha\theta_1]$$

$$[S(\bullet) + \lambda p_1 q_1^*] - (1+\lambda)(s^* + \Psi(e) + (\beta - e)q_1^*)\}$$

where the terms Z, S, p_1, D, represents the functions $Z(D_1, D_2)$, $S(q_1, q_2)$, $P1(q_1, q_2)$, $D(q_1, q_2)$. The party's policy then depends on the quantity q_1, the taxation T_1, the party's own utility's function, the parties social prices and the parties' location.

3.9.3. The ideological party case

The ideological or selfish case is considered analysing the parties' taxation choice. It is important and necessary to determine the value of T_1 and T_2 that maximise the parties' objective function given the quadratic costs, that is:

$$\max_{T_1} P(D_1, D_2)(-\frac{1}{2}(T_1 - c_0)^2)$$

The maximisation process gives us, for all d, the following results:

$$(126) \qquad T_1^1 * = c_0 \quad and \quad T_1^2 * = c_0 - \frac{4P(\cdot)r_p(1-a-b)}{P_2 - P_1}$$

where

$$P_1 = \partial P(D_1, D_2) / \partial D_1 > 0$$

and

$$P_2 = \frac{\partial P}{\partial D_2} < 0$$

where $P=P(D_1, D_2)$.

The first derivation $\partial P(\bullet) / \partial D_1 > 0$ is positive. I assume, in fact, that when the demand for party1 political proposal increases, the party has an increased probability to be elected. The derivative P_2 is negative because when T_1 increases the demand for the second party increases as well reducing party1's probability to be elected.

The two solutions in (126) represent again the pre-commitment and the no pre-commitment case. However, it is possible to see that the taxation level in the pre-commitment case depends on the location variables a and b. If for example the second party moves toward the centre (b increases), the first party is constrained. This will lead to a reduction of the equilibrium variable T_1^2*. I have to remind to the reader that in this situation the parameters a and b <u>are exogenously given</u> and the parties maximise respect to these locations.

Following the same procedure for party2, I obtain:

$$\max_{T_2} \quad (1 - P(D_1, D_2)) \quad (-\frac{1}{2}(T_2)^2)$$

and thus:

(127) $T_2^1 * = 0$ *and* $T_2^2 * = +\frac{4(1-P(\cdot))r_p(1-a-b)}{P_1 - P_2}$

where $P_1 > 0$ and $P_2 < 0$ as for party 1.

Also in this case I can see that if the first party moves toward the centre, (a increases), the taxation equilibrium function T_2 for the second party decreases as a consequence. That is, the second party moves toward the centre as well.

Equations (126) and (127) defines then, the Nash equilibrium in tax levels, for all d, chosen by the parties in a strategic environment. In our example they represent the tax levels that the parties propose during the electoral campaign to acquire a "clientele".

3.10. NASH EQUILIBRIUM AND LOCATION CHOICE

It is possible to define a different Nash equilibrium when the parties choose, first of all, the location (political proposal) and then, given that location, they choose the taxation or quantity level. This could be represented by a two-stage game: in the first stage the parties choose their location simultaneously; in the second stage, they choose the taxation or quantity level to be proposed given that location. There is a big difference between this case and the one described in the last section. The Nash equilibrium in taxation or quantity, in fact, is based upon the fact that the parties derive that choice taking as given their locations. This section, instead, goes further. That is, each party chooses immediately its location and then, they derive the taxation or quantity level to be proposed.

I start the analysis considering, first of all, the ideological or selfish case and then the benevolent and partially benevolent case.

3.10.1. Ideological location choice

As seen above, the location preferred by the parties depends on the structure where the parties behave. In a situation of selfish pre-committed parties, for example, Calvert (1986) demonstrates that the two parties' outcome tend to be convergent. By contrast, if the parties are not pre-committed, the voter anticipate that the parties, once in office, will change their behaviour. Particularly the two parties will tend to pursue their most preferred policy, that is $T_1 = c_0$ and $T_2 = 0$. I can demonstrate what it has been said by far, considering the fact that the party must anticipate that her choice of location has two consequences. The first is a direct impact on her political demand, whereas the second affects the intensity of competition with the opponent party. It is possible to find an

equilibrium in location maximising the party's utility with respect to her own location, taking the opponent party location as given. For party1 then:

$$\max_{a} u_{21} = P(D_1, D_2)(-\frac{1}{2}(T^*_1 - c_0)^2)$$

from which I can derive:

$$(128) \qquad \frac{du_{21}}{da} = \left[\frac{\partial P}{\partial D_1}\frac{\partial D_1^*}{\partial a} + \frac{\partial P}{\partial D_2}\frac{\partial D_2^*}{\partial a}\right](-\frac{1}{2}(T_1^* - c_0)^2)$$

The terms in the first bracket of equation (128) describes the two consequences due to the choice of party 1's location. The first term shows a direct effect (demand effect) of choosing a on u_{21}. The second one instead, is an indirect effect (strategic effect) derived by the fact that the choice of a influences the probability to be elected through the variation of party 2 political demand. By calculation I can derive the following expressions:

$$\frac{\partial D_1^*}{\partial a} = \frac{1}{2} + 2r_p\left[\left(\frac{p_{T2}^* - p_{T1}^*}{(2r_p(1-a-b))^2}\right)\right]$$

which must be positive for our assumption. This happens when

$$\frac{p_{T1}^*}{(1-a-b)^2} < \frac{p_{T2}^*}{(1-a-b)^2} + r_p$$

For the strategic effect instead, I have:

$$\frac{\partial D_2^*}{\partial a} = -\frac{1}{2} + 2r\left[\frac{p_{T1}^* - p_{T2}^*}{(2r_p(1-a-b))^2}\right]$$

which must be negative for construction.

Considering again the term in the first bracket of equation (128), it is possible to see that this is positive because $\partial P / \partial D_1 > 0$; $\partial D_1^* / \partial a > 0$; $\partial P / \partial D_2 < 0$; $\partial D_2 / \partial a < 0$. The final result is that $\partial u_{21} / \partial a < 0$. The result obtained is straightforward. The party increases its demand and then its chance to be elected through the direct effect. This exactly means that the party is moving toward the centre of the political spectrum. It tries to capture the median voter preference in order to increase its probability to be elected. At the same time yet, also the opponent party follows the same tactics approaching to the centre. But for the parties' image this is not a good deal. Each of them considers as very important to present herself in a different way respect to the other party. They want to demonstrate that their politics will be the most suitable and extremely right to attain the social goals. In our example, the parties want to convince the voters that their way to

regulation is the optimal one. In order to build up an image then, even if there is a convergence to the centre, each party tries to present some elements of differentiation to maximise its number of votes next political election.

In the above analysis a crucial variable is represented by the factor r_p, that accounts for the political costs for the citizens giving the parties' policies. In particular it is possible to consider two possible cases: r_p low, r_p high. With r_p low the location choice is less important in the model. The location choice is more determined by parties' strategic movements than taking into account the citizens' in the model and the costs incurred by those citizens, due to the parties' policy. This is also the case where, for parties approaching to the same position, the variation of the parties' probability is less strong. The parties, in this case, are more interested to remain differentiated by proposing policies not convergent.

With high r_p, instead, the parties' location choice has a stronger impact. The parties, then, increase their utility by proposing more convergent policies.

3.10.2. The Benevolent and Partially Benevolent location choice

If for the ideological case I have found that the parties want to differentiate themselves from each other because of their selfish nature, in the partially and fully benevolent cases the situation is rather different. The parties here have as their main goal to maximise a measure of social welfare. For the fully benevolent case, the differentiation of the party 1's social welfare gives us the following first order condition:

$$(129) \qquad \frac{dW'_{BEN}}{da} = \left[\frac{\partial Z}{\partial D_1} \frac{\partial D_1}{\partial a} + \frac{\partial P}{\partial D_2} \frac{\partial D_2}{\partial a} \right] \{\bullet\} = 0$$

(a similar result applies to party 2).

It is easy to see that in (129) the variation of social welfare with respect to the location **a** is positive. That is, the party's main goal is full social welfare maximisation and in order to attain that, it has to approach to the centre of the political spectrum.

A similar important result applies to the partially benevolent case, again considering parties strictly linked or not strictly linked to the subset of citizens in the system. The party 1's maximisation process leads us to the following first order condition:

$$(130) \qquad \frac{dW'_{PB}}{da} = \left[\frac{\partial Z}{\partial D_1} \frac{\partial D_1}{\partial a} + \frac{\partial Z}{\partial D_2} \frac{\partial D_2}{\partial a} \right] \{\bullet\} = 0$$

(the same for party2).

Parties not strictly linked to the voters

Also in this case, as for the FBP, the party 1's maximisation process with respect to the location choice **a** (respectively b for party 2) gives us the parties' convergence to the centre of the political spectrum. The derivative of the social welfare function W_{PB} in fact, is a positive function when a (or b) increases. The parties try to increase their probability to win election by moving toward the centre of the political spectrum, approaching one to the other.

Parties strictly linked to the voters

In this context, moving from the preferred policy of the subset of citizens is costly for the parties and there is not convergence.

The importance of the result obtained shows us that the parties' behaviour really matter on the result of the social outcome. Equations (129) and (130) are in accordance with our hypothesis: the benevolent and (not linked) partially benevolent parties converge toward the centre of the political spectrum because they are altruistic agents that maximise the social welfare function. Ideological and (strictly linked) partially benevolent parties do not converge.

3.11. DEMAND AND ALMOST ASYMMETRIC INFORMATION

As seen in the previous sections, there could be different behaviour as between the party in office and the same party in the electoral campaign situation. Before the election the parties promise to the voters some political platforms. The parties interest here is to communicate to the citizen a "vision of the world". The citizens then, make their choice and vote for one of the two parties. In a situation of pre-commitment, the voter's rational expectation coincide with the policy announced by the parties in electoral campaign. But where pre-commitment is imperfect there could be a problem of asymmetric information. The party that has won the election tries to extract some rent because she has a powerful position relative to the other agents in the system.

Suppose again that party 1 in office, leaving a tax level constant, and coincident with that promised in the campaign, one way for the party to extract rent is to decrease its effort in the firm regulation activity. This could mean a decrease of the transfer **s** to the agency. As a consequence, the agency decreases its control of the firm. The final result is that the firm acquires more monopoly power, decreasing production and increasing the price of the good supplied. The voter demand, becomes:

$$(131) \qquad \hat{D}_1 = a - \alpha + \frac{1 - a - b + \alpha - \beta}{2} + \frac{p_{T2} - \hat{p}_{T1}}{2r(1 - a - b + \alpha - \beta)}$$

where $\hat{D}_1 < D_1$ obviously.

Let us consider, as the only example, the ideological case. The price p_{T1} is then determined as

$$(132) \qquad \hat{p}_{T1} = \hat{p}_1 + \hat{T}_1 + r_o = \hat{p}_1 + c - \frac{P + \sqrt{P^2 + 2(P_1)^2 \bar{d}}}{P_1} + r_o$$

where r_o represents the rent earned by the party due to asymmetric information.

In particular the social price p_{T1} of party 1 has increased due to the rise of the firm's price p_1 ($\hat{p}_1 > p_1$). The determination of the price in equation (132) shows us that the voter is not totally without information. She is "sensitive" to the fact that the price she would have expected, p_1, is different from the real one. That is, the regulated firm is acting as a monopolist charging a higher price and reducing the production of the regulated good. As a consequence her political demand for party 1 decreases (equation (131)), and so does the probability that party 1 will be reconfirmed at the next election. It is necessary to add that it is not always so easy for the voter/consumer to determine if the production of a particular regulated good is satisfactory or not. This problem is very significant especially when the regulated firm is a monopolist in the market. For example, how could the consumer say that British Gas, before privatisation, acted inefficiently simply by observing output and prices? Is it only looking at costs that it is possible to infer that a firm is inefficient? How can consumers perceive that they are not well-served? These are difficult questions to answer. But the model assumes that consumers do realise this to at least some extent. In our model, this is sufficient to say that the party's probability of being (re-) elected is affected by that perception of efficiency. The asymmetric information problem then, is reduced by the election mechanism to the extent that at least some consumer/voters can monitor the efficiency of the firm and so complement the regulatory effect of the formal regulatory agency.

3.12. THE POLITICAL ECONOMY OF STATE INTERVENTATION: PRIVATISATION, REGULATION AND SOME RELATED IDEAS

It is relevant and necessary, at this point of the analysis, to stress the main important points outlined in the previous two chapters and apply them to regulation theory.

The first chapter has stressed the importance of political motivations. I have introduced the idea of the partial benevolence of parties and compared it with fully benevolent and ideological parties. The partially benevolent case is one in which the party does not consider the totality of citizens. The PBP is a political agent that forms its own political decisions endogenously, considering only a sub-set of the citizens in the system having certain preferences with respect to the policy to be implemented

The main and most important results obtained in the first chapter have related to the distortionary behaviour of the parties operating under asymmetric information. The results show how the political discretion of politicians in a regulation model operates in term of second best equilibrium obtainable. Inefficient politicians' behaviour is an important cause of distortions and the usual Lerner/Ramsey formula is modified to recognise this.

The FBP is obviously a benchmark case that allows us to compare results relating to the PBP and the ideological party case. Indeed, chapter 2 outlined and stressed the difference between the three forms of political motivation. This was done considering a complex model with more than one party and with citizens expressing political demands. The more complex model allowed us to consider a system where, together with their political motivations, the parties compete strategically in order to gain office according to the citizens' political demands. The relevance of the results obtained is reinforced by the fact that the location over the political spectrum, (i.e. the policy implemented by the parties), depends strongly on the parties motivations. Clearly, since the FBP considers the totality of citizens and locates at the centre of the spectrum, the policy implemented is neutral with respect to the citizens' political preferences. This is the result we expected for this benchmarking case. The ideological party fixes exogenously its policy. It does not take into account any citizens' preferences when it is not pre-committed. In the pre-committed case, and with another party in the system, the ideological party moves strategically over the political spectrum facing a trade off between its desire to impose its ideology and the need to win power by satisfying citizens' political preferences. In the case of the PBP, the party maximises a SWF taking into account the subset of citizens to whom it is linked.

The location of the party then converges to the centre of the political spectrum according to the strictness of the link between the party and its subset of citizens that support it.

Chapter 3 applies the main results of the previous chapters with a specific application to the regulation model. I have investigated, first of all, the ideological party associated with asymmetric information. In this way I have enriched the formulation of the parties' probability of being elected, associated to the citizens' political demand, with a discretionary and inefficient behaviour by parties due to lack of information.

In sections 3.8, 3.9 and 3.10 I have applied the parties location choices, associated with different political motivations, to the regulation model outlined in chapter 1. So that the equilibrium depends on political motivations, citizens political preferences, and strategic parties interactions.

In term of regulation, the main results may be summarised for the three cases:

- **FBP.** The classical L-T regulation model has been modified according to the parties' probability of gaining power, and to citizens' political demands. The usual PMC function includes new variable reflecting these effects, and equilibrium depends on them. As I have said on several occasions, the FBP is a benchmark case
- **PBP.** This is a more realistic case, where the party has a probability of gaining power that depends on the political demands of a subset of citizens over the political spectrum. The party maximises a SWF that takes into account that subset of citizens who have certain preferences over the firm's output. The policy is then endogenously implemented.
- **Ideological party.** This is the case where the party attempts to impose, exogenously, its own vision of the world related to policy in term of taxation and price/quantity supplied by the firm. The party, though, has to take into account that there are citizens with political preferences. The policy implemented is then of a pre-committed type.

At this point becomes relevant to trace some ideas on how the above models can describe important processes such as privatisation and regulation of firms that were directly managed by state intervention. If we refer to the early privatisation followed by regulation process, it seems that the ideological model offers a good explanation of this process. The retreat of the State from particular economic sectors (for example those characterised by natural monopoly such as telecommunication, gas, electricity) starting in countries such as Great Britain, has spread all over the world. But how to explain the political process that has pushed governments to pursue this policy, giving rise to a consistent

privatisation, liberalisation and regulation course?

Still referring to great Britain in the 80's, the Conservative party, lead by Mrs Thatcher [18] first introduced its political agenda identifying the need to reduce the costs burden implied by an inefficient public sector[19]. The idea of privatisation, it might be said, was introduced by the Conservative party ideologically (according to my definition of ideological party). To support this analysis I consider some argumentation taken from quite a recent sociological survey by Sanders and Harris (1994). Because of the importance of this interesting analysis, I review it here highlighting the main important points.

The survey analysed the idea that privatisation, and the consequent spread of share ownership across people, gave strong political support to the Conservative party. This consequently explains why the Labour party saw an erosion of its traditional support base. To be honest, such a conviction appears to me very strong, but it is commonly believed as an important factor in explaining the Conservative party election victories between 1979 and 1992.

It is interesting to see how support for privatisation fell in the 1980s, after that public support for denationalisation grew from 19% in 1966 to 37% on the eve of Margaret Thatcher's general election victory in 1979. According to the British Social Attitudes Survey[20], the popularity of privatisation peaks at around 40% of electors in the first period of Conservative government. But as the Conservative government proceeded to sell nationally important company such as BT and British Gas, that support started to fall – down to 30% before the 1987 election. The following figure by MORI illustrates this trend:

---

[18] See for example, Yarrow and Vickers (1988) for more information on the UK case.

[19] The literature on this argument is extremely extensive. I have mentioned already this literature and it is not my intention to present the public sector inefficiency arguments here.

[20] See for more details Towell, R., Witherspoon, S. and L. Brook (1988). British Social Attitudes. The 5th Report. Aldershot, Gower.

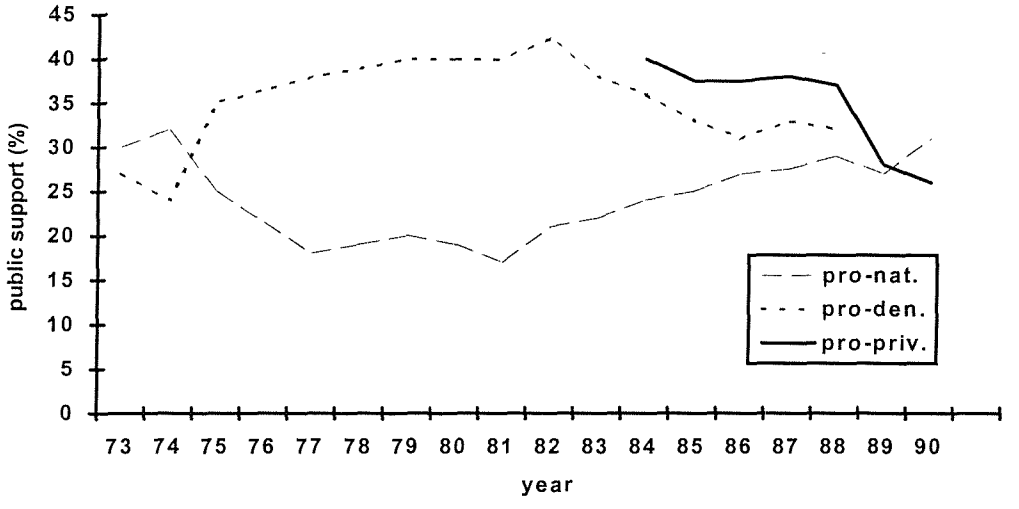


FIGURE 6

Support for nationalisation, denationalisation and privatisation 1973 - 90

Source MORI (personal communication). Question on denationalisation no longer asked after 1988; questions on privatisation asked from 1984.

Looking at this figure, it becomes very difficult to understand and accept the popular view, stated above, that privatisation was an important factor in the Conservatives winning further elections. But the case is still very controversial. In June 1987, the Conservative manifesto proposed the idea of privatising water and electricity. In that situation, another opinion poll by MORI (1988)[21] showed that 56% of voters opposed electricity privatisation with just 34% favouring it, and 59% opposed the privatisation of water with support of 30% . Despite this the Conservatives won the election with a majority of over 100 seats and went on with the privatisation program.

In the years after the election, people's discontent grew - especially in relation to water privatisation. In general, people's maintained the view that public utilities should remain in the public sector and not to be privatised. In particular, privatisation of utilities such as water and electricity, considered essential services, were substantially unpopular. If the above is taken as a most important factor concerning privatisation, it is also necessary to consider three other remarkable factors documented by the survey in question. The first is that people feared that with privatisation the price for services would increase. This

[21] MORI (1988). Prospects for the new year. British Public Opinion, 10,4.

because it becomes necessary to pay dividends to shareholders of the newly privatised utilities. The second is that people were concerned that the privatised firms would have profits as their principal goal, not caring about the quality of services. Finally, the third indicator of the unpopularity of privatisation was that the Conservative promised to sell public utilities and so distribute shares to the public. But people's objection to this was that the utilities in question were already owned by the public.

Considering these important popular concerns, it is very difficult to see how the Conservative party could win the election as it did – rather than privatisation being a major part of the explanation of the success of the Conservative party, it seems more reasonable to argue that it was, by then, an unpopular part of the Conservative agenda, and that the Conservative party won the election despite the unpopularity of this aspect of its agenda.

One further argument that might contribute to explaining the political support for the Conservatives despite the unpopularity of privatisation, concerns the private gains to be made from privatisation, due to the under-pricing of shares. This issue could be compared with that of taxation. In the taxation case people, might sometimes believe that a general policy of taxation is appropriate but nevertheless vote for tax cuts if they expect to receive private gains. Similarly, even those who were opposed to privatisation as a general policy might support it if they expect to make a significant private gain from the sale of shares (share prices rose by between 35% and 57% immediately after privatisation). In both cases, there is an element of a public good problem, with a private gain being compared with a public gain that will be spread across many individuals. This explain why people that were not happy about privatisation often alter their mind when they bought shares. This created an interest group that started to support privatisation and the Conservative party. Data from the 1987 general election seems to confirm this idea, showing that the Conservative party won 17% more of the vote among new shareowner than among those people who have never purchased or owned those shares. The Labour party, in the same occasion, lost 18% of the support of these voters. We have to say that, of course, the effect of share ownership is not the dominant effect in the election, but it may become a significant determinant in a closely fought election such as the 1992 general election where the Conservative won by only 20 seats.

It is also important to say that people who decided to buy utility shares are also those who are less committed to an anti-Conservative ethos than others who refuse to buy on principle (I will discuss this issue in the next chapter introducing the expressive vs.

instrumentalist theory approach). From the data, it is also interesting to note that it is only among Labour supporters that the purchase of new shares had an important influence on switching their vote to the Conservative party, and not vice versa.

I think that the model of ideological motivation fits well with this case and supports the view that the policy implemented was a compromise between the ideological commitment to privatisation adopted by the Conservative party itself, and the citizens' preferences which were opposed to privatisation in principal but interested in opportunities for private gain in practice. To some extent the same idea could also be applied to the Italian case. The privatisation of the public sector, followed by regulation and liberalisation of the markets, were implemented in Italy by a centre-left government. Again the policy was ideological and introduced by the party in power, and did not seem to be the result of citizens preferences (especially because the government were supported by a centre-left majority of citizens). As described in section 3.10.1, it is equivalent to having a low r_p, that is, the citizens were not concerned by privatisation while this was the policy implemented by the government.

If the model of ideological motivation helps to explain the first stage of the privatisation process, it seems not to be the case for the following stages leading to the present. It is possible to note that the privatisation and regulation processes have represented a strong commitment for the following parties that gained office after the implementation of those processes (the Labour party in UK and the centre-right government in Italy, for example, found a system already privatised and regulated). It is interesting to discuss, then, which model helps to understand the political behaviour after the privatisation process has been (ideologically) implemented. It does not seem that the actual parties in power wants to change the role of the State in the economy. It is not the case those parties want to start a re-nationalisation process particularly for the public utilities sector. It is more likely that those parties in power want to increase the general welfare of those citizens who support them, taking the fact of privatisation as a starting point – recognising that any attempt to undue the process of privatisation would be likely to damage political support. The PBP model, I think, is appropriate to explain a situation where the party in power receives political support from a subset of citizens having certain preferences regarding the output of a regulated firm. The party, then, maximises a SWF considering that subset of citizens, and regulates the firm according to the subset of citizens preferences. In this case, the policies implemented strongly depend on the link between the party and its constituencies.

4. EXPRESSIVE VOTING AND ENDOGENOUS POLITICAL CANDIDATES

4.1. INTRODUCTION

The main aim of this chapter is to extend the political aspect of the model introduced in the previous chapters by introducing two further ideas: expressive voting and endogenous political candidature. Each of these ideas arises in response to a line of criticism that might be addressed at the model of competitive politics used in the earlier chapters. I will sketch each in turn.

Expressive voting[22] addresses the issue of the so-called 'paradox of voting' - the issue that in large-scale elections the instrumental incentive for any individual to vote will be negligible, given the very small probability that an individual voter will be decisive. 'Instrumental incentive' here is taken to mean the incentive that the citizen has in relation to the policy outcome of the electoral process. Voting is not like choosing in the market place where each person is responsible for their own choice, and gets what they choose. In voting situations, the ultimate choice is collective, and the standard logic of voluntary contributions to a public good indicates that we can expect widespread free-riding. In short, this line of criticism says that since any single vote is extremely unlikely to carry any consequences for final outcomes, the act of voting can not be motivated by reference to final outcomes. The expressive voting response to this critique of standard instrumental voting is then to suggest that voting provides individuals with a low-cost opportunity to express themselves in ways that provide intrinsic pay-offs. For example, a voter may wish to identify with certain causes, or certain politicians, or to express certain values, and all of this may be done through the political process at little cost either in the direct sense of costs, or in the more indirect sense of the opportunity cost of the impact on actual political outcomes. When my vote is freed of its causal link to political outcomes, I am free to use it in ways that provide me with direct pay-offs.

In this way, the expressive voting idea threatens to weaken or even break the traditional link between an individual's vote and an individual's instrumental interests in the policy

---

[22] See Brennan and Lomasky (1993), Brennan and Hamlin (1998), Brennan and Hamlin (2000).

under discussion. Of course, the aggregate of all votes still determines the result of the election and hence the policy outcome, so this aspect of the link is maintained, but the motivational aspect of the link is threatened. I will make some attempt to incorporate something of the expressive voting idea into the model in the following sections.

The second idea to be discussed is that of endogenous political candidates. Here the underlying criticism of the standard model of political competition used in earlier chapters relates to the fact that the political parties are essentially imposed on the model. This is true in at least two senses – first I have assumed (as is common in the literature) that the number of parties is exogenously determined, and second I have taken the motivation of each party as a matter to be assumed. Clearly, these issues could be addressed separately. One could think about the impact of the potential entry of new parties[23], and one could – as I have done – consider a variety of different motivational specifications. However, a recent literature tackles these two issues jointly in modelling the emergence of candidates endogenously[24]. The basic idea is the identification of 'citizen-candidates' – so that each individual citizen faces a preliminary choice as to whether to stand as a candidate, and only when the set of candidates has emerged, does the voting game take place. Each citizen who stands as a candidate brings with her standard preferences, and these are taken to be the preferences of the candidate, so that once the decision to stand has been made, the candidate is effectively pre-committed to the specific policy platform that is identified by her ideal point as a citizen.

Of course, the citizen-candidate approach does not answer all relevant issues. While it does provide new insights into the equilibrium emergence of candidates across the political spectrum, it leaves political parties out of the account. One of the aims of the following sections is to make some attempt at incorporating citizen candidates alongside parties.

The remainder of this chapter is organised as follows. Sections 4.2 and 4.3 introduce an expressive element into the model by reviewing both the basic motivational structure of individual citizens and the political demand function. Section 4.4 then introduces the citizen candidate idea into the model, which is then explored in a number of variants in the remaining sections.

---

[23] See, for example, Palfrey (1984) and Weber (1992).

[24] Osborne and Slivinski (1996), Besley and Coate (1997), Hamlin and Hjortlund (2000).

4.2. EXPRESSIVE VOTING IN THE MODEL

As outlined above, the expressive voting idea must substantially modify any instrumental model. In particular we must fully reconsider the structure of the individual citizen-voter's motivation. Recall that, in the instrumental account offered in earlier chapters, the final specification of the citizen's net benefit function was:

$U_i = S(q_i) + B(q_i) - \mu_i(e_i(q_i)) - T_i - p_i q_i$

We must modify this in two ways if we are to introduce expressive concerns alongside of instrumental ones. The first point is simple enough. We must weight the instrumental net benefit given above by the probability that the citizen's vote is decisive. The second point is then to introduce some expressive concern. Here we follow a suggestion in Brennan and Hamlin (1998) by supposing that the focus of expressive concern is the same dimension of political choice as is instrumentally relevant, but that the form of the concern is different. In the expressive case, the voter will seek to identify with positions close to her own ideal point – regardless of whether that candidate has a prospect of winning the election or influencing policy. This idea is interpreted somewhat differently from Brennan and Hamlin (who suggest that the citizen will support any position within some fixed distance of her own ideal point) by specifying:

$$u_i = pU_i - \frac{r}{2}(x_i - y)^2 \qquad (133)$$

where

p is the probability of the ith voter's being decisive;

Ui is the net instrumental benefit that i derives as given above;

The second term on the right hand side of equation (133) then introduces the expressive element where r represents the expressive cost incurred by the citizen from supporting a candidate located at y given the citizen's own ideal point is x_i.

4.3. THE POLITICAL DEMAND FUNCTION

The first step is to consider the modification of the political demand function. We have seen previously that party i's political demand function could be determined as:

$$D_i = a + \frac{1-a-b}{2} + \frac{P_{Tj} - P_{Ti}}{2r(1-a-b)} \qquad (134)$$

For our present purposes, there are two limitations to this function. The first is due to the fact that it does not take into consideration the distribution of citizens over the political

spectrum. The problem is insignificant when the distribution is uniform – as I have assumed thus far - or if it is a unimodal and symmetric distribution. But with a multimodal or asymmetric distribution equation (134) does not fit very well. The second limitation is that this demand function was developed specifically to incorporate the differential social prices associated with the parties (the final term of equation (134)), and so I now wish to eliminate them in order to return to the more standard form. For these reasons, I now modify (134) in the following way:

$$(135) \qquad D_i = \int_{\alpha}^{a} f(x)dx + \int_{a}^{\frac{1-a-b}{2}} f(x)dx$$

where $\alpha \geq 0$ for party i, and

$$(136) \qquad D_j = \int_{\frac{1-a-b}{2}}^{1-b} f(x)dx + \int_{1-b}^{\beta} f(x)dx$$

where $\beta \leq 1$ for party j.

Consider the following illustration. Party i and party j are located at a and 1-b respectively. The introduction of α and β allows for the possibility that the parties do not fully cover the political spectrum so that there may be abstentions. Party i will receive the support of all citizens in the interval between α and (1-a-b)/2 , and party j will receive the support of all citizens in the interval between (1-a-b)/2 and β. Clearly if $\alpha \rightarrow 0$ and $\beta \rightarrow 1$, the two parties cover the whole political spectrum and no citizens abstain.

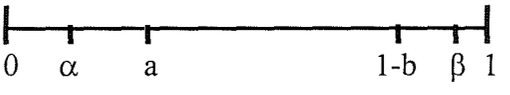


FIGURE 7

The political demand schedules given by equations (135) and (136) therefore represent the standard starting point from which to begin the introduction of expressive voting.

Taking as given the modifications just mentioned, we now start to set out a new model incorporating the endogenous emergence of candidates.

4.4. THE MODEL

The major differences between this model and the earlier ones concerns both the expressive element introduced in the last section, and the introduction of endogenous

political candidates. In the model to be developed here the policy maker may be selected from the group of citizens who present themselves as candidates for public office. This type of model allows the study of a situation where there are no exogenously imposed limits on the policy that may be adopted. Anyone, from any part of the political spectrum, may stand as a candidate, subject only to their own calculus of costs and benefits. Clearly in such a model there will have to be some explicit cost of candidature, since if there were no such cost, everyone would be a candidate. The model considers essentially the same regulation case as before, so that policy coincide with taxation levels or, equivalently, the choice of transfers to the regulatory agency and the firm.

The model is set out considering a community of N individuals labelled $i \in \mathbf{N} = \{1,...,N\}$, and, in addition, a set of political parties labelled $p \in \mathbf{P} = \{1,...P\}$ with $P \leq N$. People choose a policy maker to select and implement a policy. In particular we indicate with **x** the alternative taxation policy proposed by the policy maker in order to regulate the firm. (As before, a policy maker proposes a transfer s to the agency and t to the firm, and charge the citizens a tax T). In general we say that the set of policy alternatives when individual candidate i (or party p) is elected is indicated by A^i (A^p). These sets take into account all informational and feasibility constraint on policy. The variation in A^i across citizens reflects variable policy-making competence. In our model the set $A = \bigcup_{i=1}^{N} A^i$ represents the set of all possible policy alternatives i.e. the set of all possible taxes charged on the consumer, by any possible policy maker.

Any citizen that would like to act as policy maker may present themselves as a candidate for office. The citizen's and party's utilities depends on the result of the election. Given the tax policy x_i, the utility of the ith citizen-candidate, if elected, is V^i (**x** , 1) and otherwise V^i(**x** , 0) and similarly if the p^{th} party is elected its utility is V^p(**x** ,1), and if not elected V^P (**x** , 0). Running for office is a costly activity and we indicate that cost with δ. This represents the full cost for running a campaign including any disutility of being in the public eye. The cost applies only for citizen-candidates (who might be thought of an independent candidates for office) who want to be elected, and not for parties already present in the political competition. The election is won outright by the candidate who receives most votes. In the event of a tie the winning candidate is chosen randomly and with equal probability from the set of tying candidates. It is obvious that with only one candidate, this candidate will be the winner, regardless of the number of votes cast. We

also indicate with P^o the default policy, which is implemented if and when no-one runs for office.

We now consider different situations characterised by endogenous independent candidates both when there are established political parties in the system and when there are not. In each case the social decision process has three stages. At the first stage the candidates declare themselves. At stage two, voters choose whom to vote for among the declared candidates and any existing parties. The candidate or the party with the largest number of votes, of course, will take office. At the final stage the selected candidate makes the policy choice. These steps will be studied in reverse order.

4.5. POLICY CHOICE

The citizen or party that wins the election chooses their most preferred policy, no other promise would be credible during the election campaign. Citizen i's preferred policy is

(137) $$x_i^* \in \arg\max_x \{V^i(x,1) \mid x \in A^i\}$$

while party p's preferred policy is:

(138) $$x_p^* \in \arg\max_x \{V^p(x,1) \mid x \in A^p\}$$

We will assume a unique solution to (137) and (138). Each citizen's ex post utility will depend on who is in power or, equivalently, the policy chosen. Generally the utilities are indicated as $U_i = \{U_{1i},...,U_{Ni}\}$ and $U_p = \{U_{1p},...,U_{Np}\}$, where U_{ji} is individual j's utility if i is elected, and U_{jp} is the utility of the same individual if party p is elected. Following our notation then, $U_{ji} = V^j(x_i^*, 0)$ if $j \neq i$, $U_{jp} = V^j(x_p^*, 0)$ if $j \neq p$, and $U_{ii} = V^i(x_i^*,1)$ or $U_{pp} = V^p(x_p^*,1)$. The default policy x_0 is selected if nobody won the election and the citizens' utility vector becomes $U_o = \{U_{10},...,U_{N0}\}$.

4.6. VOTING

The voting stage is important to determine which candidate wins and how the citizen votes. Let us define the set of candidates as $C \subset \{\mathbf{N} \cup \mathbf{P}\}$ i.e. the set of candidates is determined by both citizens and parties. Citizen j's voting decision is indicated by $\alpha_j \in C \cup \{0\}$. With $\alpha_j = i$ indicating that citizen j votes for candidate i, and $\alpha_j = p$ indicating that the same citizen cast his vote for the party p. The abstention of citizen j is then $\alpha_j = 0$. More specifically, we define the vector of voting decisions as $\alpha = (\alpha_1,...,\alpha_N)$.

We have already introduced the political demand function for the parties in section 4.3. In this new setting, this demand function still plays an important role – and clearly such functions now relate to both political parties and independent candidates. The political demand then, depends on both the number of candidates, C, and their locations over the political spectrum. Let $D_i(C)$ denote the political demand for candidate i given the candidate set. Denoting with D_{-i} the demand for candidates other than i, and with α the vector of voting decision, then i's probability to be elected is $P_i(D_i, D_{-i}, \alpha)$.

We assume that the voters fully anticipate the policy that would be set out by the candidates. However, the potential voter's decision is driven not by ex post utility, but by ex ante utility as shown in equation (133). In the purely expressive account, (when p=0 in equation (133)) citizens vote for that candidate who offers the policy closest to the citizens own – regardless of the overall impact on outcomes. With p not equal to zero, the voters decision balances the strategic implications of her vote on outcomes, against the expressive benefits.

Given the vector of voting decision $\alpha^*=(\alpha_i^*,...,\alpha_N^*)$ for all $j \in \mathbf{N}$, the voting equilibrium is then

$$(139) \qquad \alpha_j^* \in \arg\max\left\{\sum_{i \in C} P_i(D_i, D_{-i}, \alpha_j, \alpha_{-j}^*)u_{ji} \,\middle|\, \alpha_j \in C \cup \{0\}\right\}$$

Following Besley and Coate (1997), it is necessary to refine the voting equilibrium because (139) has many voting equilibria most of which citizens' vote is not effective in influencing the probability that any candidate win. The first refinement is that no individual uses a weakly dominated voting strategy. The second is that when there exists a dominant candidate, citizens vote for their preferred candidates [25].

4.7. ENTRY DECISION

In the first stage, the entry decision is a strategic game between the N citizens and the P parties. The campaign cost for citizens that decide to enter is δ, but is zero for the parties already in the system. We adopt a pure strategy equilibrium where the citizen's pure strategy is $S^i \in \{0,1\}$, denoting with $S^i=1$ entry by citizen i. We denote with $s = (s^1,...,s^N)$ the pure strategy profile from which it is possible to derive the candidate set $C(s) = \{i \mid s^i=1\}$. We indicate with $\alpha(c)$ the citizen's vector of voting decision that they anticipate

[25]For more details see Besley and Coate (1997).

with candidate set C. In particular, $\alpha(C)$ represents individual's beliefs about voters' behaviour. The expected citizen i's payoff is then determined as:

$$(140) \qquad U^i(S,\alpha(\cdot)) = \begin{cases} \sum_{j\in C} P^j(D_j, D_{-j}, \alpha(C(s))u_{ij} - \delta & if\ i \in C(s) \\ \sum_{j\in C} P^j(D_j, D_{-j}, \alpha(C(s))u_{ij} + P^0(D_j, D_{-j}, \alpha(C(s))u_{i0} & if\ i \notin C(s) \end{cases}$$

where P^0 is the default policy.

To assure that S represents an equilibrium in pure strategies, it is important that, giving the belief α, the following two conditions are satisfied:

$$(141) \qquad \sum_{j\in C(s)} P^j(D_j, D_{-j}, \alpha(C(s))u_{ij} - \delta \geq$$

$$\sum_{j\in C(s)/\{i\}} P^j(D_j, D_{-j}, \alpha(C(s)/\{i\})u_{ij} + P^0(D_j, D_{-j}, \alpha)$$

for all $i \in C(s)$

(where C(s)/i means the candidate set without i)

that is, candidate i would like to run for political competition.

The second condition is:

$$(142) \qquad \sum_{j\in C(s)} P^j(D_j, D_{-j}, \alpha(C(s))u_{ij} + P^0(D_j, D_{-j}, \alpha)u_{ij} \geq$$

$$\sum_{j\in C(s)\cup\{i\}} P^j(D_j, D_{-j}, \alpha(C(s))u_{ij} - \delta$$

for all $i \notin C(s)$

that is, there is no individual not in the race that would like to enter.

We have now given all the necessary condition in order to analyse our specific model of regulation. We focus on the ideological or selfish party case since this fits most naturally with the pre-committed independent citizen-candidate.

4.8. ONE PARTY AND ONE POTENTIAL ENTRANT

We will consider different situations. We start with a system with a party and a single citizen who wants to compete against that party. We will then consider other possible equilibrium configurations involving a mix of parties and citizens who want to run for office.

We must specify the agents' utility functions. Since the party is taken to be ideological, for party 1 we have the utility function

$$u_1 = P_1[-\frac{r}{2}(y_i - a)^2]$$

where

y_1 = party 1's position on the political spectrum;

a = actual policy outcome;

and r is the cost incurred by the party when its position is non coincident with its position on the spectrum. Note that this is essentially identical to the expressive element of the individual's ex ante utility function given in equation (133), this is because both the expressive individual and the ideological party share a commitment to a particular political stance.

We begin with a system with a single established political party and a citizen who would like to run for election. It is now necessary to specify the following stages. The role of the established party here is twofold: first it ensures that there will be at least one candidate, so that the default payoff will not be relevant; second its position determines the political agenda, so that the potential independent entrant may be seen as reacting to the given ideological commitment of the established party.

4.8.1. Entry decision

The citizen who is deciding whether or not to enter the political contest has payoffs determined as:

$$(143) \qquad u_i = \begin{cases} P_1 u_{i1} + P_i u_{ii} - \delta & if\, i \in C \\ u_{i1} & if\, i \notin C \end{cases}$$

where

$u_{i1} = [-\frac{r}{2}(x_i - a)^2]$ is the citizen's i payoff when party 1 is in office;

$u_{ii} = [-\frac{r}{2}(x_i - \sigma_i)^2]$ is the citizen's i payoff if in office;

and P_I and P_i are the probabilities of victory for the party and the candidate, respectively.

It is clear that citizen i will run if for i $\in$ C, we have:

$$(144) \qquad P_i u_i + (1 - P_i)u_{i1} \geq \delta$$

Now, since the decision of whether to stand as a candidate or not is an essentially instrumental one (because it does not suffer from the large number public good problem that gives rise to the critique of instrumental voting) it is clear that the citizen will only stand if she has a significant probability of victory. In short, if the expected outcome of the election is a tie, so let us suppose that $P_l = P_i = 0.5$, and that, without loss of generality, along the political spectrum $\sigma_i < a$. It is then possible to define the point at which a citizen would be indifferent between standing as a candidate against the party, and accepting the victory of the party, that is:

$$(145) \qquad x_i = \frac{1}{2(a-\sigma_i)}(a^2 - \sigma_i^2 - \frac{4}{r}\delta)$$

The result is important in order to understand the citizen's decision to run for office against an established party. Clearly when δ increases, it becomes more difficult for a citizen to stand as a candidate and the indifference point x_i moves further from the party's policy location – that is the citizen has to be more markedly different to the established party to make it worth running. Equally clearly, the closer the established party is toward the centre of the spectrum, the less likely it is that a citizen will oppose them.

4.8.2. Voting

Clearly there are just two cases to consider, depending on whether the independent candidate enters or not. If she does not, we have the trivial case of one party. Clearly this party will win the election regardless of the number of votes cast. However, it is worth noting that while under purely instrumental accounts of voting a single party would attract no votes in equilibrium – since the outcome of the election does not hinge on votes cast; under expressive motivations the single party will receive a positive number of votes from those voters wishing to identify with the party's ideological position.

In the second case, where both the party and an independent citizen candidate contest the election, we have already seen that a condition of equilibrium of the entry game is that each candidate has a non-zero probability of winning the election, so that the expected result of the contest is a tie. In the expressive case with exactly two candidate, each candidate will attract a pool of voters clustered around its ideological position, but these pools must be of the same expected size. This illustrates the way that the instrumental and expressive elements of motivation work together in models of this sort. The party and the candidate have esentially instrumental preferences since they are playing in a small

numbers game of competition for office, this implies the equilibrium conditions in the entry game given as (141) and (142) above. But the voters are playing in a large numbers, public good or voting game in which expressive preferences come to the fore. In this way it is the candidates expectations of the pattern of expressive voting that enters into their instrumental calculus.

4.8.3. Policy choice

Party 1's or citizen i's policy choice once elected is relatively straightforward. By the nature of the citizen candidate model, the independent candidate, if elected, will enact policy identical with her ideal point. No other policy would be credible in the election campaign of such a candidate. In this way the independent citizen can be seen as a very strict version of the ideological party in which there can be no deviation from the initial ideological position.

Of course, if the established party wins office, we are back in exactly the position of the previous chapter – with the parties policy depending on the degree of pre-commitment in the system.

The point here then, is that the introduction of the potential independent citizen candidate does not change the structure of the political system dramatically, although it does call for some different analytic techniques. However, this is not to say that the potential for independent candidates does not change equilibrium outcomes. Clearly, provided that δ, the cost of candidature, is not too high, the threat of entry will place considerable pressure on the range of policy outcomes that will be sustained in equilibrium. This is particularly clear in this simple case with just one established party. Without the effective threat of entry, a single party of an ideological type could impose policy of a very extreme kind, the threat of entry makes this impossible. In this way there may be considerable benefits to a system that allows independent candidates even if such independent candidates rarely run, and even more rarely win power. There is a direct analogy her with the theory of contestable markets. Just as in that case the value of the threat of entry depends on the absence of sunk costs incurred by any entrant, so here the potential benefits of independent candidates depends on the costs of candidature being low.

4.9. ONE PARTY AND MANY POTENTIAL ENTRANTS

In this section we consider the possibility that more than one citizen may decide to enter the political competition. We still have one fixed party situated along the political spectrum. We indicate with D_1 and D_{-1} respectively, the party 1's potential political demand and the potential demand for the remaining candidates. I remind the reader that the potential political demand represents the consensus that, giving all the candidates' locations, citizens express in favour of a particular candidate. This does not mean, of course, that all the citizens identified by the demand function will vote. People could be alienated or otherwise decide not vote. The political demand function however, is important in finding the probability for each candidate to be elected. Given the set of candidates $C \subset \{\mathbf{N} \cup \mathbf{P}\}$ with $i, j \in C$ $(i \neq j)$, the demand function depends on C, i.e. $D_1(C)$ and $D_{-1}(C)$, with $D_1' < 0$ and $D_{-1}' < 0$. Considering again the vector of voting decision α, the candidates' probability of being elected functions are indicated with $P_i(D_1,D_{-1},\alpha)$ for candidate i; $P_j(D_1,D_{-1},\alpha)$ for candidate j; and $P_1(D_1,D_{-1},\alpha)$ for the fixed party 1.

4.9.1. Entry decision

The citizen i's payoff is determined as

$$(146) \qquad u_i = \begin{cases} P_i u_{ii} + \sum_{j=1}^{N-1} P_j u_{ij} + P_1 u_{i1} - \delta & if\ i \in C \\ P_1 u_{i1} + \sum_{j=1}^{N-1} P_j u_{ij} & if\ i \notin C \end{cases}$$

which is the natural extension of equation (143) where

u_{i1} is the citizen i's payoff when party 1 is in office;

u_{ii} is the citizen i's payoff when she is in office;

u_{ij} is the citizen i's payoff when candidate j is in office;

Again, since we are assured of at least one candidate (party 1) the default payoff is not relevant.

The novelty of this new model compared to the previous one is represented by the utility of the candidate i when there are other candidates campaigning. This utility is indicated

by $u_{ij} = [-\frac{r}{2}(x_i - \sigma_j)^2]^*$ where σ_j represents candidate j's bliss point. Citizen i will run for election if

$$P_i u_{ii} > -(\sum_{j=1}^{N-1} P_j u_{ij} + P_1 u_{i1}) + \delta$$

The results are broadly similar to the one citizen candidate and one party case. However there is one significant difference that is worth underlining. This case is the more realistic since in the earlier case each individual makes a decision on candidature that effectively assumes that she is the only person making that choice. The choice as perceived by each individual was, 'either I stand as a candidate, or the established party will win with certainty'. Clearly, the only way for all individuals to think in this way is if they hold mistaken beliefs about others. So, the case in which all citizens recognise that each other citizen is also a potential candidate facing an essentially similar decision is to be preferred on the grounds of its assumptions about information in the society. However, in this case the potential independent candidates do face something like a public good problem. Each individual must compare their own candidature, with the possible candidature of other citizens. Given that each candidate will pay a cost δ. It is clear that each citizen now has an incentive to free ride in the sense that the best possible outcome will be one in which someone who has political views very close to your own will run as a candidate and bear the cost, while you free ride on their political activity. This explains why only a few candidates will emerge – no-one will wish to stand as a candidate (and incur the cost) if there is already a candidate tolerably close to her position.

But the more public good nature of the entry game also raises the question of the appropriate balance between instrumental and expressive motivations. As I have already said, when there is at most one citizen candidate, the instrumental logic seems inevitable – but as the 'publicness' of the decision increases, so the instrumental logic loses its power and more expressive considerations may become dominant. Standing for office becomes more like voting. I do not pursue this argument in detail here, but simply note what effects might be expected to follow from a more expressive formulation of the entry decision. First, and most important, if entry decisions were expressive rather than instrumental, they become more detached from final policy outcomes and this leads to the possibility that candidates will emerge despite the fact that they have effectively no expected impact on final policy outcomes. Not only may we see candidate who have zero probability of winning, we might also see candidates who do not influence the final

outcome less directly by changing the identity of the eventual winner. This would radically change the nature of the equilibrium of the entry game.

4.9.2. Voting and Policy Choice

Once the set of candidates is known, the voting and policy choice aspects of the model are essentially as before, and as treated in sections 4.5 and 4.6.

4.10. NO PARTY AND MANY POTENTIAL ENTRANTS

This case is closest to the original Besley and Coate model, and in the present context is a straightforward extension of the previous one. We now just have N citizens and $C \subset \mathbf{N}$ candidates. Candidate i's demand function is D_i, while candidate j's demand function is indicated by D_j with $i, j \in C$ $(i \neq j)$. Again the probability function will be $P_i(D_i, D_{-i}, \alpha)$ and $P_j=(D_i, D_{-i}, \alpha)$. Let us again briefly examine the three stages of the game.

4.10.1. Entry decision

The expected citizen i's payoff is now determined as:

$$(147) \qquad \begin{cases} P_i u_{ii} + \sum_{j=1}^{N-1} P_j u_{ij} - \delta & i \in C \\ \sum_{j-1}^{N-1} P_j u_{ij} + P_i^{\,0} u_{io} & i \notin C \end{cases}$$

The only innovations here relative to equation (146) being the deletion of the established party, and the introduction of the default payoff u_{i0} that arises in the event that no candidates emerge.

This default payoff is essentially exogenous. Both Besley and Coate and Hamlin and Hjortlund proceed by assuming that this payoff is the same for all individuals and so bad that every citizen would prefer to incur the cost of candidature rather than suffer the default outcome. Obviously, if the default payoff is interpreted as a cost on each citizen, then $u_{i0} > \delta$ will be more than sufficient to ensure that we always have at least one candidate and therefore that the default outcome never arises in equilibrium. If this line is followed, then citizen i campaigns if

$$P_i u_{ii} > -\sum_{j=1}^{N-1} P_j u_{ij} + \delta$$

which is essentially similar to the previous case.

An alternative treatment of the default case would be to allow the possibility of the default outcome in equilibrium. In this case, the default outcome plays essentially the same role as that played in the earlier model by the fixed party, and citizen i will campaign if:

$$P_i u_{ii} > -(\sum_{j=1}^{N-1} P_j u_{ij} + P^0 u_{i0}) + \delta$$

4.10.2. Voting and policy choice

Once the set of candidates is known, the voting and policy choice aspects of the model are essentially as before, and as treated in sections 4.5 and 4.6, with the exception that in this case, since there are no established parties, there can be no departure from the pre-announced policies of the winning independent candidate.

4.11 TWO PARTIES AND ONE POTENTIAL ENTRANT

Finally, this section introduces the possibility for a potential independent entrant to enter the competition between two parties already present in the political system. The location for the parties is a_1 for party 1 and a_2 for party 2 as, for example, illustrated in figure 2.

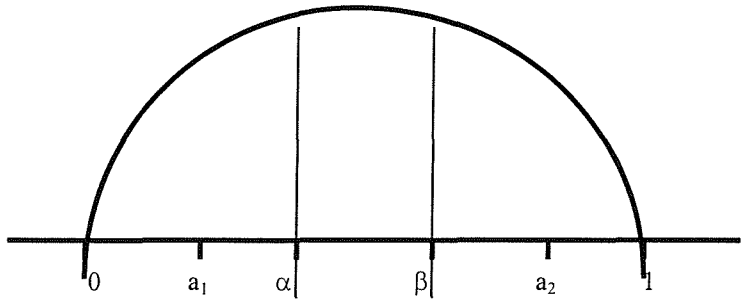


FIGURE 8

The area between α and β represents the potential citizens' demand not covered by the parties. This could lead to the citizen's decision to campaign and enter the political game. Again we can think to a_1 and a_2 as the taxation choice by the two parties in order to regulate the industry.

The relevant utility functions are then:

$$u_1 = P_1[-\frac{r}{2}(y_1 - a_1)^2]$$

for party 1,

$$u_2 = P_2[-\frac{r}{2}(y_2 - a_2)^2]$$

for party 2, and

$$u_i = P_i[-\frac{r}{2}(x_i - a_i)^2]$$

for citizen candidate i. The probability functions are $P_1(D_1,D_{-1},\alpha)$ and $P_2(D_2,D_{-2},\alpha)$ for the two parties and $P_i(D_i,D_1+D_2,\alpha)$ for i. From fig.8, the political demand functions are determined as:

$$D_1 = \int_0^{\alpha} f(x)dx \quad and \quad D_2 = \int_{\beta}^{1} f(x)dx$$

4.11.1. Entry decision

A citizen located between α and β could decide to enter the competition supported by the fact that there is a potential demand which is not covered by the existing parties. Citizen i's expected payoff is determined in the usual way as:

(148) $$u_i = \begin{cases} P_i u_{ii} + P_1 u_{i1} + P_2 u_{i2} - \delta & if\, i \in C \\ P_1 u_{i1} + P_2 u_{i2} & if\, i \notin C \end{cases}$$

where $u_{i1} = P_1[-\frac{r}{2}(x_i - a_1)^2]$ and $u_{i2} = P_2[-\frac{r}{2}(x_i - a_2)^2]$ are i's utility functions when party 1 and party 2 are respectively in power.

As before, citizen i campaigns when

$P_i u_{ii} > -(P_1 u_{i1} + P_2 u_{i2}) + \delta$

But once again, the interpretation needs some care. To the extent that the potential entrant, located between the two established parties, is essentially instrumentally motivated, she is faced with the following ex ante problem. If only the two established parties compete in the election then, since this will be an equilibrium, each will have a probability of winning, so that the expected value of the policy outcome, or similarly, my expected utility will account for this - as shown in (148). Take a simple case in which the individual in question lies exactly half way between the two party positions, and the probability of victory for each party in a two party race is 0.5, then the *expected* outcome of the election coincides with the individuals ideal point and *expected* utility will only be

reduced if the individual is risk averse. If the individual is not located exactly half way between the two party positions, this problem may seem to be reduced, but only at the expense of introducing a second problem. If the potential entrant is located closer to party 1, then her entry is likely to take more votes from citizens who would otherwise support party 1, thereby increasing the probability that party 2 will win the election. Of course, this second problem arises even more obviously in the case of potential entrants who lie outside of the range of the two established party. In this case then, it is clear that there is little likelihood of an instrumental entrant challenging the two party positions, unless the cost of entry is very small[26].

But this logic does not apply so forcefully in the case of more expressive motivations on the part of potential candidates (rather than voters). So, as discussed above, moving from the situation in which each individual considers the choice of whether to be a candidate or not in isolation from the similar choices faced by others, to the more realistic case in which each potential candidate recognises the public good nature of the decision, and hence the relevance of expressive considerations, we can expect a greater likelihood of entry since that entry will be largely motivated by intrinsic or expressive considerations and not dependant on the balance of instrumental expected values. But, again, the fact that entry in that case may be expressively motivated does not imply that it will not have impacts on policy outcomes – just that those impacts were not a major part of the reason for the entry. To revisit the two cases mentioned above. In the first case the potential entrant was located exactly half way between the two established parties and so unlikely to enter on instrumental grounds given the small impact on the expected outcome. In the expressive version of that situation entry may take place since the citizens ideal point is relatively far removed from both party positions but, as before there is unlikely to be any major impact on policy outcome. In this case then, expressive entry may produce more political activity without seriously affecting policy outcomes. But this is not necessarily the case. In the second case mentioned above, the instrumental individual did not enter the election because entry might have a perverse effect on policy – essentially by splitting the vote for the preferred party and increasing the probability that the less preferred party will win. In this situation, an expressive individual might enter the race despite this

---

[26] Indeed, in an instrumental model that uses proportional representation, rather than plurality voting, Hamlin and Hjortlund (2000) demonstrate that there will never be more than two candidates in equilibrium.

possible impact – essentially if the large number, public good nature of politics weakens the link between individual actions and ultimate consequences. This underlines the point that in a more expressive account of politics, the policy outcome is best seen as the unintended consequence of the various political decisions made, rather than the outcome chosen by directly instrumentally rational agents.

4.11.2. Voting and policy choice

Once the set of candidates is known, the voting and policy choice aspects of the model are essentially as before, and as treated in sections 4.5 and 4.6.

4.12. CONCLUDING COMMENTS

This chapter has been concerned to extend the political aspect of the model developed in previous chapters to include some consideration of expressive motivations and the endogenous choice of political candidature. I have viewed a number of cases, and found that while the addition of these elements to the political model are of considerable interest in their own right, and offer additional insights into the process of politics, they do not threaten the basic structure discussed in earlier chapters – or the application of that structure to the case of regulation as much as might be expected. Of course, much depends on the details – particularly in the case of expressive motivations. I have taken the simplest case in which the expressive dimension of concern is identical to the instrumental dimension of concern – so that the difference between the two is the form of the concern and the implications for action. Clearly if completely different issues were the basis of expressive concern so that, for example, in a political process that is instrumentally concerned with regulation, voting is actually motivated by expressive concerns with, say, the personal characteristics of the rival candidates, there might be considerably more concern that the political process did not generate outcomes that reflected the underlying economic interests of citizens. This is a part of the general problem that government *by* the people may not necessarily produce government that is *for* the people.

The distinction between the expressive and instrumentalist analysis allows us to better explain some behaviour by political agents. But, first of all, we have to discuss if it is really the case of an expressive theory versus an instrumental theory, or more the case of introducing expressive considerations into the model alongside the instrumental concerns

of the same citizens. Referring to the slow decline of voters going to the poll at elections, which is a characteristic of many countries, it seems that the expressive account offers explanations of this phenomenon that are not available to a purely instrumental account. On a purely instrumental account, the real puzzle is why participation levels were so high, rather than why they are falling, and the only obvious lines of explanation must lie in changes in either the voters' perceptions of their likely impact on the election outcome, or on their valuation of the alternative outcomes. There seems to be little reason why these should be changing in a manner that implies reduced participation across many countries. The expressive account, by contrast, is more related to ideological and other related aspects of the voting process, no matter whether voters believe their vote to be decisive or not. And here it might be easier to point to international effects that might explain the reduced participation in democratic elections, such as the reduced tension between democratic and non-democratic regimes at the world level [27].

It seems then, that a first approach to the above distinction shows that instrumentalist and expressive theories are different components of the same political process, with the balance between instrumentalist and expressive considerations being determined by institutional and other factors. It is necessary, then, to reconsider the analysis introducing the separation of government at different level. We have in mind the delegation of political and administrative decision from central or national government, to local or regional government. It seems clear that the institutional structure associated with national politics is more likely to shift the balance toward expressive concerns, than is the institutional structure of local government – not least since at local level, each individual will feel more directly responsible/decisive. This suggests that any reform that decentralises power, by shifting authority from the national level to the local, for example, might also be expected to increase the relevance of instrumental factors while reducing the significance of expressive factors, and vice versa.

From these considerations, we try now to develop more discussion of the regulation issue.

---

[27] Indeed the instrumentalist vs expressive analysis could open up more general and interesting considerations. Let us think, for example, of the recent anti-globalisation movements. The main idea of these movements is that they mobilise the ability to express a political opinion outside of any formal mechanism that bears responsibility for outcomes. One might expect protest of this sort to differ systematically from decisions made within specific countries by democratic means. This does not mean that people do not care about the bigger issues when deciding local policy, but just that the circumstances will influence the action taken.

Again we distinguish between public utilities at national level (usually national natural monopolies that have been privatised and regulated), and local public utilities (these utilities provide services at local level – water, electricity and gas distribution, waste management, transport, telecommunication and so on) subjected to control/regulation by local authorities (this case is discussed in detail in the next chapter). The ideas expressed in the previous chapters view political regulation in an instrumentalist form. The parties, having different motivations, set policies in order to regulate a firm. The parties interact strategically to increase their probability of gaining power over setting policies that satisfy, at least, a majority of voters in the system, whose voting behaviour is modelled instrumentally.

Considering the expressive account in this chapter though, casts some doubt on this model. What is the importance, or 'weight', associated with the public utilities in the political decision of voters? And what is the relevance of voters being decisive at elections? Referring to national public utilities and national elections, it seems to us that these question have, as relevant answer, the fact that, firstly, for voters the regulation of public utilities is important but there are, surely, more important national issues (see section 3.12). Secondly, even if we assume that the regulation issue is very important for voters, they will have little reason to feel themselves to be decisive in changing the political outcome. So, in this case, the expressive account could be more relevant than the instrumental account.

The case local public utilities is very different – both in relation to the importance of the regulation issue, and in relation to political decisiveness. The citizens in a local district (for example a municipality) have more 'weight' in the political decisions, and regulation of utilities will be a key part of the policy profile of alternative parties. Instrumental considerations are therefore more likely to be of significance in this setting than they would be at the national level.

The question of endogenous political candidates is considerably less troubling. Although the citizen candidate model generally does not result in median voter outcomes, it clearly maintains a strong link between the preferences of individual citizens and electoral outcomes. In one sense, citizen candidate models may be seen as providing greater flexibility in models of democratic politics since these models typically generate multiple equilibria and a corresponding range of possible outcomes. In another sense, this type of model serves to import into politics the idea of the endogenous threat of entry that has long been a major feature of the economic analysis of markets. Essentially, in citizen

candidate models, what prevents political outcomes from being too bad, is that there is a mechanism by which individuals can seek to improve them – by participating in politics directly. Of course, this mechanism is not perfect – it is both costly and subject to public-good-like distortions – but it does provide a safety valve that may regulates the political process to some extent. At the same time it depends on the institutional context. With a simple majority voting system the possibility for new candidates to enter the electoral process is differently explained by the expressive and instrumental models. An instrumental account of voter motivations generally reduces the willingness of candidates to participate. Since the possibility of influencing the political outcome is low. The expressive motivation, by contrast, may allow greater political participation both because political support is granted on a different basis and because the probability of victory is not the only salient issue. Clearly, similar points could be made in relation to voting systems that embody various forms of proportional representation.

In conclusion, both instrumentalist and expressive models raise important issues for consideration in relation to the political processes involved in regulation. In particular, the expressive model introduces new elements into the analysis of the complex political structure where the simple instrumental model fails to offer full explanations of political behaviour.

5. POLITICAL REGULATION – A STUDY OF ITALIAN LOCAL PUBLIC UTILITIES

5.1. INTRODUCTION

The aim of this part of the research is to apply some of the ideas of the theoretical analysis developed in the previous chapters to a specific case study of a shifting pattern of political regulation. In particular, in this chapter I present material focusing on the process of evolution of Italian local public utilities involved in providing services such as electricity, gas, waste management and water in local areas[28]. Traditionally in Italy, since 1900, such firms are called 'municipalities' and have had the important role of providing public services to local citizens in accordance with local political directives[29].

The idea of privatisation and liberalisation of public utilities derives from the necessity to reduce the public burden for providing services and increase the efficiency of the public utilities themselves (Schliefer 1998). The recent literature has argued that the privatisation process is a necessary step in order to reduce inefficiencies due to the public involvement in providing such services. Dixit (1996) argues that the transaction costs for publicly provided services are higher than comparable private services; Beesley (1992) affirms that failures in the private market are fewer than in the non-market sector; Hart, Schliefer and Vishny (1997) consider the imperfections in contracts and regulation that are widespread in the public sector. Another important source of inefficiency is related to the self-seeking activities of politicians and bureaucrats in their administration of public services (Banarjee 1997).

The main argument of this thesis is related to this last aspect of inefficiency – the political aspect of regulation. I have considered how a partially benevolent party in power is more partisan and related to just a sub-group of citizens. Social welfare is affected (reduced) by

---

[28] The research is part of a larger project conducted at Bocconi University in Milan and funded by the Italian Ministry of Research.

[29] This idea derives from the social municipal movement that, at the beginning of the twentieth century, affirmed that municipal services were lower cost than those supplied by alternative sources. See Montemartini (1902) for some references.

this partisan activity if compared to the full benevolent party case. The inefficiency is greater the greater is the asymmetric information considered in the model. When agents do not share the same information, the equilibrium may deviate considerably from the first best equilibrium.

The privatisation processes have developed across many countries in Europe and beyond. The European policy on privatisation[30] has strongly affected the evolution of important sectors such as the energy sector. Every European country has followed this privatisation and liberalisation process to some extent - each with a quite uniform basic structure but with differences that depend on their own specific characteristics: social factors, the political-institutional system, the structure of the economic markets and so on.

In Italy, privatisation and liberalisation policies have been very significant in the energy sector, with the introduction of policies that force the market towards a more competitive environment. The national electricity and gas companies were monopolists in the energy sector leaving to municipalities and some private companies just part of the distribution service to citizens/customers. The municipalities were public monopolists in the role of providing public utility services at the local level - such as transport, water and, in some cases, waste management, and the distribution of electricity and gas[31].

The concern of this chapter is to consider the evolution of the local public utilities (LPUs) in the light of data extracted from a pool of the most important LPUs in Italy. In particular, the data have been derived from ongoing research that has as its main goal to study the evolution of LPUs with respect to the past structure of such firms. It is not a direct purpose of the empirical research to investigate the political relationship between the firm, and the political system (parties and voters). Nevertheless, in this chapter I will use the data to gain some useful, if indirect, views of how the political relationship has changed with respect to the past, and how these political changes are reflected in the more economic aspects of the evolution of the LPUs. By these indirect means, it will be possible to suggest that the structure of the public utilities in general, and of the LPUs in particular, has changed principally due to different institutional reforms that have modified the role of the actors in a complex political system.

---

[30] European Directive 98/38/CE for gas and 96/92/CE for electricity.

[31] I consider only services with industrial relevance leaving aside services such as social care services.

The next section then will investigate the nature of such institutional changes and the new roles given to the local political authority (LPA) and to the LPU. I will also try to insert some ideas concerning the evolution of the LPA-LPU sector interpreting the evolution in the light of the PBP model. Sections 2 and 3 will then introduce qualitative and quantitative analysis of data collected from a questionnaire completed by the pool of LPUs in the research. Finally section 4 will outline some issues on more political economy aspect indirectly derived from the available data.

5.1.1. The evolutions of the Local Public Utilities: the agents involved

The main purpose of the research is to analyse the impact that the recent privatisation process has had in the Local Public Utility (LPU) sector in Italy. In particular, I consider what are the main evolutionary changes in the role of the LPUs in Italy in the past few years.

In order to better understand the dynamics of such an evolution in the LPU sector it is interesting to begin by considering the agents involved in this process, their relationships and the role they are playing at the moment. Together with the LPUs the agents involved are the citizens/consumers together with the public/political authorities.

The first agent, the LPU itself, is involved in an industrial process and is changing its formal structure. These previously publicly owned firms are changing to become privately owned assets. Private sector firms are also more interested in providing some services that were traditionally public. Waste management sector, the supply of electricity or gas, for example, are services that could be supplied by private companies in competition with the LPU. The recent privatisation process, through the introduction of specific sector policies, together with the fast improvement of the technologies, has fostered and enhanced the evolution of these sectors. For example, in the telecommunication market the technology has allowed the operator to by-pass the natural monopoly barriers created by the network.

Also important are the public/political agents that play a big role in this evolutionary process. First of all the privatisation and liberalisation process has seen its beginning with directives issued by the European institutions. Each European country is applying these directives considering the national specificity of the market. Apart from the European issue, it is interesting to consider the importance of politics in the privatisation process, and how this could really affect the dynamics of industrial evolution of the LPU sector.

How does local political behaviour affect the evolution of LPUs? In Italy there is a deep transformation in the structure of local administration. There is a tendency to delegate more power to local administrations. This will imply more political power and greater independence of local administration. The local mayor, elected by the citizens, is more "executive" in his/her actions - choosing the executive members of the council (Giunta) while the town council (Consiglio) is elected directly by the citizens. Referring to the LPU sector, the main aim of the legislative process is to reduce the power that the local administration has over the provision of public services to citizens. The role of the Local Political Authority (LPA) is considered more as an overseer and regulator of the services provided to citizens than as a direct producer and owner of public utilities.

Finally, in the analysis of relationships between LPU and LPA, there are the citizens/consumers. In the pre-privatisation period, the LPA was the main determinant of the LPU's activity, in the sense that the production activity of the firm were the result of decisions made within the political process, so that the role of citizens in influencing the activities of the LPU was an indirect one – through the political process. However, the new privatisation process is moving toward a position in which citizens in their role as consumers of the firms products play a more direct role, as well as an indirect role through the political process. In this way the main aim of the firm is to devote its attention to creating stronger links with customers, and greater responsiveness to consumer demand. The customer becomes an important asset for the firm whose value is directly related to the fidelity of those customers to the firm. The diversification process and the multiutility-multiservice evolution of public utilities is a result of the firm need to link the customers to the services provided and avoiding the transfer of custom to other firms.

In order to understand the privatisation and liberalisation process in practise and its effects in the public utility sector, it is necessary to understand the following aspects concerning the relationship between LPU, LPA and consumers/citizens: *protection*, *financing*, *organisation*, and *production*[32]. I will discuss each in turn.

Consumer Protection is usually related to the terms on which services must be supplied to citizen/consumer, or to questions of service quality. It is usually a result of social and political choices concerning both the standard of quality and the quantity of services, and the avoidance of discrimination between citizens in providing the public services. The

[32] This analysis follows an interesting paper by Archibugi *et al.*(2000) concerning the relationship between citizen/consumer, LPU and LPA.

new privatisation and liberalisation process does not eliminate the requirement that the LPA should regulate the provision of services in terms of the protection of the citizen/consumer. However, the protection of citizens does not mean that public utilities could not be sold to the private sector. The public agent, selling the public utility to the private sector, looses its internal control over the firm but retains an external, regulatory, control over prices, quality and market competition.

Financing is a political decision too. The public operator has to decide how to charge citizens for the public services. It decides if the services must be financed with transfer to the firm concerning general taxation over citizens, or with prices of services charged only to the consumer of those services. The price/transfer decision affects also the quality of services provided. When privatised, these issue remain in a similar form with the regulating authority able to offer transfers and regulate prices, although the privatised firm will enjoy greater flexibility in pricing policy.

Organisation concerns the structure for providing services (who provides them, and how). With a public operator the organisational decision is entirely political and usually results in a single monopoly supplier; after privatisation, organisation is still influenced by political decisions even if it is more influenced by private decision by firms who may enter the market. In the longer term the organisation or structure of the regulated market will follow the pattern of productivity and efficiency of the firms, under the influence of regulation.

The last factor is represented by *production*. This may also be seen as the result of the three previous aspects (quality and quantity of services, terms of supply, who produces them, how they are financed) and the technical analysis of production. At this stage, political interference should not be relevant. There is no real reason to accept productive inefficiency in a public firm or a private one, once these other aspects of the operation of the market have been set.

The above analysis is important in order to consider the role that a public agent must follow. In particular, the protection, financing and organisation decisions, or supply decisions, must rely on the political process, while the final production decision should be related to technical and economic evaluation.

The relationships between the agents in the provision of public services is quite complex. First of all the public agent is elected by the citizens. The party in power is the agent that has won the electoral competition and has been elected by a certain majority of citizens. The party in power then takes decisions in accordance to the political preferences of the

citizens that have elected and supported it. The Partially Benevolent Party case, developed in earlier chapters, is the political model that provides an explanation of this relationship, as it is going to be considered below.

Production activity is then considered by referring to the ownership of the firms. The services could be supplied by firms owned and directly managed by the political agent (particularly for LPUs). Alternative, the services could be provided by a public or private company. If the services are supplied through private company the structure of the market could be a monopoly, oligopoly or a competitive market. In this latter situation the relationship between the public agent and the firm is usually regulated through a Contract of Services that indicates the standard or minimum requirements, for the firm providing the services to the citizens/consumers. The relationship between the citizens/consumers and the firm is then regulated by a Charter of Services that indicates the main quality and quantity standards for services to be provided to the citizens/consumer by the firm.

The classical structure for the provision of services is represented by a relationship between the agents where basically a monopolistic structure has been adopted. The citizens elect a single party in a political competition. A party wins and takes power and set out its preferred policy. The party gives a mandate to a single firm in providing services to the citizens. This is a bilateral and temporally determined monopoly because the firm and the party in power contract, for a certain period of time, on the services that have to be provided according to quality, quantity, prices and so on.

Then the firm supplies services to citizens/consumers. This relationship is temporally undetermined and is structurally a monopoly. Such a simple monopolistic structure was widely adopted on the basis of some benefits that the theory associates to the monopolistic provision of public services: scale economies; integration economies; scope economies; reduction of transaction costs; elimination of transition, etc..

In reality, however, it is also necessary to recognise some diseconomies associated with the monopolistic provision of public services:

- The public agent could force the firm to act following its private interests, not considering social welfare or consumer demand;
- The firm has no incentive to reduce costs because it may receive transfers from the public agent and is the only supplier in the market;
- The monopolistic activity is also detrimental for the quality of services provided to citizens/consumers;

- The only way through which the citizens can complain or comment on the services provided is through the electoral competition by threatening not to re-elect the party in power at next election.

From this simple analysis it is clear that the claimed advantages of the monopoly structure are related to economic-technical aspects, while the disadvantages are mainly political-institutional in nature

The main strategies followed by many countries in order to enhance the efficiency of the public sector are:

- trying to keep the economies associated to the monopolistic activity of the firm but reducing the political-institutional inefficiencies by alternative institutional arrangements;
- separating stages of the production process by creating competitive markets for the services provided.

Most countries have followed strategies of the second type. Competition has been introduced into public utility markets. In particular the idea of *competition for the market*[33] is a strategy that tries to reduce the bilateral monopoly between the incumbent firm and the political agent, while the idea of *competition in the market* is a strategy that eliminates the monopolistic relationship between the political agent and the firm, and between the firm and the citizens/consumers.

It is possible to say that the idea of competition for the market presents some problems if the initial auction to secure the right to provide the services is not genuinely competitive – with a number of firms competing from essentially similar positions, and this is unlikely given the history of the sector, and the advantages that are likely to be associated with experience in the market. It is also clear that the pattern and structure of regulation must be fixed in advance so that firms can evaluate the market opportunity given that pattern of regulation, and so bid appropriately. Once an auction of this type has been conducted, the firm is essentially free to act as a monopolist subject only to the pre-announced pattern of regulation. Thus, this strategy involves a once-and-for-all approach to regulation with the public authority having little flexibility to adapt its regulatory policy to future changes in circumstances. In a world of uncertainty and asymmetric information, in which the public authority may have little ability to predict the future, this may be a considerable problem.

---

[33] See Demsetz (1968a; 1968b) and Baumol *et al.* (1982).

Equally, of course, political pressure from the citizens can not effectively operate to regulate the firm post-auction. This implies that if there is dissatisfaction amongst the citizens *ex post* they will only be able to express this dissatisfaction by voting for another candidate (thereby punishing the original governing party) without actually affecting the operation of the firm. By contrast, a market where there are more possible entrants and a more flexible approach to regulation, could offer greater incentives to efficiency over time.

These comments convince us that privatisation is not the only possible evolution of the public utility sector. The decision really depends on the potential structure of the market for the public utility, and on the nature of the political process. It is necessary in any particular case to consider and understand the economic and political relationships between the agents in the system. These relationships must then be evaluated according to the protection, financing, organisation and production aspects of the provision of public utilities to citizens.

5.1.2. The LPUs juridical status

The juridical institution for the LPUs in Italy is dated 1903, when law n.103 allowed the creation of municipal firms. This important law gave local political administrations the opportunity to administer directly, or through a municipality consortium, firms supplying services to citizens. In 1925 law n.2578 specified further the three possible juridical forms for the LPUs: a *special firm* (municipality) with unbundled accountability from that of the LPA, but with limited administrative autonomy; an *economic administration* i.e. direct administration of the services by the LPA, this was particularly relevant to those services (such as social care services) not relevant from the industrial point of view; and finally the ability to grant a *concession* to external private firms.

It is necessary to wait until 1990 and law n.142 in order to see further innovations for this important sector. This law affirmed that the main goal for a public utility must be: *the production of good and services having as main purpose the improvement of social welfare for local communities.*

The law also defined the limited company, with predominant public ownership, as a new administration possibility for the municipality, alongside the economic administration and the concession.

The legal background is important because it has allowed an important evolution that is reforming structurally the LPU's sector in Italy. The reform gives LPUs more juridical and economic autonomy from the LPA. This provides the LPUs with the possibility to administer themselves and be judged against criteria such as efficiency and efficacy typical of the private sector. At the same time firms are more independent from the political decisions of the LPAs. The firms have, through the constitution of limited companies, the opportunity to gain access to private capital and the possibility to acquire technical know-how and skilled human resources that were scarce under public ownership. Law n.142 therefore represented the first major step in the privatisation process. Other laws have followed and the system is evolving gradually to a more substantially privatised system with a combination of public and private firms supplying public utilities. Important are, for example, laws n. 95 and n. 273 of 1995. The first introduces the Contract of Services, having as its main aim the regulation of the relationship between the LPA, responsible to the society for the services provided, and the LPU, the administrator of the services provided in the market. This is particularly important because the privatisation process gives more autonomy to the local utilities. The LPA concedes to the LPU the possibility to supply services with more autonomy but also clarifies the responsibilities of the firm and the LPA. For the firm, the Contract of Services defines, mainly, the management function while, for the LPA, the Contract considers the regulation and definition of the main strategies for the firm. The Contracts of Services, then, becomes an important instrument for the regulation of the LPU by the LPA.

Also important is the Services Charter introduced by law n.273. The relevance of this document is related to the fact that it regulates the relationship between the firm and the consumers. It defines the main characteristics regarding quality , quantity and type of services supplied.

5.1.3. The relationship between LPA, LPU and citizens: the application of Partially and Fully Benevolent Party cases

The purpose of this section is to consider the relationships between the citizens, the LPA and the firm that provides public utilities. It is possible to analyse a double agency model: at one level, the citizens as voters are the principals who delegate power to the LPA, the agent. At the second level; the LPA, is the principal with respect to the firm that produces

and distributes services to citizens as consumers. The analysis of those important relationships is crucial to understand and to apply the FBP and the PBP case.

In a perfect world with full information the public agent elected by the citizens has all the relevant information to maximise a social welfare function reflecting the preferences of the voters. This in turn would be required of the party in power by the voters in order for the party to be re-elected at next election. The party, in this case, optimally regulates the production activity of the firm, and the party is, in turn, optimally regulated by the electoral process. In this way, the political power of the citizens operates as a perfect substitute for the market power that they lack as consumers facing a monopolist.

This story is very different, however, if we consider more realistic cases. The introduction of imperfect information opens up the scope for inefficiency both in the regulation of the firm by the party and in the regulation of the party by the voters. And the distinction concerning the motivation of parties, as made in the previous chapters will also imply differences. The FBP, PBP and Ideological party cases define different equilibria according to the nature of the party considered. The FBP maximises a welfare function that consider all of the citizens in the political system. This is a traditional story and the party is neutrally affected by political preferences of the citizens. The equilibrium may be thought of as a second best one.

The PBP model considers a party that is linked to the sub-set of citizens that have voted and supported it at the elections. The party, then, is committed to this section of citizens and it maximises a welfare function that takes into account only those citizens. As demonstrated, the PBP model is important because it renders endogenous the political formation of policies, and because the equilibrium is different from the second best one identified above as a result of the appeal to the political preferences of a faction of citizens.

The ideological model considers the political formation of party preferences as exogenous. The ideological party sets a policy which is coincident with its own preferences. The final equilibrium then depends on the strategic interaction between parties competing for power in an electoral competition.

With asymmetric information the equilibrium is worsened first because the agents cannot observe the activity of each other, and second because the motivations of the political parties diverge from the standard. Not only do parties, and firms, extract a rent for their informational advantage (as in the standard case), the parties also distort policy to fit

either the preferences of a particular group in society, and to fit their own ideological preferences.

The model changes depending on whether the firm is public or private. The public firm is administrated directly by the bureaucrats of the ruling party. The bureaucrats must behave according to the preferences of the party in power – so there is no effective principal-agent problem between the party and the firm in this case. The private firm has, instead, as its main objective function the maximisation of its profits subject to the regulatory regime. And this identifies the standard principal-agent relationship between the party and the firm, as in the basic Laffont and Tirole model.

As already noted, in the LPU-LPA model the Contract of Services is an important instrument that regulate the relationship between the LPA and the LPU. The Contract of Services defines the rights and duties of the two parties. It therefore has to introduce the optimal incentives in order to commit the firm not to appropriate excess rents.

Equally, the Charter of Services specifies the relationship between the firm or LPU and consumers. For the firm, the Charter specifies the minimum quality and quantity standards providing, in this way, information and protection to the consumers and reducing the firm's discretion. This Charter must be the result of an agreement between firm, consumers and public agents, and is binding for the firm.

As a last relationship, the citizens monitor the politicians in power. With asymmetric information the citizens do not fully observe the politicians in power. The party in power could be inefficient in supervising the firm production of services. It becomes necessary to introduce some sort of incentives for the party in order to commit it to behave according to the objective function of the citizens. This could be done by increasing the information to the citizens with regards to the activities that firm and politicians must undertake (for example opening information desk, publishing the number of services available to the citizens, the rights of the consumers and so on).

Against this background discussion of the LPU/LPA system, I will, in the next sections, introduce the results obtained from a questionnaire sent to a sample of LPUs. The LPU questionnaire asked both qualitative and quantitative questions (See Appendix 1). I will analyse the results of these questions and interpret them in the light of the earlier discussion and models. In particular, I will consider important aspects of the LPU-LPA relationship: the privatisation process, the links between LPU and LPA; and the industrial evolution of the LPUs, following the privatisation process.

5.2. QUALITATIVE ASPECTS OF THE ANALYSIS

The pool of participating firms includes 11 LPUs (specified in detail in section 5.3.1 below). In order to understand how the privatisation process has been implemented, the link with the LPA, and the industrial evolution of LPU a qualitative questionnaire was sent to each LPU. The results of these questionnaire has been summarised in the following paragraphs.

In this context, the aims of the present research are to investigate:

- The traditional division of roles and objectives between the LPA and LPU;
- How this traditional division of roles is evolving.

5.2.1. The LPUs location in the production chain

From the questionnaire sent to the firms, the first qualitative result that arises concerns the perception of the LPUs position in the middle ground between consumers (representing the demand for the services provided) and the LPA regulating supply conditions. In one sense the LPUs receive from the LPAs a general framework which does not specify particular details – this would be the standard picture of the LPA as the principal setting out the constraints within which the LPU as agent must operate, but then leaving the LPU to optimise from its own perspective within those constraints. However, in practice, the system seemed to have operated in a slightly different way, with the LPUs having chose a strategy with the role of the LPA confined to an ex-post control of those strategies. In other words the onus was on the LPU to propose a strategy that would then be approved by the LPA, so that the LPU was confronted by the task of anticipating the LPA's reaction to possible proposed strategies. In particular the LPAs traditionally have:

- Delegated to the firms all technical aspects of production;
- Promoted and supported the development of important capital projects such as the gas pipeline network, local transport infrastructure, and so on;
- Played an important and crucial role with respect to the regional and state political and administrative agencies in order to generate project financing, being active actors in deciding the plan for the development of areas;
- Transferred to the LPU management the day-to-day direct contact with the customers/citizens;
- Used the profit of the most profitable businesses run by LPUs in order to cover local administration costs;

- Charged the firms with burdens not directly related to the firm's specific business. This in order to finance some LPA activities. Effectively shifting LPA costs onto LPU accounts so that general political activity are funded through the prices set for LPU services;
- Appointed directly some members of the LPU's executive board and expressed political support for the firm's main strategic developments in the executive and legislative LPA institutions.

From the above analysis it is clear that the main LPUs strategic decisions have been to decide all the relevant technical and organisation structures of the firm, also playing an important role with respect to the urban infrastructure development, and structuring prices and revenues to meet not only operating costs but also the political charges levied by the LPA.

According to this view, the LPUs have played first a "political" role in deciding which developing strategies to pursue. This activity is supported by the local political actor and then pursued by the LPU. At the same time the LPUs have developed their own industrial capacities relative to local needs, acquiring in other markets commodities or more specialised services that are part of the normal routine of the firm, such as engineering services for new plants, software, monitoring system and so on.

The "added value" contribution by the LPU to the industrial chain has been mainly from the organisational and labour intensive side (for example, sales management, customer relations, billing for services, etc). In some cases, for example refuse incineration, the local firm has invested in the creation of new plant trying to internalise the rent and finding possible synergies with other public services (as in the integration of refuse incineration and production of energy and heating).

The LPU has played a leading role in the construction of the local infrastructure network, creating positive externalities necessary for the development of local areas. It has been able to utilise the resources available for the needs of local community.

A different picture emerges in relation to sunk investment and replication economies that have been delegated and acquired from external agents. Few LPUs have had the capacity to develop important general project or invest significantly in R&D. Here the small scale of LPUs counted against them.

This restricted development of the LPUs has been the major factor bounding the expansion of these firm outside the local areas. Only few of them have started external expansion abroad trying to find alliances with other partners. And even those cases where

there has been expansion seem to be seen more as strategic movements seeking representation in other areas rather than a real search for new business.

From the historic point of view the LPUs have been *monads* i.e. units without many industrial relationship with other LPUs, but occasionally they relate with each other for the exchange of technical experiences and best practice.

The LPUs relationships with customers has been very limited because these firms have principally responded to the LPA as the main customer and stakeholder of the utility. In particular, the citizens/consumers needs for public utilities has been considered by the LPU only indirectly, as a result of the political process. The political process has had an important role to play, and the preferences of citizens/consumers have been filtered by the political process. In this case the party in power had a very important role with respect to the relationship with the LPU, in particular for all the most relevant strategic development of the utilities. Overall, the LPUs were more concerned with the technical aspects of their activities and not particularly linked with the citizens/consumers preferences.

The idea of the public supply of public utilities, rather than the private contracting out of the services, has been seen as an important remedy against the asymmetric information problem and transaction costs. Obviously, having the LPU under the direct control of LPA is seen as an important benefit allowing the internalisation of the above market imperfections. Of course this also implies a co-presence of political and productive functions that links the political formation of preferences with the productive decision making process.

The top management of the LPUs have considered this privileged position with respect to the political authority and have followed strategies basing all their activity on policies that internalised productive and political functions. This strong market position related to the above privileged relationship has allowed the LPUs to increase their productive capacity with a certain use of technology, monitoring the market and developing a modest know-how.

The reverse of this coin was that the LPUs were more inward looking, with little attention paid to cost reducing and cost-saving innovation, or customer demand. The result of this process is mainly seen in a culture that puts a strong emphasis on local and specific variables leaving aside efficient benchmarking with other external cases. Of course this has not always been the case for all LPUs. But the decision to compare performances across LPUs in order to increase efficiency was rare and not encouraged by the structure

of the LPU system. A system characterised by non-monetary incentives and integration with the political system lead to gold plating, over capacity, and over staffing risks.
The negative aspects related to the LPUs have lead to a transformation of some public utilities that has modified the original role of the LPUs. These transformations concern, mainly, the evolution of the private industry, the technological development together with a new vision of the strategic importance of some services and the necessity of a new regulation activity for the LPUs.

5.2.2. The LPU production chain: the transformation

The LPU sector has been revolutionised by the process that has started with the liberalising legislative processes imposed by the EU commission and by the Italian national government. To this, of course, it is necessary to add further pressures coming from the industrial sector and depending on technological factors and on the changing nature of the services.
The trend in the new structure of the system is related to factors that could be summarised as follows (also referring to other international experiences):

- The increasing complexity of the production chain. The production chain is expanded, comprising more activities and including specialised and complex inputs. The market is no longer local but national or international. This new role, of course, has to take into consideration the fact that the LPUs have to set out a new way to approach the market, not only related to a new organisational and productive structure but also embracing the necessary technology. At the same time, they have to acquire greater expertise in term of customer relations and contacts with other external agents in the market.
- The LPUs also have to reconsider their traditional activities. Particularly they have to expand their operating structures in order to justify the burden of the fixed costs in increasingly competitive markets. For this reason two main alternatives have been following by the LPUs. The first is to enlarge their market by expanding in the nearby markets in order to increase the number of consumers serviced (as done, for example, in the water industry), of course this tends to put pressure on the link with LPAs as the set of customers differs from the LPAs set of voters. The second way is to become more specialised - outsourcing some activities, and concentrating on others so as to

achieve a better balance of costs – this involves trading extensively with other specialist firms.

- As a result, the relationship between LPUs and LPAs tends to change. The LPUs do not operate on the basis of a strong political mandate and the activity of the firm is more geared to market pressures than to the political commitment, as it was previously. The relationship between the two agents is now regulated by the Contract of Service and the Customers Charter. The role of the LPA is, in this way, reduced and confined to a regulatory role. This is reinforced by the increasing shift to national and international standards of quality of services are also determined rather than the traditional local standards reflected through the local political process.
- Another important development of the LPU relates to finance. The weakening of the previously strong relationship with the LPA, where costs were substantially covered as a matter of public expenditure, the firms now have to solve finance problems internally. There is less scope for political cross-subsidisation. For some LPUs (at the moment only 5 in Italy), corporate financing has represented an important step. In this case the necessary conditions such as the profitability and credibility in the financial market of the firm become a crucial variable considered by the firm.
- The modern evolution of the system is, as I have said above, determined both from a political attitude toward privatisation and liberalisation of the public utilities, and by new technological improvements that have a different impact on several services supplied by the LPUs. For example, services such as green spaces maintenance, public building maintenance, public street lighting, and traffic lights are clear examples of services that could be provided by private firms, even if the LPUs have accumulated more expertise in supplying them and have established a privileged link with the relevant LPAs.

  For services that are close to a natural monopoly, the evolution of the system has lead mainly to a liberalisation of the commercial activities (for example, customer relations and billing in the cases of gas and electricity supply) together with a monopoly over the network itself. In the telecommunication sector, however, both the network and commercial activities have been liberalised even if subjected to some public control.

Finally, some services have become more significant as public local utilities. For example, the provision of cable network services, connected with the modern development of the telecommunication system, has become an important public utility in recent years. The public utility aspect may arise, for example, because it is not profitable

for private firms to provide the service in marginal areas.

The answers to the qualitative questionnaire given to the firms support these views of the evolution of the relationships between LPAs, LPUs and consumer/citizens. These answers are summarised in the following sections 5.2.3 and 5.2.4. In particular in section 5.2.3 it is considered the evolution of the production chain, the alliance with other firms in other areas. In section 5.2.4, I consider the new relationship with the LPA (purchaser-regulator and, in some cases, owner) and the relationship with firms other than LPUs.

5.2.3. The production chain: some evidence and interpretations

The new approach to the nature of the production chain, is not uniform across LPUs. Each firm has developed its own strategic industrial plan. It has been possible to find, though, some similarities across the firms:

- All the firms are re-considering strategically the traditional activities with relatively low added value, repetitive. In particular, they refer to increased outsourcing for activities that are more labour intensive. In the past, the main suppliers of the LPUs were essentially those firm that supplied specialist services such as construction, excavation, pipeline setting, and machinery and equipment, with all other services produced in-house. Nowadays, the main LPUs suppliers are essentially refuse collection firms, road sweeping firms, communication and personnel training, for example.
- These new suppliers are firms that supply routine and repetitive activities at low cost on a very large scale - often active across national and international markets. By using external supplier the LPUs have reduced their control over the entire production chain. At the same time, they have reduced the number of activities that were subjected to checks and controls by the LPAs.
- None of the firms surveyed explicitly stressed the importance of new functions for them such as the marketing, or sales management, or finance.
- The strategic growth activity of the firm is often to create new relationships with other firms in sectors where they are not dominant. For example, alliances in the gas sector in order to increase purchasing power with respect to the suppliers of gas; alliances in order to share risks in new markets; developing partnership for the application of new technologies in local areas and so on. With the exclusion of gas and electricity, it does not seem that there is any strong pressure towards vertical integration, and there

is no particular concern over financial and technological aspects.

The main differences across the firms seem to depend (significantly for the main hypothesis of this thesis), on the political decisions of the LPA. In particular, in some cases, depending on the political stance of the LPA, the citizen/consumer is seen as very important and the relationship between the LPA and the firm is very strict. In other cases, the above relationship is not so important and it is delegated to other actors.

Another important difference between firms concerns the technology adopted by them. Even if all the firms consider technological factors important, their policies vary widely. This seems to depend on the propensity of the firm to expand outside of the traditional local market. For those firms with external expansion goals, technological progress is an important part of their strategy to be utilised in order to enter new markets. However, the more "closed" firms which seek to consolidate and protect their traditional market have no such propensity to implement technological developments – preferring to rely on their political and economic strength as incumbents.

In conclusion, it is possible to affirm that the LPUs are not following a uniform process of development, and this is unsurprising given the wide variety of forces in play. The only certain aspects, at the moment, are, the re-defining of the relationship with LPAs, the growth of alliances with other LPUs or private firms; and the development of partnership with professionals for the implementation of specific projects.

Despite the variety of experience it possible to delineate two possible and alternative cases that capture the essence of recent developments, I will consider these two types in more detail in the following section.

5.2.4. Future development of the LPUs market

The above discussion has attempted to explain the recent development of the LPUs in general terms, with particular emphasis on the tension between the old political controls and the new market pressures. I will now delineate two possible developments:

- The first is the "butler-LPU" (BLPU), where the relationship with the LPA is still very strong, and the LPU might be seen as moving into a relationship as a servant (butler) to the LPA. In this case there remains a strong link with the traditional local area, and the LPU is more concerned with political decisions, the preferences of the local parties, and with the development of the local area by providing public services to

the local citizens/consumers. Commercial activity, and particularly any commercial activity outside of the area, has relatively low priority.

- The second is the "multiutility" LPU where, the movement is away from links with the LPA and the local area, and towards a more commercial and market oriented activity usually involving alliances with other firms, diversification into other services, and expansion into new areas. They are at least partially privatised and they are more concerned with creating value for shareholders.

These two stylised cases are, of course, extreme. In some practical cases the firms have attempted to adopt a mix of both strategies: decreasing the link with the native market but still relating to it and seeking new business strategies in other markets. The two models, though, provide a good basis for exploring the potential for LPUs. In particular:

- From the financial point of view, the provision of more services in the same local environment saves on the financial needs of a BLPU because of the cross-subsidising practise between the various services of the firm, but also between the profit of the firm and the financial needs of the local municipality. The multiutility model, by contrast, is far from cross-subsidising its services and seeks to compete by means of reduced prices based on increased efficiency deriving from technological improvement and from economies of scale and scope. At the same time, such a multiutility LPU is more independent of any need to cover local political deficits or having to create positive externalities for the local area. They are more concerned to create value for their shareholders. In this case, the firm's investments are mainly considered as important activities in order to enter in new markets or new sectors, rather than to generate local public goods or political support.
- Another important contrast between the two models is related to the relationship with citizen/consumers and the potential impact on the quality of the services provided. A BLPU is more concerned with satisfying the political needs and preferences of the local citizens/consumer. The multiutility model, by contrast, is not so strongly concerned to meet the local political preferences. The relationship between the LPA and LPU is regulated with a Contract of Services, while the relationship with citizens/consumers with a Customers Charter. This simply means that the firm will not provide services not mentioned in the contracts. Since both types of firm will have a residual degree of monopoly power, this suggests that the BLPU may be more responsive to public demands than the multiutility LPU, since the BLPU may be expected to use its discretionary powers in ways that increase political support for the

party in power. (For example, after the destruction of La Fenice theatre in Venice, the LPU provided a temporary site for theatre activities).

- The BLPU has a stronger incentive to invest in local resources and projects, again to reflect local political preferences. The multiutility LPU will tend to look for projects over a wider area, and may try to compete directly with other BLPU by attempting to enter their local markets.
- Another important aspect is the focus on the final customer for the multiutility model rather than a strong relationship with the LPA. This is important because it directs new developments toward more marketing-oriented functions rather than technical-productive functions. This, of course, will lead the LPU to concentrate on more profitable services abandoning or reducing the efforts in the less profitable ones.
- As is clear, the multiutility model definitively represents a sharp break from the previous and traditional development of LPUs. Whereas the BLPU model represents a greater continuity.

The new development of the LPUs also introduces new problems for the LPAs. The LPAs are losing, or at least relaxing, their control over the LPUs but, at the same time, they are still held politically responsible by voters for some basic services that have to be supplied to citizens/consumers. This is the reason why recent debates in Italian politics have often focussed in detail on what should be the new role for the LPAs. A role that implies a general definition of services that have to be supplied and the regulation of the LPU through specific and general contracts (Charter of Services and Contract of Services) – or something very different with regulatory authority moving to a different level.

5.3. QUANTITATIVE ASPECTS

5.3.1. The LPUs sample

The research concerning the industrial evolution of the LPUs has been carried to a second stage by inviting the same pool of 11 LPUs to answer a further quantitative questionnaire. In particular, the information requested was focussed on the main variables of the official company accounts, industrial accountability, and on several technical questions over the period 1996 to 1999. 9 of the 11 questionnaires have been received in completed form (See Appendix 2 for data). The LPUs involved in the research are different in their scale, juridical status and the degree of diversification of services they supply. In particular we are interested in the production and distribution of electricity,

heating, gas distribution, and waste management.

The 9 LPUs are[34]:

- **ASM Town of Brescia**. For this firm we have considered the water, refuse collection, production of electricity, heating and gas distribution services. This firm has transformed from a totally public firm to a limited company (S.p.A.) in 1998. The production value in the above production areas was £317,1 millions in 1999. This firm represents a typical local multiutility with a majority of shares owned by the municipality.
- **AGAC Town of Reggio Emilia** operates in the water, gas, electricity and refuse collection production areas. This firm is not a limited company. It is a type of co-operative whose partners are the municipalities of the Reggio Emilia area. This firm had a total production value of £171,9 millions in 1999.
- **AEM City of Turin** has been a limited company since 1997 (recently quoted on the Italian stock market) and operates in the electricity sector. It is a typical example of a big local mono-utility. The production value was £146,7 millions in 1999.
- **AMGA Town of Genoa** has been a limited company since 1996 and is quoted on the Italian stock exchange. Its main activities are water, gas distribution and a little heating activity. The production value was £109,6 millions. This firm is a typical example of company whose strategic plan is to expand external to its traditional local area.
- **AMI Town of Imola** operates in all the production sectors considered. It had £4,9 millions of production value in 1999. This firm is not a limited company, and is totally owned by the municipality. It is strategically orientated to create a co-operative with he support of local municipalities. This is a typical example of a medium-sized LPU linked to the LPA, as in the BLPU case above.
- **AMAV Town of Venice** has been a limited company since 1998, and is active particularly in the waste management sector. Its production value was £38,4 millions in 1999. This is an important mono-utility company.
- **AGEA Town of Ferrara** recently transformed into a limited company and is a supplier of waste management, heating, and gas distribution services. It is a medium-sized multiservice company with a production value of £44,5 millions in 1999.

---

[34] The ongoing research project is processing data on Milan, Rome and Bologna, not included here.

- **INTESA Town of Siena** is a supplier of water and gas services with a production value of £31,7 millions. It is a medium sized company and is a co-operative.
- **AMGA Town of Udine** recently transformed into a limited company and is a supplier of water and gas distribution services. Its production value was of £18,4 millions in 1999.

5.3.2. LPU size, diversification and growth

The total production value (PV) of all LPUs in the sample has increased from £731,7 millions in 1996 to £976,7 millions in 1999 (Appendix 3-Fig.9). This shows that the traditional services sectors (water, gas, electricity, waste) is still buoyant are not "mature" sectors. The increasing value of the production has been mainly concentrated in the water industry (+48%) and heating/electricity (+42%) with waste management growing more modestly (+26%) and gas distribution still more slowly (+9%).

Some of the LPUs have developed a vertical integration in the water industry, some have introduced heating services and some others have strategically increased their activities to include the distribution of gas and water in other markets. This pattern of diversification and expansion into new markets is explained in part by the structural and regulatory changes discussed above.

Considering the firms of the sample separately, it is possible to find a PV increases for Brescia in the period 1996-1999 of 50% - fairly evenly spread across all the industrial sectors (with more modest growth in the gas sector); Siena has increased its PV by 38% due mostly to an expansion of its water sector, while Ferrara grew by 33%, largely because of the increased importance of the heating sector and the expansion in the distribution of gas to a wider market. Turin has increased its production by 24% in electricity, its only sector. Imola has seen an increase of 21% due mainly to the growth in the water industry. Reggio Emilia and Venice grew at approximately 15%, while Genoa and Udine grew at rates of less than 10%.

Fig.9 charts this data and shows that there is no substantial correlation between the PV growth and either the original size of the firm or with the degree of diversification of the firm.

5.3.3. The level and growth of value added

Another important variable is its added value AV (determined by subtracting from the PV

the raw materials and external services costs). In 1999 the aggregate AV across all 9 firms was £377 millions, 38,6% of the total PV (Fig.10). The LPUs do not creating particularly high AV with respect to the PV, compared with other firms. This is the result of several causes. In the gas distribution sector, for example, these firms are only the final distributors of gas and for this reason the profit margins and AV measure is consequently reduced. The AV in the gas sector is just 27% of the PV, with little difference between the LPUs of the sample, with the exception of AMGA Genoa (36,5% of PV). This firm has increased its AV because it has been able to supply a range of services to its final gas customers such as maintenance and the provision of heating to local public buildings such as school and hospitals.

In the waste management sector the AV across firms is mainly determined by two factors. Firstly, the firms resort to outsourcing for operations with modest scale economies (such as refuse collection, road cleaning and so on) or with more important scale economies (such as incineration activity for example). Secondly, the differences between firms depends on different patterns of integration and diversification. On average in this sector the AV for the LPUs considered were 57,1% of the PV. The AV for Ferrara in 1999 were 74,2% (strong vertical integration), 65,6% for Brescia, 53% for Venice, 48,6% for Reggio Emilia (with little vertical integration) and 34,8% for Imola that operates mainly by outsourcing.

The water industry (39,9% average AV) and the electricity industry (43,1% average AV), also display differences in AV across the LPUs depending on the characteristics of the structure of the LPU. For example, in the water industry, the differences depends on the technical characteristics of the network and the specificity of the extent of the area where water is distributed.

In general, AV between 1996 and 1999, shows an increased of 14% - much lower than the increase in PV (33%). This is shown in Fig.10 where it is possible to see how the growth of AV is modest with respect to the PV (in two cases the increase in PV is associated with a decrease in AV).

The AV measure also allows the introduction of a rough indicator of employee productivity by considering AV per employee (AV/E). This is an important indicator because worker turn over in these public firms is not very high. The preservation of jobs in the public sector has been for long time an important political goal of the LPAs. In the period 1996-1999 AV/E has increased from £67.300 to £78.300 (16%). AV/E depends on firm-specific factors concerning human resources, and on the mix of services supplied

by the firm. The analysis shows an interesting and positive relationship between the growth of the activities directly provided by the firms and the AV/E (see fig.11). There is no apparent correlation between the reduction of the number of employees and the AV/E (see fig.12) across the sample firms.

5.3.4. The level and growth of profitability

The profitability of the LPUs is a measured only roughly by simply subtracting from PV the total costs of production. It shows an increase between the 1996 and 1999 from £52,7 millions in 1996 (7,1% of PV) to £111,7 in 1999 (11,4% of PV) – Fig.11).

The increase of this measure of profitability derives mostly from the increase in prices for the services provided. Sector by sector this measure of profitability shows a reduction in the losses in the water industry (from –4,5% of PV to – 3,1%), and an increase of profitability in waste management (from 4,3% of PV to 6,6%), gas (from 7,2% of PV to 11,8%9) and electricity/heating (from 10,2% of PV to 19,2%).

Profitability differs across firms partly because of the different sectoral composition of firms and partly because of differing pricing regimes. In fig.13 it is possible to note a positive correlation between the juridical structure of the firm (limited company, co-operative, municipalities). There is a strong suggestion that the LPUs that have transformed into limited companies, are more profitable than other types of firm. From figure 14 it is possible to suggest that there is a positive correlation between profitability in 1999 and the rate of growth of PV rate in 1996-1999.

5.3.5. LPU investments

The capital investment needs of LPUs are high - these sectors are relatively capital intensive – however these firms do not find it difficult to raise funds from the financial markets.

Total investment in the period 1996-1999 was £683,3 millions (average £169,8 millions per years). The investment growth has also been quite significant in the period considered (16.8%). This is a sign of the reduced importance given to relatively labour intensive activities and the still greater emphasis on capital intensive activities. In fig.15 it is shown how for 7 of the 9 LPUs considered investments have been greater than the capital depreciation allowance per year, suggesting considerable net investment.

Brescia (ASM) has been the leading investor in the sample, with an average £62,3

millions per year. It is followed by AGAC Reggio Emilia (£28,6 millions), AMGA Genoa (£15 millions), AEM Turin with £14,4 millions and AMI Imola (£8 millions).

The ratio between investments and PV (fig.15) shows AEM Turin with an exceptional 38,5% but also Reggio Emilia, Brescia, Venice, Siena and Imola have strong values (between 15% and 20%). The results also show that the investments are, as expected, quite well correlated with the size of the firm (fig.16).

Considering the individual sectors, the greater investments are in the water industry (32,3% over PV in 1999) and in the electricity/heating sectors (20,6% over PV in 1999). The big incidence of investment in the water industry is the result of two important causes. The first is the increase in prices, with a binding commitment to invest to additional revenues to maintain and improve the network managed by the LPUs. The second is the greater concern of the LPUs to invest in sewerage activities. ASM Brescia is the biggest investor here, followed by AGAC Reggio Emilia, AMI Imola and INTESA Siena. It is interesting to note that there is no evident correlation between PV and investments in the 96-99 period.

In the electricity/heating sector AEM Turin is the largest investor, 38,5% (recall that for this LPU the electricity/heating sector is the only sector). This firm is investing particularly in the electricity production and in the new creation of a heating network.

In the waste management sector the investments were 12,9% over PV in 1999. In particular AMAV Venice (18,8%) followed by Ferrara and Reggio Emilia are the most relevant.

In the gas sector the level of investments is reduced with respect to the other sectors. The only relevant ones are INTESA Siena (13,9% over PV in 1999) and AMGA Genoa (10,2%) because they are investing in the network extension.

5.3.6. Cost structures

Not all the LPUs in the sample were able to supply specific or detailed information regarding their accounts relating to specific sectors of their production. This may reflect internal accounting procedures as well as the genuine problem of the allocation of joint costs. It is also necessary to add that, in the period 1996-1999, some of the firms in the sample changed their company structure transforming from public companies to partly privatised limited companies. These transformations have affected the valuation and re-valuation of the firms assets, and the criteria for imputing costs. For these reasons we

illustrate only cost variables for 1999 without considering the earlier years.

The sample firms costs in 1999 were £833,3 millions of which 69% were raw materials and external services purchased, 15% labour costs, 8% depreciation and 8% indirect costs.

The simple data shows us that the firms resort to outsourcing for some of their activities. The labour costs are also very significant having a strong impact on the firms activities. The allowance for depreciation is quite modest – but given the strong pattern of investment already mentioned, this may be temporary in nature.

Considering the production sectors separately, it is the waste management sector that has the highest labour costs and lower allowance for depreciation. At the same time, the external services costs are quite high because of the outsourcing of refuse collection, waste disposal and treatment, etc. In this sector AMAV Venice and AGEA Ferrara have higher direct labour costs than external services costs (AMAV, for example, has 53% of its total costs as labour costs and 38% of total costs as external service costs). The pattern is different for ASM Brescia (61% external services costs), AGAC Reggio Emilia (52%) and AMI Imola (58%). These latter firms have also high profitability while AMAV is in deficit. The main differences between the firms, though, is due to different prices set, rather than differences in outsourcing of activities.

In the water industry, the raw material and external services costs dominate. In this case the greater incidence is mainly due to labour costs and depreciation allowances (particularly those concerning the extraordinary maintenance of network). In figure 18 it is possible to see that AMGA Genoa and AMGA Udine have labour costs above the average[35].

We have also noticed (given the few data available) a relatively uniform cost structure in the adduction and water distribution stages (for Brescia and Genoa, though, we found high labour costs). This is not the case for the water purification and sewerage stages where the cost structures are very different between firms.

In the electricity, heating and gas sectors, unsurprisingly, cost structures are dominated by the cost of fuel purchases (69% of costs in the electricity case and 86% of costs in the gas case) see figs. 19 and 20.

---

[35] Genoa directly employs workers in the water purification sector.

5.3.7. Some productivity indicators

We have also requested from the sample firms information concerning technical details. These information will allow us to determine the general level of the firms productivity, and the productivity of single factors of production utilised in the production process. These data will also give us basic insights relating to scope and scale economies. In this section I limit discussion to general productivity trends, looking at the output supplied and their costs. It should be noted that this analysis makes no adjustment for the fact that the firms are different in respect of the extent of vertical integration, the quality of services provided, or other differences related to the specific local context.

The general results obtained are that the costs per unit of production have not reduced over the 1996-1999 period despite the considerable changes in structure and strategy. This might of course, reflect either an increase in the real costs of inputs, or an increase in quality of service.

Concerning the adduction and water distribution sector (with unit costs per m^3 of water very different from area to area according to local characteristics) we have received proper information from only 4 of the 11 firms of the sample. We have indicated the information concerning the dynamics of real unit costs. It has been found that Imola has shown an increase in productivity, while Brescia, Reggio Emilia and Genoa have record decreases index.

In the sewerage sector the unit cost of water treated has increased by 50%. This indicator is not to be considered purely as a decrease of productivity in this sector, since, as was already noted, this sector has embarked on a major, long-term investment strategy financed in part by current price increases.

In the waste management sector as a whole we have a unit cost per inhabitant that have decreased a little in the period 1996-99. The refuse collection cost per unit of refuge (equivalent to 220,46lb) varies across LPUs according to local collection conditions and characteristics (for example Venice, for obvious local reasons, has high unit costs). Over the 96-99 period Imola's costs have decreased significantly, with slight decreases for Venezia e Reggio Emilia, and stable costs for Brescia e Ferrara.

The traditional gas sector shows a unit real cost per m^3 of gas supplied that is quite constant over the period 1996-99, with the exception of Udine and Reggio Emilia which show a slightly decreasing cost. Genoa, on the other hand, presents an increase in unit cost. This is explained by considering the strategy of this firm characterised of supplying

new services for the final customers.

5.4. INTERPRETATION AND CONCLUSIONS

Clearly the qualitative and quantitative date presented and discussed in the above sections is not sufficient – in either quantity or quality - to draw strong conclusion, or to test specific hypotheses. Rather this information should be seen as a first empirical sketch that allows at least some impression of the recent evolution of the LPU sector to be gained, and compared with the earlier, more theoretical discussion.

Nevertheless, I do want to suggest that there is some evidence of a pattern emerging from this preliminary data that provides some support for the general importance of essentially political aspects of the regulatory process, and more specifically for the type of models that I have explored in the earlier chapters in which citizen/voters act both as economic agents in relation to the LPU and as political agents in relation to the LPA, and therefore indirectly the LPU.

The sample of LPUs studied include several distinct types – multiutilities with a majority of shares help by the LPA (ASM Brescia, AMGA Udine, AMAV Venice, AGEA Ferrara, SEABO Bologna), co-operatives made up of LPAs (AGAC Reggio Emilia), mono-utilities that are quoted limited companies (AEM Turin), multiutilities that are quoted limited companies (AMGA Genoa, AEM Milan, ACEA Rome), and BLPU which is still very closely tied to a LPA, and provides a range of services (AMI Imola). Given this diversity, even though I have only a few examples of each type, I am able to make some comments on the relative experience of the different types.

It is important to stress immediately that an evident correlation between politics and LPUs is given by the juridical structure of the firms. The middle regions of Italy (particularly Emilia Romagna and Tuscany) have a long tradition of leftist political administrations. The political administration of some municipalities considered in our sample, belongs to this tradition. This is true for Reggio Emilia, Imola, Ferrara, Bologna (all part of the Emilia Romagna region where Bologna is the most important city) and Siena (Tuscany Region).

Considering our sample of firms, it is possible to see how the juridical structure of the LPUs belonging to such (traditional) leftist political administrations has given more relevance to the creation of co-operatives between municipalities of local areas (for example, the town of Reggio Emilia and the surrounding municipalities) in the LPUs'

ownership (Bologna has not adopted a co-operative juridical structure but still its performance and goals are similar to those of the other LPUs in the same region). In this case, then, it is possible to argue that the idea of public service, the idea that the LPA has to assure such services to the local community, and the idea that the LPA is really in charge of such a duty, translates into a more direct administration of the LPU through a juridical structure that privileges the co-operative form. Even if these municipalities are considering the opportunity to transform into limited companies, the idea of direct political involvement by the LPAs remains a strong and important element to consider in order to understand the evolution of such LPUs.

In other towns and cities the situation is slightly different. Where there has been more coalitional politics (centre-right, centre-left) in the administration of local council, it is possible to find juridical structures more or less orientated toward the formation of limited companies. The larger and more industrialised cities (Milan, Rome, Turin, Genoa) have preferred the quoted limited company structure with the majority of shares retained by the council, while the rest of the shares are sold in the market.

The two opposite models (co-operative vs. limited company) also represent the juridical structures chosen for the LPUs in the remaining medium-large towns in Italy (for the great majority of small towns, the LPU is a sort of BLPU). In particular, medium sized towns tend to prefer co-operative ownership of their own LPUs, while the larger towns tend to choose the limited company structure.

Brescia represents, though, a different and interesting case. In the sample, Brescia shows outstanding performance with respect to PV, high profitability, and high investments. And Brescia is also unique in terms of the relationship between the LPU and the LPA. The Brescia town council, since the second world war, has accorded great independence to the LPU. In this sense, Brescia acted to effectively liberalise its local services far in advance of any legal pressure to do so (particularly before law n° 142 in 1990) and well before other LPAs. Over a relatively long period ASM Brescia has invested a lot in its structure, applying the necessary know-how and supplying a good quality of services to the local community. This has been possible because of the relatively political stability of the LPA, and its liberal control over this LPU.

The political decisions that give a certain juridical structure to the LPUs are not, of course, without consequences. The performance of the LPUs is related, of course, to the specifics of the markets they operate in (particularly the energy sector), but it is important to consider the fact that the juridical structure also represents an important factor in

determining performance, as suggested by fig.13. Indeed the positive correlation between the juridical structure of the firm and profitability seem to suggest that the more independent is the LPU from the LPA, the more profitable the firms' activity. Of course, more profitable firms do not necessarily mean better quality of services provided in the community. It is true that larger and more independent firms have more profits, but it is also true that the quality of services provided to citizens by more co-operative firms in some local communities is, in some cases, excellent.

The empirical research gives weight to the above reasoning. It shows how the performances of the LPUs in the sample are developing; how the LPUs have different juridical structures; and how these two aspects of the evolution of the firms are related. Since the juridical structure derives from political decisions, and reflects different forms of relationship between political and economic aspects of regulation, we may draw inferences concerning the politics of regulation. LPUs that are more politically regulated – via direct links to the LPAs (such as the co-operative ones) have more limited flexibility and more stringent commitments. This does not necessarily mean inefficient activities. In many cases the quality of services provided is excellent. LPUs less linked to the LPAs behave in more market oriented and profitable way. This is not necessarily associated to services provided for all the citizens (exactly as for private firms).

The tentative conclusions I can draw from the above empirical discussion analysis have two aspects – one stressing the political-institutional structure, the other focussing on more economic issues. With respect to politics, it is clear that the LPU sector is undergoing a transformation which is introducing both more independence from the LPA's and more variety in the institutional arrangements. Interpreting this through the model of regulation by a partially benevolent party this should imply improved efficiency and a greater ability for LPUs to connect with all consumer preferences rather than the political preferences of a particular group. Thus, while in a traditional model of the Laffont-Tirole kind, where the political process is assumed to be essentially benevolent, political re-structuring of the kind undertaken in the Italian LPU sector might be expected to have little impact on efficiency (or perhaps even a negative impact to the extent that the firm is less tightly regulated by the assumed benevolent political agency); in models of the sort I discuss, where politics suffers from distortions and imperfections, we can expect political restructuring to have economic significance.

Considering our sample of firms most of the LPUs have been partially privatised but the majority of shares are still owned by the LPA. There is still considerable political

influence over the LPUs activities, but there does seem to be at least some evidence that reducing that political influence and structuring it within a regulatory framework that limits the extent to which the LPA can use the LPU to achieve essentially political ends, has some positive impact on the efficiency and market orientation of the LPU.

The privatisation process, though, does not automatically or necessarily reduce inefficiencies. The regulation and control of the LPUs activities remains a duty, in privatised world, charged to the LPAs. However, again, there is some reason to suppose that the reforms in the political structure that imply that regulation takes place in terms of the Contract of Service and the Charter of Service will imply greater consistency of regulation across different LPU and across different sectors which may also be expected to improve efficiency.

It should be noted, however, that the reform of LPAs and other regulatory bodies is still a very active and ongoing debate in Italy. If, for national public utilities some national regulatory authorities have been introduced to the system (Antitrust, Energy Authority etc.), there is still some considerable uncertainty concerning the future role of LPAs as LPUs become increasingly national and even international in their operations.

The second aspect, the more technical-economic aspect of the evolution for the LPUs, has also been considered in this research. This has been seen as a way to understand how the LPU have changed their range of activities, altered their performances, increased the number of services they provide together with efficiency of those services, as a consequence of privatisation. The privatisation process, and the greater political independence of the LPUs has allowed an industrial and economic evolution for those firms that is very different from the past, when the LPU sector was essentially static. The problem is how to interpret this new dynamism – whether to conclude the changes are evidence of improved efficiency, greater market orientation and the responsiveness to consumer demand, or whether to conclude that the changes are evidence of the firms being freed to exploit their monopoly power at the expense of consumers.

The data concerning the LPUs in our sample are not sufficiently rich to be decisive, but there is evidence that points to improvements in performance by these firms in the recent years, the privatisation processes and liberalisation have taken place. These improvements seem to be in efficiency and productivity, and other aspects of the firms operations that may indicate genuine social gains, rather than being biased simply in favour of profitability. If this relatively optimistic message is reasonable, it does not however imply that still further relaxation of the regulatory regime, or in the political

structure of the relationship between LPAs and LPUs , will be advantageous. Reducing political power does not mean necessarily increasing the welfare as a whole. It is still necessary to regulate the LPU sector, but there is at least some evidence that the newly emerging structure of political and economic forces will work rather better than the traditional system of close political control.

REFERENCES

Alesina, A. (1987). Macroeconomic policy in a two-party system as a repeated game. *Quarterly Journal of Economics*, 102, 651 - 678.

Alesina, A. (1988). Credibility and policy convergence in a two-party system with rational voters. *American Economic Review*, 78, 796 - 805.

Alesina, A. and R. Rosenthal (1995). *Partisan Politics, Divided Government and the Economy.* Cambridge: Cambridge University Press.

Allais, M. (1947). *Le problème de la coordination des transports et la théorie economique.* Bullettin des Ponts et Chaussées et de Mines.

Archibugi D., Ciccarone G., Marè M., Pizzetti B. and F. Violati (2000). *Relazioni triangolari nell'economia dei servizi pubblici,* vol.5, Economia Pubblica, pp.47-82.

Armstrong, M., Cowan S. and J. Vickers (1994). *Regulatory Reform: Economic Analysis and British Experience.* Cambridge, MA.: MIT Press.

Arrow, K.J. (1951). *Social Choice and Individual Values.* New York: John Wiley and Sons.

Atkinson, A. and J. Stiglitz (1980). *Lectures on Public Economics.* New York: McGraw-Hill.

Austen-Smith, D. and W. Riker (1987). Asymmetric information and the coherence of legislation. *American Political Science Review*, 81, 897- 918.

Austen-Smith, D. (1988). Elections, coalitions and legislative outcomes. *American Political Science Review*, 82, 405 - 422.

Austen-Smith, D. and J. Banks (1989). *Electoral Accountability and Incumbency*, in P.C. Ordeshook ed. *Models of Strategic Choice in Politics.* Ann Arbor: University of Michigan Press.

Ballard, C., Shoven, J. and J. Whalley (1985). General equilibrium computations of the marginal welfare costs of taxes in the U.S.A. *American Economic Review*, 75, 128- 138.

Banerjee A.V. (1997). A theory of Misgovernance, *Quarterly Journal of Economics*, vol. 451, pp- 1288-1332.

Banks, J.S. and R.K. Sundaram (1993). *Short-lived Principals, Long-lived Agents.* Typescript.

Baron, D.P. (1989). *Design of Regulatory Mechanisms and Institutions*, in Shmalensee, R. and R. Willig (eds). *Handbook of Industrial Organisation*, Vol.2. Amsterdam: North Holland.

Baron, D.P. (1993). Government Formation and Endogenous Parties. *American Political Science Review.*, 89, 1181-1206.

Baron, D.P. (1994). Electoral Competition with Informed and Uninformed Voters. *American Political Science Review*, 88, 33-47.

Barro, R. (1973). The Control of Politicians: An Economic Model. *Public Choice*, 14, 19-42.

Barzel, Y. (1982). Measurement Cost and the Organization of Markets. *Journal of Law and Economics*, , 27-48.

Baumol W.J., Panzar J and R.D. Willig (1982). *Contestable markets and the theory of Industry Structure*, New York, Hartcourt Brace Jovanovic

Bayley, E. E. (1973). *Economic Theory of Regulation Constraint.* Lexington, Massachusetts: Lexington Books.

Becker, G. (1983). A Theory of Competition Among Pressure Groups for Political Influence. *Quarterly Journal of Economics*, 98, 371-400.

Beesley, M. and S. Littlechild (July 1983). Privatization : Principles, Problems and Priorities. *Lloyds Bank Review*, 149, 1 - 19.

Beesley M.E. (1992). *Privatisation, Regulation and Deregulation,* London, Routledge.

Besley, T. and A. Case (1995). Incumbent Behaviour: Vote Seeking, Tax Setting and Yardstick Competition. *American Economic Review*, 85, 25-45.

Besley, T. and S. Coate (1997). An Economic Model of Representative Democracy, *Quarterly Journal of Economics*, 112, 85-114.

Besley, T. and S. Coate (2000). Elected versus appointed regulators: theory and evidence. WP7579, NBER.

Berg, S. V. and J. Tschirhart (1988). *Natural Monopoly Regulation. Principles and Practise.* Cambridge: Cambridge University Press.

Bishop, M. and J. Kay (1988). *Does Privatization Work? Lesson from the UK.* London: London Business School, Centre for Business Strategy.

Black, D. (1948). The decisions of a committee using a special majority. *Econometrica*, 52, 245-261.

Black, D. (1958). *Theory of Committees and Elections*. Cambridge: Cambridge University Press.

Boadway, R. and B. Neil (1984). *Welfare Economics*. Oxford: Basil Blackwell.

Bos, D. and L. Nett (1991). Employees Share Ownership and Privatisation: A Comment. *Economic Journal*, 101, 966-969.

Bos, D. (1993). Privatization in Europe: A Comparison of Approaches. *Oxford Review of Economic Policy*, 9, 85 - 111.

Brennan, G. (1993). *Economics*, in Goodin R.E. and P.Pettit (eds). *A Companion to Contemporary Political Philosophy*. Oxford: Basil Blackwell.

Brennan, G. and J. M. Buchanan (1978). Tax instruments as constraints on the disposition of public revenues. *Journal of Public Economics*, 9, 301-318.

Brennan, G. and J. M. Buchanan (1980). *The Power to Tax*. Cambridge: Cambridge University Press.

Brennan, G. and J. M. Buchanan (1983). Predictive Power and the Choice Among Regimes. *Economic Journal*, 93, 89 - 105.

Brennan, G. and J. M. Buchanan (1985). *The Reason of Rules*. Cambridge: Cambridge University Press.

Brennan, G. and A. P. Hamlin (1992). Bicameralism and Majoritarian Equilibrium. *Public Choice*, 74, 169 -179.

Brennan, G. and A. P. Hamlin (1993). Rationalizing Parliamentary System. *Australian Journal of Political Science*, 28, 443 - 457.

Brennan, G. and A. P. Hamlin (1995). Constitutional Political Economy: The political Philosophy of *Homo Economicus? Journal of Political Philosophy*, 3, 280-303.

Brennan, G. and A.P. Hamlin (1994). A Revisionist View of the Separation of Powers. *Journal of Theoretical Polities*, 6, 345 -368.

Brennan, G. and A.P. Hamlin (1996). *Two Theories of Rational Voting*. Typescript.

Brennan G, and A.P. Hamlin (1998). Expressive Voting and Electoral Equilibrium. *Public Choice*, 95, 149-175.

Brennan G, and A.P. Hamlin (2000). *Democratic Devices and Desires*. Cambridge: Cambridge University Press.

Brennan, G. and L. Lomasky (1993). *Democracy and Decision*. Cambridge: Cambridge University Press.

Breton, A. (1974). *The Economic Theory of Representative Government*. London: Macmillan Press.

Brown, S. J. and D. S. Sibley (1986). *The Theory of Public Utility Pricing.* Cambridge: Cambridge University Press.

Buchanan, J.M. (1972). *The Theory of Public Choice.* University Of Michigan Press.

Buchanan, J.M. (1986). *Liberty, Market and the State.* New York: New York University Press.

Buchanan, J.M. (1987). *Constitutional Economics*, in Eatwell, J. M. Millgate e P. Newman (eds). *The New Palgrave Dictionary Of Economics.* London: Macmillan.

Buchanan, J.M. (1990). The Domain of Constitutional Economics. *Constitutional Political Economy*, 1, 1-18.

Buchanan, J.M. (1993). How can Constitutions be Designed so that Politicians who seek to serve "Public Interest" can Survive. *Constitutional Political Economy*, 4, 1 - 6.

Buchanan, J.M. and G. Tullock (1962). *The Calculus of Consent.* Ann Arbor: University of Michigan Press.

Buchanan, J., Tollison R. and G. Tullock (1980). *Toward a Theory of the Rent Seeking Society.* College Station Texas: A&M Press.

Calabresi, G. (1968). Transaction costs, resource allocation and liability rules. A comment. *Journal of Law and Economics*, 67 - 73.

Calvert, R. (1985). Robustness of The Multidimensional Voting Model, Candidate Motivations, Uncertainty and Convergence. *American Journal of Political Science* 39, 69 - 95.

Calvert, R. L. (1986). *Models of Imperfect Information in Politics.* Harwood Academic Publishers.

Caves, R.E. (1990). Lessons from Privatization in Britain: State Enterprise Behaviour, Public Choice, and Corporate Governance. *Journal of Economic Behaviour and Organization*, 13, 145 - 169.

Coase, R.H. (1937). The nature of the firm. *Economica*, 4, 386 - 405.

Coase, R. H. (1945). Price and output policy of state enterprise: A comment. *Economic Journal*, 55, 112 - 113.

Coase, R. H. (1946). The marginal cost controversy. *Economica,* 13, 169 - 182.

Coase, R. H. (1960). The problem of social cost. *The Journal of Law and Economics.*

Coase, R.H. (1988). *The Firm, the Market and the Law.* Chicago: The University of Chicago Press.

Coate, S. and S. Morris (1993). *On the Form of Transfers to Special Interests.* Typescript.

Cooter, R.D. (1980). How the law circumvents Starrett's non convexity. *Journal of Economic Theory*, 499 - 504.

Cooter, R.D. (1982). The cost of Coase. *Journal of Legal Studies*, 1 - 34.

Cooter, R.D. (1987). *The Coase theorem*. In Eatwell, J. Milgate, M. e P. Newman (eds). *The New Palgrave: A Dictionary of Economics*. London: MacMillan.

Cornes, R. and T. Sandler (1986). *The theory of externalities, public goods, and club goods*. Cambridge: Cambridge University Press.

Coughlin, P. J and S. Nitzan (1981). Electoral Outcomes with Probabilistic Voting and Nash Social Welfare Maxima. *Journal of Public Economics*, 15, 113 - 122.

Coughlin, P. J. (1990). Majority rule and election models. *Journal of Economic Surveys*, 3, 157 - 188.

Coughlin, P.J. (1992). Probabilistic Voting Theory. *Cambridge University Press.*

Crew, M. A. and P. R. Kleindorfer (1979). *Public Utility Economics.* London: Macmillan Press.

D'Arge, R.C. and W. Schulze (1974). The Coase Proposition, Information Constraints and Long-Run Equilibrium. *The American Economic Review*, 763 - 72.

DeAlessi, L. (1980). The Economics of Property Rights: A Review of Evidence. *Research in Law and Economics*, 1, 1 - 47.

Demsetz, H (1968a).The cost of transacting. *Quarterly Journal of Economics,* 82, 55-66.

Demsetz, H (1968b). Why regulate utilities? *Journal of Law and Economics*, 11, 55 - 66.

Demsetz, H. (1979). *The growth of government*, manuscript.

Dixit A. (1996). *The making of Economic policy,* Cambridge Mass. MIT Press.

Downs, A. (1957). *An Economic Theory of Democracy*. New York: Harper and Row.

Downs, A. (1960). Why the Government is too small in a democracy. *World Politics*, 13, 541 - 563.

Elster, J. (1986). *The Market and The Forum: Three Varieties of Political Theory*, in Elster J. and A. Hylland (eds). *The Foundations of Social Choice Theory.* Cambridge: Cambridge University Press.

Enelow, J. and M. Hinich (1990). *Advances in the Spatial Theory of Voting.* Cambridge: Cambridge University Press.

Feenstra, R.C. and J.N. Bhagwati (1982). *Tariff seeking and the efficient tariff* , in Bhagwati, J.N. (ed.), *Import competition and response*. Chicago: University of Chicago Press.

Ferejohn, J. (1986). Incumbent performance and electoral control. *Public Choice*, 50, 5 - 25.

Fiorina, M. (1982). Legislative Choice of Regulatory Forms. *Public Choice*, 39, 33-66.

Foreman-Peck, J. and R. Millward (1994). *Public and Private Ownership of British Industry 1820 - 1990*. Oxford: Clarendon Press.

Galal, A., Jones L., Tandon P. and I. Vogelsang (1994). *Welfare Consequences of Selling Public Enterprises*. Washington D.C.: The World Bank. Oxford University Press.

Galeotti, G. (1992). *Informazione e istituzioni democratiche*, in Muraro, G. (a cura di) *Economia dell'informazione ed economia pubblica*. Bologna: Il Mulino.

Graham, C. and T. Prosser (1991). *Privatizing Public Enterprises*. Oxford: Clarendon Press.

Grossman, S. and O. Hart (1983). An Analysis of the Principal-Agent Problem. *Econometrica*, 51, 7- 45.

Grossman, S. and O. Hart (1986). The Costs and Benefits of ownership: A Theory of Vertical and Lateral Integration. *Journal of Political Economy*, 94, 691-719.

Grossman, G.M. and E. Helpman.(1994). Protection for Sale. *American Economic Review*, 84, 833-850.

Grossman, G.M. and E. Helpman.(1996a). Electoral Competition and Special Interest Politics. *Review of Economic Studies*, 63, 265-286.

Grossman, G.M. and E. Helpman.(1996b). *Electoral competition with policy compromise*. The Forbider Institute for Economic Research. Working Paper No 10-96.

Hamlin, A. P. (1986). *Ethics, Economics and the State*. Great Britain: Wheatsheaf Books LTD.

Hamlin, A.P. (1989). Rights, Indirect Utilitarianism and Contractarianism. *Economics and Philosophy*, 5, 167 - 185.

Hamlin, A. P. and P. Pettit (1989). *Normative Analisysis of the State: Some Preliminaries*, in Hamlin A. P. and P. Pettit (eds.). *The Good Polity*. Oxford: Basil Blackwell.

Hamlin, A. and M. Hjortlund (2000). Proportional Representation with Citizen Candidates, *Public Choice,* 103, 205-230.

Hardin, R. (1988). Constitutional Political Economy. Agreement on Rules. *British Journal of Political Science*, 18, 513 - 530.

Harrington, J.E. Jr. (1993). Economic Policy, Economic Performance and Elections. *American Economic Review*, 83, 27-42.

Harris, C. and P. Saunders (1994). *Privatization and Popular Capitalism*. Buckingham: Open University Press.

Hart O., Shleifer A and R.W. Vishny (1997). The Proper Scope of Government : Theory and Application to Prisons. *Quaterly Journal of Economics,* vol. 112, pp. 1127-1161.

Hausman, J. and J. Poterba (1987). Household behaviour and tax reform act of 1986. *Journal of Economic Perspective*, 1, 101 - 119.

Hinich, M. (1977). Equilibrium in Spatial Voting: The Median Voter Result Is an Artifact. *Journal of Economic Theory*, 16, 208 - 219.

Holtham, G. and J. Kay (1994). The Assessment: Institutions of Policy. *Oxfords Review of Economic Policy*, 10, 1 - 16.

Hotelling, H. (1929). Stability in Competition. *Economic Journal*, 39, 41 - 57.

Hotelling, H. (1938). The general welfare in relation to problems of taxation and of railway and utility rates. *Econometrica,* 6 , 242 - 269.

Kay, J. A. Mayer, C.P. and D. J. Thompson (1986). Privatization: A Policy in Search of a Rationale. *Economic Journal*, 96, 18 - 32.

Kahn, A.E. (1971). *The Economics of Regulation. Principle and Institution.* Vol. I e II. New York: Wiley.

Kikeri, S. Nellis J. and M. Shirley (1992). *Privatisation: The Lesson of Experience.* Washington D.C.: World Bank.

Laffont, J. J. (1993). *Comment on "Public versus Regulated Private Enterprise" by Willig*. Proceeding of the World Bank Annual Conference on Development Economics. Washington, D.C.: World Bank.

Laffont, J. J. (May 1994). The New Economics of Regulation Ten Years After. *Econometrica,* 62, 3, 507 - 537.

Laffont, J.J. (1996). Industrial policy and politics. *International Journal of Industrial Organization*, 14, 1-27.

Laffont, J.J. and J. Tirole (1986). Using Cost Observation to Regulate Firms. *Journal of Political Economy*, 94, 614-641.

Laffont, J. J. and J. Tirole, (1988). The Dynamics of Incentive Contracts. *Econometrica*, 56, 1153 - 1175.

Laffont, J. J. and J. Tirole, (1991). Privatization and Incentives. *Journal of Law, Economics and Organization*, 7, 89 - 105.

Laffont, J. J. and J. Tirole, (1993). *A Theory of Incentive in Procurement and Regulation.* Cambridge, MA: MIT Press.

Ledyard, J. (1984). The Pure Theory of Large Two-Candidate Elections. *Public Choice*, 44, 7-41.

Levy, B. and P.T. Spiller (1994). *Proceeding of the World Bank. Annual conference on development Economics - 1993*. Washington D.C.: World Bank.

Loeb, M. and W. Magat (1979). A decentralised method of utility regulation. *The Journal of Law and Economics*, 22, 399 - 404.

Malcomson, J. (1986). Rank - Order Contracts for a Principal with Many Agents. *Review of Economic Studies*, 21, 807 - 817.

Mill, J. S. (1863). *Considerations on Representative Government*. London: J. M. Dent (1910).

Montemartini, G. (1902). *Municipalizzazione dei pubblici servizi*. Milano: Società editrice libraria.

Moore, J. (1983). *"Why Privatise?", speech given to the annual conference of City of London stockbrokers Fielding, Newson Smith at Plaisterer's Hall, London Wall, on 1st November.* HM Treasury Press Release, 190/83.

Morton, R. and R. Myerson (1992). Campaign Spending with Impressionable Voters. *CMSEMS, Working paper No 1023*, Northwestern University.

Muller, D. C. (1989). *Public Choice II.* Cambridge: Cambridge University Press.

Muraro, G. (1992). *Economia dell'informazione ed economia pubblica*. Bologna: Il Mulino.

National Consumer Council (1989). *In the absence of competition*. London: Her Majesty's Stationary Office.

Noll, R. (1989). *The Politics of regulation*, in Schmalensee, R. e R. Willig (eds.). *Handbook of Industrial organisation*, Vol.2. Amsterdam: North-Holland.

North, D.C. (1990). *Institutions, Institutional Change and Economic Performance.* Cambridge.: Cambridge University Press.

Nozick, R. (1974). *Anarchy State and Utopia*. New York: Basic Books.

Oates, W.A. (1981). *Discussion of papers by R.A. Musgrave and G. Brennan*, in Ladd, H.F. e T.N. Tideman (eds.). *Tax and expenditure limitations, Coupe Papers on Public Economics 5*. Washington D.C.: The Urban Institute.

Olson, M. (1983). *La logica dell'azione collettiva*. Milano: Feltrinelli editore.

Ordeshook, P.C. (1986). *Game theory and political theory. An introduction.* Cambridge: Cambridge University Press.

Osborne, M. and A. Slivinski (1996). A model of political competition with citizen-candidates, *Quarterly Journal of Economics,* 111, 65-96.

Palfrey, T. (1984). Spatial Equilibrium with Entry, *Review of Economic Studies*, 51, 139-156.

Peacock, A.T. (1979). *The economic analysis of government.* Oxford: Martin Robertson.

Peltzman, S. (1976). Toward a more general theory of regulation. *Journal of Law and economics,* 19, 211 - 240.

Peltzman, S. (April 1990). How efficient is the voting market? *The Journal of Law and Economics*, 33, 27 - 63.

Persson, T. and G. Tabellini (1990). *Macroeconomic Policy, Credibility and Politics.* Harwood Academic Publisher.

Pint, E.M. (1991). Nationalisation vs. Regulation of Monopolies: The Effect of Ownership on Efficiency. *Journal of Public Economic*, 44, 131 - 164.

Pitkin, H. (1967). *The Concept of Representation.* Berkeley: University of California Press.

Rasmusen, E. (1990). *Games and Information.* Cambridge: Cambridge University Press.

Reagan, D.H. (1972). The problem of social cost revisited. *The Journal of Law and Economics*, 427 - 37.

Rogerson, W. P. (November 1985). The First - order approach to Pricipal-Agent Problems. *Econometrica,* 53, 1357 - 1367.

Roemer, J. E. (March 1995). Political cycles. *Economics and Politics*, 7, 1 - 20.

Rogoff, K. (1990). Equilibrium Political Budget Cycles. *American Economic Review*, 80, 21-36.

Romer, T. and H. Rosenthal (1986). Modern Political Economy and the Study of Regulation, in E. Bailey (ed.) *Public Regulation.* Cambridge: Cambridge University Press.

Schneider, F. and B.S. Frey (1988). *Politico-Economic Models of Macroeconomic Policy,* in T. D. Willet (ed.) *Political Business Cycle.* Durham, N.C.: Duke University Press.

Schwartz, M. (1986). The Nature and Scope of Contestability Theory. *Oxford Economic Papers,* 38 (supplement), 37 - 57.

Sen, A.K. (1970). *Collective Choice and Social Welfare.* San Francisco: Holden Day.

Shapiro, C and R. Willig (1990). *Economic Rationales for the Scope of Privatization.* Princeton, N.J.: Princeton University.

Shleifer A (1998). State versus Private Ownership, *Journal of Economic Perspectives,* 12, 133-150.

Shumpeter, J. A. (1950). *Capitalism, Socialism and Democracy.* New York: Harper and Brothers.

Sherman, R. (1989) *The Regulation of Monopoly.* Cambridge: Cambridge University Press.

Spiller, P. T. (April 1990). Politicians, Interest Groups, and Regulators: A Multiple-Principals Agency Theory of Regulation, or "Let them Be Bribed". *The Journal of Law and Economics*, 33, 65 - 101.

Spitzer, M.L. (1982). The Coase Theorem: some experimental tests. *Journal of law and Economics*, 73 - 98.

Stigler, G.J. (1971). The theory of economic regulation. *Bell Journal of Economics and Management science*, 2, 3 - 21.

Stiglitz, J.E. (1975). *Incentives Risk and Information: Notes Toward a theory of Hierarchy.* Bell Journal Of Economics, 6, 552 - 579.

Stiglitz, J.E. (1990). *The Economic Role of the State.* Cambridge, MA.: Basil Blackwell.

Tirole, J. (1986). Hierarchies and Bureaucracies. *Journal of Law and Economics*, 2, 181-214.

Tirole, J. (1990). *The Theory of Industrial Organization.* Cambridge, MA: MIT Press.

Tirole, J. (1994). The internal organisation of Government. *Oxford Economic Paper*, 40, 1 - 29.

Tovey, C. (1991). *The Instability of Instability.* Monterey: CA; Naval Postgraduate school. Unpublished.

Usher, D. (1994). The Significance of the Probabilistic Voting Theorem. *Canadian Journal of Economics*, 27, 433-45.

Varian, H. R. (1984). *Microeconomic Analysis: second edition.* New York: W. W. Norton & Company, Inc.

Veljanovsky, C. (1991). *Regulators and the Market. An assessment of the Growth of Regulation in the UK.* London: The Institute of Economic Affairs.

Veljanovsky, C. (1993). *The Need for a Regulatory Charter.* London: European Forum.

Vickers, J. S. (1985). Strategic Competition among the Few. Some Recent Developments in Oligopoly Theory. *Oxford Review of Economic Policy*, Vol. 1, 3, 39 - 62.

Weber, S. (1992). On Hierarchical Spatial Competition, *Review of Economic Studies*, 59, 407-425.

Weingast, B. R. (1984). The congressional-bureaucratic system: a principal-agent perspective. *Public Choice*, 44, 147 - 191.

Williamson, O. E. (1968). Economies as an Antitrust Defence: The welfare Trade-offs. *The American Economic Review*, Vol. 58, 18 - 36.

Williamson, O. (1975). *Markets and Hierarchies: Analysis and Antitrust Implications.* New York: The Free Press.

Williamson, O. (1979). Transaction costs economics: the governance of contractual relations. *Journal of Law and Economics*, 22, 233 - 261.

Williamson, O. (1981). The modern corporation: origins, evolution, attributes. *Journal of Economic Literature*, 19, 1537 - 1568.

Williamson, O. E. (1985). *The Economic Institutions of Capitalism.* New York, The Free Press.

Williamson, O. E. (1986). *Economic Organization.* Wheatsheaf Books LTD.

Williamson, O. (1988). The Logic of Economic Organisation. *Journal of Law, Economics, and Organization,* 4, 65 - 93.

Willig, R.D. (1994). *Public versus Regulated Private Enterprise.* Proceedings of the World Bank Annual Conference on Development Economics. Washington, D.C.: World Bank.

Wilson, J.Q. (1973). *Political Organisations.* New York: Basic Books.

Wilson, J.Q. (1980). *The Politics of regulation.* New York: Basic Books.

Wilson, J. D. (July 1989). An optimal tax treatment of Leviathan. *Economics and Politics*, Vol. I, 2, 97 - 117.

Wittman, D. (1977). Candidates with Policy Preferences: A Dynamic Model. *Journal of Economic Theory*, 15, 86-103.

Wittman, D. (1983). Candidate Motivation: A Synthesis of Alternative Theories. *American Political Science Review*, 77, 142 - 157.

Yarrow, G. (1986). Privatization in Theory and Practise. *Economic Policy*, 2, 324 - 377.

Yarrow, G. (November 1988). Privatization and Economic Performance. *The Economic Review*, Vol. 6, 2, 2 - 6.

Yarrow, G. E J. Vickers (1988). *Privatization: an Economic Analysis.* Cambridge, MA: MIT Press.

Zerbe, R.O. (1976). *The Problem of Social Cost: Fifteen Years Later*. In Lin S.A.Y. (ed.). *Theory and Measurement of Economic Externalities*. New York: New York University Press.

APPENDICES

APPENDIX 1

DETAILS OF QUESTIONNAIRES

Copies of the qualitative and quantitative questionnaires used are appended, as are the raw data returned from these questionnaires. Since the questionnaires are in Italian, the remainder of this brief note provides some details of their structure.

Accountability and data

The two questionnaires given to the LPUs were structured as follows:

- General data and information on the LPUs: in this section all the relevant general information on the LPUs is collected such as: firm's status, outsourcing, co-operation with other firms, organisational structure, standard of services (charter of services, certifications and so on);
- More sector specific information relating to water management, gas distribution, energy (electricity and heating), waste management;
- Each service sector is considered according to a double approach:

1. Service specific accounts and information on the service provided, investment plans, the number of employees in the specific sector, details of the Contract of Service;
2. Information on aspects of each industrial market/sector as follows:

- Water: distribution, sewerage, purification;
- Waste management: sweeping, waste collection, recycling, disposal;
- Gas: distribution;
- Energy: production, distribution

The specific information required is of both a technical and economical kind.

The technical refers to quantities, the number of employees and working hours, numbers of customers and so on.

The economical information refers to industrial accounts: costs, revenue, investments, depreciation allowances, employee costs an so on.

Questionnaire's aim

The main aim of these questionnaire is to collect information for a spatial and temporal analysis. The questionnaires represent the first stage of a process of collecting information on the LPUs. The second stage consists of direct interviews with the top management of the LPUs.

In particular, the main information required concerns:

- The positioning of the LPUs in relation to each segment of the industrial sector;
- The activity directly managed and those managed by contracting-out;
- The main changes with respect to the past;
- The main present and future strategic decisions;
- The alliances with other firms.

Data use

The information and data collected allows us to cover the main gaps occurring in the Italian official data already available. The information will permit spatial and temporal analysis.

- The temporal analysis will compare, over time, data in order to view, for each firm, the evolution both at general and at sector specific level. In particular we expect to find relevance on the following factors:

- dynamic evolution for the LPU toward more specialised or diversified services to customers;
- changing pattern of outsourcing for some activities;
- changing pattern of co-operation between LPUs;
- the evolution of company structure and governance;
- the LPUs productivity, efficiency and efficacy after the privatisation, liberalisation and regulation processes;

- The spatial analysis focuses on benchmarking the LPUs in the sample considered. The direct comparison between LPUs is not easy because of the different social-cultural context in which they operate. Looking at individual industrial sectors should facilitate the benchmarking operation. With the spatial analysis we want to focus on:

- Production of indicators for each specific section of each industrial sector ;
- Comparison of the specific indicators between LPUs.

QUESTIONARIO QUALITATIVO

Lo sviluppo di alleanze o accordi strategici tra imprese

A1. Con specifico riferimento alla Vostra impresa e considerando sia le alleanze già in essere sia quelle "in itinere", Vi preghiamo di indicarci, cortesemente, il settore, il/i partner e le finalità che la Vostra impresa intende perseguire attraverso tali accordi, scegliendo tra quelle sotto indicate o aggiungendone altre, specificandole ulteriormente:

N° Progr.	*SETTORE**	*PARTNER***	*FINALITA'****
1			
2			
3			
4			
5			
6			
7			

* *Indicare il settore: Gas, energia etc..*

** *Indicare il/i partner coinvolti (ad esempio altre Imprese Pubbliche locali, Imprese di servizi Pubblici Nazionali etc.).*

*** *Indicare le finalità secondo quanto schematizzato di seguito.*

Finalità degli accordi di cooperazione

1. Raggiungimento di economie di scala
2. Strategie di diversificazione ed economie di scopo
3. Rafforzamento del potere contrattuale o delle barriere all'entrata
4. Aumento delle risorse finanziarie
5. Rafforzamento del potere di gruppi manageriali
6. Suddivisione dei rischi di entrata in nuovi settori
7. Altro (*specificare*):

A2. Vi preghiamo infine di commentare brevemente (in termini di condivisione o meno) le seguenti ipotesi di lavoro:

1. Le alleanze tra imprese pubbliche locali (IPL) tendono a verificarsi tra capoluoghi, invece di svilupparsi dalla città alla provincia secondo una logica di settore (acqua, rifiuti...);

---

2. Gli accordi di cooperazione fra IPL sembrano seguire i confini regionali (salvo i grandi accordi come nel caso del settore elettrico), trascurando migliori opportunità di cooperazione con aziende anche solo di Regioni vicine: eredità culturale, condizionamento dovuto alle reti di rapporti preesistenti fra le imprese, o cos'altro?

---

3. Le IPL, una volta alleatesi, tendono a ricercare partner nella misura in cui pensano che sia utile, con particolare riferimento ai nuovi mercati (es. telecomunicazione: allearsi con un soggetto che ha già un portafoglio clienti e un know how, e che sia disposto a condividere i rischi della cablatura); al consolidamento in quelli tradizionali interessati da riforme "pericolose" (es. gas: scopo dell'accordo è avere un operatore che controlla un po' di offerta di materia prima); alla ricerca di mercati all'estero;

---

4. Le IPL tendono ad evitare accordi con lo stesso operatore in più di un settore;

---

5. Le IPL privatizzate, particolarmente quelle quotate in borsa o che intendono farlo, mostrano un interesse molto maggiore per i nuovi business che per quelli tradizionali; si mostrano molto refrattarie ad accettare la tradizionale logica comunale della

""sussidiazione incrociata""(servizi ricchi per finanziare i servizi poveri senza aumentare troppo le tariffe). Sui mercati tradizionali, puntano a mantenere gli standard di servizio e a vedere il loro ruolo come "interpreti di quello che dice la legge", con contratti di servizio abbastanza poveri nei contenuti, e concentrano semmai gli sforzi (e le iniziative comuni) verso la riduzione dei costi operativi;

---

6. Eventuali altri suggerimenti (*facoltativo*) :

Outsourcing

In passato la compresenza fra funzioni "politiche" e funzioni "produttive" è stata vista come un tipico elemento di vantaggio competitivo delle aziende pubbliche locali rispetto a soluzioni basate sul *contracting out*. Il fatto, poi, che l'azienda avesse al suo interno capacità produttive e tecnologiche avrebbe permesso alle aziende un dialogo più consapevole con il mercato, partendo da una posizione di forza; l'esercizio delle fasi industriali avrebbe consentito un più efficace e continuo monitoraggio del mercato, aggiornamento tecnologico, sviluppo di *know-how*. Questo aspetto è stato sempre enfatizzato dal top-management delle aziende pubbliche locali.

A dire il vero, non mancano casi in cui l'azienda pubblica locale funge da mero "integratore", svolgendo solo funzioni di tipo organizzativo, ma acquisendo dall'esterno tutte le fasi produttive. Questo tipo di struttura organizzativa si riscontra, ad esempio, in molti consorzi che operano nel settore dei rifiuti, dove "l'azienda" ha una struttura estremamente leggera – una decina di dipendenti al massimo – mentre tutte le fasi "industriali" sono svolte da operatori privati.

B1.a) Ritenete che il presidio di funzioni operative, o meglio ancora la loro effettuazione diretta, comporti ancora questo tipo di vantaggi?

---

b) Quali sono le fasi del ciclo produttivo che a vostro avviso è essenziale svolgere direttamente per mantenere il "vantaggio competitivo" (di seguito alcuni esempi; si prega di motivare la risposta):

- Gestione dei rapporti con l'utenza

- Progettazione

- Attività labour-intensive (es. raccolta dei rifiuti)

- Servizi amministrativi

- Fatturazione, lettura, riscossione, sportello

- Call-center

- Logistica, magazzino

- Ricerca e sviluppo

- Monitoraggio reti, telecontrollo

- Analisi

- Altro…

B2. Vi preghiamo di indicarci le principali funzioni ed attività (anche di carattere esecutivo) che attualmente:

a) svolgete direttamente;

---

b) quali affidate ad altre imprese? (Imprese collegate o imprese esterne).

B3 Vi preghiamo altresì di indicarci per il prossimo futuro:

a) se intendete estendere il ricorso "all'outsourcing";

---

b) le funzioni o le attività attualmente svolte all'interno della Vostra impresa che intendete affidare a terzi:

B4 Vi preghiamo infine di specificare i motivi fondamentali che Vi spingono a sviluppare (o a contenere) l"outsourcing":

C <u>Evoluzione dei rapporti con gli enti locali</u>

C1. Sempre con riferimento alla Vostra specifica esperienza ritenete che, anche in relazione alla normativa "in itinere" per la liberalizzazione nel settore, i rapporti con gli Enti locali di cui siete emanazione presentano fin d'ora cambiamenti rilevanti? In caso affermativo, quali e con quali implicazioni strategiche per la Vostra impresa?

(*Fare riferimento al tipo di rapporto con l'Ente Locale, ad esempio:*

- *Rapporto Formalizzato/non formalizzato-fiduciario;*
- *Controllo ex-ante/ex-post;*
- *"Oneri Impropi"*
- *Contratto di servizio/Carta dei servizi*)

C2. Vi preghiamo inoltre di misurarVi, anche criticamente, con le seguenti ipotesi di lavoro (alquanto pessimistiche):

1. L'appropriatezza dei servizi resi rispetto alle specificità territoriali e socio-culturali locali tenderà a non riferirsi più ai bisogni collettivi espressi dai soggetti politici locali (al di là di quanto previsto nei contratti di servizio), ma ai segmenti di mercato prescelti dall'impresa SPL, in una logica di segmentazione del mercato finalizzata alla creazione di valore agli azionisti;
2. La crescente formalizzazione dei rapporti contrattuali tra ente locale e azienda attenuerà considerevolmente il rapporto fiduciario che si stabiliva tra gli enti locali e le *utilities* con la vecchia disciplina;
3. La crescente autonomia delle imprese SPL rispetto agli enti locali arriverà anche dalla trasformazione delle loro strutture societarie ed organizzative;
4. Il nuovo processo di sviluppo richiede la focalizzazione su segmenti più redditizi e al limite l' attuazione di economie di replicazione attraverso la ricerca di nuovi mercati locali in altre aree. Questo sottrae risorse che potrebbero essere destinate, invece, allo sviluppo di altri servizi nel contesto locale.
5. Potranno manifestarsi discrasie tra la ricerca di economie di specializzazione (anche attraverso accordi che investono una pluralità di contesti locali) e la ricerca di economie di scopo attraverso l'offerta di una pluralità di servizi nello stesso contesto locale;
6. Potranno manifestarsi discrasie tra logiche di sviluppo centripete (dal centro verso le comunità minori che gravitano su di esso) e centrifughe (con altri centri esterni dotati di capacità analoghe).
7. Il Comune tenderà a comportarsi più come azionista di maggioranza, acrescendo le risorse organizzabili con cessioni di quote che come enti interessati allo sviluppo di nuovi servizi pubblici locali.

Dati generali dell'azienda

1 sigla _____

2 denominazione _____

3 indirizzo _____

4 città _____ **5** CAP _____ **6** provincia _____

7 telefono _____ **8** fax _____

9 e-mail _____

10 indirizzo web _____

11 ragione sociale (barrare solo un'opzione):

1 azienda municipalizzata non adeguata alla L.142/90 ☐

2 azienda municipalizzata adeguata alla L.142/90 ☐

3 consorzio non adeguato alla L.142/90 ☐

4 consorzio/azienda consortile adeguato alla L.142/90 ☐

5 S.p.A. a prevalente o totale capitale pubblico ☐

6 S.p.A. a prevalente o totale capitale privato ☐

7 S.r.l. a prevalente o totale capitale pubblico ☐

8 S.r.l. a prevalente o totale capitale privato ☐

9 altro (specificare) _____

12 SERVIZI EROGATI

Servizio idrico

1 acquedotto (adduzione e/o distribuzione) _____ ☐

se sì, da quando? _____

2 fognatura _____ ☐

se sì, da quando? _____

3 depurazione _____ ☐

se sì, da quando? _____

Servizio gestione rifiuti

1 spazzamento strade _____ ☐

se sì, da quando _____

2 raccolta RSU _____ ☐

se sì, da quando _____

3 raccolta differenziata _____ ☐

se sì, da quando _____

4 smaltimento _____ ☐

se sì, da quando _____

Distribuzione gas _____ ☐

se sì, da quando _____

Energia elettrica

1 produzione _____ ☐

se sì, da quando _____

2 trasporto _____ ☐

se sì, da quando _____

3 distribuzione _____ ☐

se sì, da quando _____

13 comuni soci (n.) _____

14 nome del comune di riferimento _____

15 totale dipendenti (n.) _____

16 trasformazioni societarie dell'azienda:

1 trasformazione in S.p.A. avvenuta ☐ prevista ☐

data _____

2 fusioni con altre società (indicare quelle avvenute e/o previste)

società data

_____

_____

_____

_____

_____

_____

_____

3 scorpori di alcuni settori di attività (avvenuti e/o previsti)

_____

_____

_____

_____

_____

_____

_____

_____

4 acquisizioni di altre aziende/società (avvenute e/o previste)

società data quota di capitale posseduto

_____

_____

_____

_____

_____

_____

_____

5 nessuna delle precedenti ☐

Indicare tipologia e data _____

_____

_____

_____

17 vengono effettuate attività in outsourcing? sì ☐ no ☐

se sì, elencatele

18 principali relazioni cooperative

con quali soggetti	in quali aree di attività

19 carta dei servizi? sì ☐ no ☐

se no per quando è prevista? 2000 ☐ 2001 ☐ 2002 ☐

20 certificazioni in possesso dell'azienda:

1 cert.UNI EN ISO 9001 per la qualità ☐ (Per Sez. Trasporti e N.U.- Per i servizi a rete ISO 9002)

2 cert. UNI EN ISO 14001 ☐ (Per il sito "C.le Lamarmora" di cogeneraz. E.E. e calore)

3 registrazione EMAS ☐

21 è stata avviata un'indagine di customer's satisfation? si ☐ no ☐

se sì, con quali modalità?

22 Utili dell'azienda e apporti al Comune/Comuni di riferimento

nel 1996	Utile		.000.000
	Apporto		.000.000
nel 1997	Utile		.000.000
	Apporto		.000.000
nel 1998	Utile		.000.000

	Apporto	_____ .000.000
nel 1999	Utile	_____ .000.000
	Apporto	_____ .000.000

23 Fornire una descrizione sintetica della struttura organizzativa dell'azienda (allegare un foglio)

Allegati 1 e 2

Servizio idrico

ANNO 1996

1 Erogazione del servizio

1 dipendenti (n.medio annuo) * _____ n.

di cui dirigenti _____ n.

quadri _____ n.

impiegati e operai _____ n.

(*) indicare il personale direttamente impiegato e quello assegnato al settore in base alla quota di costo del personale imputata al settore idrico

2 investimenti effettuati nell'esercizio _____ .000.000

2 Conto economico

1 Valore della produzione _____ .000.000

di cui

1a ricavi delle vendite e prestazioni _____ .000.000

1b ricavi da copertura costi sociali _____ .000.000

1c incrementi di immobilizz. per lavori interni _____ .000.000

1d contributi in conto esercizio _____ .000.000

2 Costi della produzione _____ .000.000

di cui

2a per acquisti materie prime, di consumo, merci _____ .000.000

2b per servizi * _____ .000.000

2c personale _____ .000.000

2d ammortamenti _____ .000.000

2e svalutazioni _____ .000.000

2f accantonamenti _____ .000.000

3 Reddito operativo (1-2) _____ .000.000

4 Proventi e oneri finanziari _____ .000.000

4a proventi finanziari _____ .000.000

4b oneri finanziari _____ .000.000

5 Rettifiche di valore di attività finanziarie _____ .000.000

5a rivalutazioni _____ .000.000

5b svalutazioni _____ .000.000

6 Proventi e oneri straordinari _____ .000.000

6a proventi straordinari _____ .000.000

6b oneri straordinari _____ .000.000

7 Risultato prima delle imposte (somma da 3 a 6) _____ .000.000

8 Imposte sul reddito di esercizio _____ .000.000

9 Risultato di esercizio (7-8) _____ .000.000

10 Rettifiche di valore per norme tributarie _____ .000.000

11 Accantonamenti operati per norme tributarie _____ .000.000

12 Utile/perdita di esercizio (9-10-11) _____ .000.000

13 Indicare, se possibile, il criterio d'imputazione alla filiera delle variabili contabili di carattere generale

_____

_____

_____

3 Adduzione

1 investimenti nell'esercizio _____ .000.000

2 investimenti programmati per l'esercizio successivo _____ .000.000

3 n. medio annuo dipendenti* _____ n.

ore lavorate (migliaia) _____ .000

costo del personale |_____| .000.000

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio Adduzione.

4 clienti di acqua addotta e non distribuita direttamente |_____| n.

5 acqua addotta (o prodotta) |_____| .000 mc

6 provenienza acqua addotta (%)

di superficie |_____| %

sotterranea |_____| %

acquistata da terzi |_____| %

altro |_____| %

7 acqua non contabilizzata (comprese perdite) |_____| .000 mc

8 acqua venduta ad altri distributori |_____| .000 mc

9 rete acquedotto adduzione (km) |_____| km

10 contabilità industriale

1 costi generali serv. Adduzione |_____| .000.000

2 costi diretti serv. Adduzione |_____| .000.000

3 totale ricavi serv. Adduzione |_____| .000.000
di cui

3a ricavi Adduzione (da vendita a terzi) |_____| .000.000

3b ricavi da contributi in c. esercizio |_____| .000.000

11 Indicare, se possibile, il criterio d'imputazione alla fase Adduzione delle variabili contabili di carattere generale

_____

_____

4 Distribuzione

1 investimenti nell'esercizio _____ .000.000

2 investimenti programmati per l'esercizio successivo _____ .000.000

3 n. medio annuo dipendenti* _____ n.

ore lavorate (migliaia) _____ .000

costo del personale _____ .000.000

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata alla fase Distribuzione.

4 totale utenze Distribuzione _____ n.

di cui utenze domestiche (stima) _____ n.

5 abitanti serviti (n.) _____ n.

6 elenco comuni serviti (indicare in allegato)

7 acqua non contabilizzata (comprese perdite) _____ .000 mc

8 acqua venduta a utenti finali _____ .000 mc

9 rete acquedotto Distribuzione (km) _____ km

10 contabilità industriale

1 costi generali serv. Distribuzione _____ .000.000

2 costi diretti serv. Distribuzione _____ .000.000

3 totale ricavi serv. Distribuzione _____ .000.000

di cui

3a ricavi della Distribuzione (da tariffa) _____ .000.000

3b ricavi da contributi in c. esercizio _____ .000.000

11 Indicare, se possibile, il criterio d'imputazione alla fase Distribuzione delle variabili contabili di carattere generale

_____

_____

4 Fognatura

1 investimenti nell'esercizio _____ .000.000

2 n. medio annuo dipendenti* _____ n.

ore lavorate (migliaia) _____ .000

costo del personale _____ .000.000

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio Fognatura.

3 abitanti serviti (n.) _____ n.

4 elenco comuni serviti (indicare in allegato)

5 rete fognaria

km fogne miste _____ km

km fogne nere _____ km

km fogne bianche _____ km

6 Contabilità industriale

1 costi generali serv. Fognatura _____ .000.000

2 costi diretti serv. Fognatura _____ .000.000

3 totale ricavi serv. Fognatura _____ .000.000

7 Indicare, se possibile, il criterio d'imputazione alla fase Fognatura delle variabili contabili di carattere generale

_____

_____

5 Depurazione

1 investimenti nell'esercizio _____ .000.000

2 n. medio annuo dipendenti* _____ n.

ore lavorate (migliaia) _____ .000

costo del personale _____ .000.000

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio Depurazione.

3 abitanti serviti (n.) _____ n.

4 elenco comuni serviti (indicare in allegato)

5 C.O.D. trattato (tonnellate anno) _____ tonnellate

6 volume di acque reflue industriali trattate _____ .000 mc

7 contabilità industriale

1 costi generali serv. Depurazione _____ .000.000

2 costi diretti serv. Depurazione _____ .000.000

3 totale ricavi serv.Depurazione (*) _____ .000.000

di cui

3a ricavi da acque reflue a tariffa o canone civile _____ .000.000

3b ricavi da reflui industriali a tariffa regionale _____ .000.000

3c ricavi da attività commerciale _____ .000.000

8 Indicare, se possibile, il criterio d'imputazione alla fase Depurazione delle variabili contabili di carattere generale

_____

_____

Servizio gestione rifiuti

ANNO 1996

1 Erogazione servizio

1 dipendenti (n.medio annuo)* |_____| n.

di cui dirigenti |_____| n.

quadri |_____| n.

impiegati e operai |_____| n.

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al settore Rifiuti

2 investimenti effettuati nell'esercizio |_____| .000.000

2 Conto economico

1 Valore della produzione |_____| .000.000

di cui

1a ricavi delle vendite e prestazioni |_____| .000.000

1b ricavi da copertura costi sociali |_____| .000.000

1c incrementi di immobilizz. per lavori interni |_____| .000.000

1d contributi in conto esercizio |_____| .000.000

2 Costi della produzione |_____| .000.000

di cui

2a per acquisti materie prime, di consumo, merci |_____| .000.000

2b per servizi |_____| .000.000

2c personale |_____| .000.000

2d ammortamenti |_____| .000.000

2e svalutazioni |_____| .000.000

2f accantonamenti |_____| .000.000

3 Reddito operativo (1-2) |_____| .000.000

4 Proventi e oneri finanziari |_____| .000.000

4a proventi finanziari |_____| .000.000

4b oneri finanziari |_____| .000.000

5 Rettifiche di valore di attività finanziarie |_____| .000.000

5a rivalutazioni |_____| .000.000

5b svalutazioni |_____| .000.000

6 Proventi e oneri straordinari |_____| .000.000

6a proventi straordinari |_____| .000.000

6b oneri straordinari |_____| .000.000

7 Risultato prima delle imposte (somma da 3 a 6) |_____| .000.000

8 Imposte sul reddito di esercizio |_____| .000.000

9 Risultato di esercizio (7-8) |_____| .000.000

10 Rettifiche di valore per norme tributarie |_____| .000.000

11 Accantonamenti operati per norme tributarie |_____| .000.000

12 Utile/perdita di esercizio (9-10-11) |_____| .000.000

13 Indicare, se possibile, il criterio d'imputazione alla filiera delle variabili contabili di carattere generale

_____

_____

3 Spazzamento

1 investimenti nell'esercizio |_____| .000.000

2 n. medio annuo dipendenti* |_____| n.

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio Spazzamento.

ore lavorate (migliaia) |_____| .000

costo del personale |_____| .000.000

3 abitanti serviti (n.) |_____| n.

4 elenco comuni serviti (indicare in allegato)

5 spazzatrici (n.) |_____| n.

6 km spazzati |_____| km

7 Contabilità industriale

1 costi generali serv. Spazzamento _____ .000.000

2 costi diretti serv. Spazzamento _____ .000.000

8 Indicare, se possibile, il criterio d'imputazione alla fase Spazzamento delle variabili contabili di carattere generale

_____

_____

4 Raccolta (compresa raccolta differenziata)

1 investimenti nell'esercizio _____ .000.000

2 n. medio annuo dipendenti* _____ n.

ore lavorate (migliaia) _____ .000

costo del personale _____ .000.000

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio Raccolta.

3 abitanti serviti (n.) _____ n.

4 elenco comuni serviti (indicare in allegato) Comune di Brescia

5 automezzi di raccolta (n.) _____ n.

6 cassonetti (n.) _____ n.

7 totale rifiuti raccolti (tonnellate) _____ tonnellate

di cui raccolta differenziata

carta _____ tonnellate

vetro _____ tonnellate

plastica _____ tonnellate

legno _____ tonnellate

metallo _____ tonnellate

organico _____ tonnellate

ingombranti _____ tonnellate

altro _____ tonnellate

8 Contabilità industriale

1 costi generali serv. Raccolta |_____| .000.000

2 costi diretti serv. Raccolta |_____| .000.000

3 di cui costi Raccolta differenziata |_____| .000.000

9 Indicare, se possibile, il criterio d'imputazione alla fase Raccolta delle variabili contabili di carattere generale

_____

_____

5 Smaltimento

1 investimenti nell'esercizio |_____| .000.000

2 n. medio annuo dipendenti* |_____| n.

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio Smaltimento.

ore lavorate (migliaia) |_____| .000

costo del personale |_____| .000.000

3 abitanti serviti (n.) |_____| n.

4 elenco comuni serviti (in allegato)

5 impianti di smaltimento dell'azienda:

discariche controllate

numero impianti |_____| n.

capacità di rifiuti smaltiti |_____| tonnellate

impianti di compostaggio

numero impianti |_____| n.

capacità di rifiuti smaltiti |_____| tonnellate

inceneritori

numero impianti |_____| n.

capacità di rifiuti smaltiti |_____| tonnellate

altri impianti

numero impianti |_____| n.

capacità di rifiuti smaltiti |_____| tonnellate

6 rifiuti smaltiti (tonnellate)

in impianti propri dell'azienda |_____| tonnellate

in impianti di terzi |_____| tonnellate

7 Contabilità industriale

1 costi generali serv. Smaltimento |_____| .000.000

2 costi diretti serv. Smaltimento |_____| .000.000

3 di cui costi di Smaltimento in impianti di terzi |_____| .000.000

4 totale ricavi serv.Smaltimento |_____| .000.000
di cui

4a ricavi per smaltimento rifiuti di terzi |_____| .000.000

4b ricavi vendita materiale recuperato o energia |_____| .000.000

8 Indicare, se possibile, il criterio d'imputazione alla fase Smaltimento delle variabili contabili di carattere generale

_____

_____

Distribuzione gas
ANNO 1996

1 Erogazione del servizio

1 investimenti effettuati nell'esercizio _____ .000.000

2 dipendenti (n.medio annuo)* _____

di cui dirigenti _____

quadri _____

impiegati e operai _____

(*) indicare il personale direttamente impiegato e quello assegnato alla filiera in base alla quota di costo del personale imputata al servizio.

3 totale ore lavorate (migliaia) _____ .000

costo del personale _____ .000.000

4 utenze

civili solo cucina _____ n.

civili cucina+riscaldamento _____ n.

industriali _____ n.

altre utenze _____ n.

5 abitanti serviti (n.) _____ n.

6 elenco comuni serviti (indicare in allegato)

7 rete gas (km)

tubazioni ad alta pressione _____ km

tubazioni media pressione _____ km

tubazione bassa pressione _____ km

allacciamenti (stima) _____ km

8 gas immesso in rete

volume (migliaia mc) _____ .000 mc

energia (Mcal) _____ Mcal

9 volume perdite (migliaia mc) |_____|.000 mc

10 volume autoconsumi (migliaia mc) |_____|.000 mc

11 volume gas venduto (migliai mc) |_____|.000 mc

12 gas venduto per tipologia di gas (migliaia mc)

metano |_____|.000 mc

GPL |_____|.000 mc

altri gas |_____|.000 mc

13 gas venduto per tipologia di utenze (migliaia mc)

utenze civili solo cucina |_____|.000 mc

utenze civili cucina + riscaldm. |_____|.000 mc

utenze industriali |_____|.000 mc

altre utenze |_____|.000 mc

2 Conto economico

1 Valore della produzione |_____| .000.000
di cui

1a ricavi delle vendite e prestazioni |_____| .000.000

1b ricavi da copertura costi sociali |_____| .000.000

1c incrementi di immobilizz. per lavori interni |_____| .000.000

1d contributi in conto esercio |_____| .000.000

2 Costi della produzione |_____| .000.000
di cui

2a per acquisti materie prime, di consumo, merci |_____| .000.000

2b per servizi * |_____| .000.000

2c personale |_____| .000.000

2d ammortamenti |_____| .000.000

2e svalutazioni |_____| .000.000

2f accantonamenti |_____| .000.000

3 Reddito operativo (1-2) |_____| .000.000

4 Proventi e oneri finanziari |_____| .000.000

4a	proventi finanziari	.000.000
4b	oneri finanziari	.000.000
5	Rettifiche di valore di attività finanziarie	.000.000
5a	rivalutazioni	.000.000
5b	svalutazioni	.000.000
6	Proventi e oneri straordinari	.000.000
6a	proventi straordinari	.000.000
6b	oneri straordinari	.000.000
7	Risultato prima delle imposte (somma da 3 a 6)	.000.000
8	Imposte sul reddito di esercizio	.000.000
9	Risultato di esercizio (7-8)	.000.000
10	Rettifiche di valore per norme tributarie	.000.000
11	Accantonamenti operati per norme tributarie	.000.000
12	Utile/perdita di esercizio (9-10-11)	.000.000

13 Contabilità industriale

1	Ricavi da utenze civili	.000.000
2	Ricavi da utenze industriali	.000.000
3	Ricavi da altre utenze	.000.000

14 Indicare, se possibile, il criterio d'imputazione alla filiera delle variabili contabili di carattere generale

Energia elettrica e Teleriscaldamento

ANNO 1996

1 Erogazione servizio

1 dipendenti (n.)* |_____|

di cui dirigenti |_____|

quadri |_____|

impiegati e operai |_____|

(*) indicare il personale direttamente impiegato e quello assegnato alla filiera in base alla quota di costo del personale imputata al settore energia elettrica e teleriscaldamento

2 investimenti effettuati nell'esercizio |_____| .000.000

2 Conto economico

1 Valore della produzione |_____| .000.000

di cui

1a ricavi delle vendite e prestazioni |_____| .000.000

1b ricavi da copertura costi sociali |_____| .000.000

1c incrementi di immobilizz. per lavori interni |_____| .000.000

1d contributi in conto esercio |_____| .000.000

2 Costi della produzione |_____| .000.000

di cui

2a per acquisti materie prime, di consumo, merci |_____| .000.000

2b per servizi * |_____| .000.000

2c personale |_____| .000.000

2d ammortamenti |_____| .000.000

2e svalutazioni |_____| .000.000

2f accantonamenti |_____| .000.000

3 Reddito operativo (1-2) |_____| .000.000

4 Proventi e oneri finanziari |_____| .000.000

4a proventi finanziari |_____| .000.000

4b oneri finanziari |_____| .000.000

5 Rettifiche di valore di attività finanziarie |_____| .000.000

5a rivalutazioni |_____| .000.000

5b svalutazioni | | .000.000

6 Proventi e oneri straordinari | | .000.000

6a proventi straordinari | | .000.000

6b oneri straordinari | | .000.000

7 Risultato prima delle imposte (somma da 3 a 6) | | .000.000

8 Imposte sul reddito di esercizio | | .000.000

9 Risultato di esercizio (7-8) | | .000.000

10 Rettifiche di valore per norme tributarie | | .000.000

11 Accantonamenti operati per norme tributarie | | .000.000

12 Utile/perdita di esercizio (9-10-11) | | .000.000

13 Indicare, se possibile, il criterio d'imputazione alla filiera delle variabili contabili di carattere generale

_____

_____

_____

3 Produzione Energia elettrica e Calore

1 investimenti nell'esercizio | | .000.000

2 n. medio annuo dipendenti* | | n.

ore lavorate (migliaia) | | .000

costo del personale | | .000.000

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio.

3 potenza installata (MW)

idroelettrica | | MW

termoelettrica | | MW

cogenerazione | | MW

fonti rinnovabili | | MW

4 energia elettrica prodotta (GWh)

idroelettrica _____ GWh

termoelettrica _____ GWh

cogenerazione _____ GWh

fonti rinnovabili _____ GWh

5 calore prodotto (Gcal) _____ Gcal

6 Contabilità industriale

1 costi generali serv. Produzione _____ .000.000

2 costi diretti serv. Produzione energia Elett. _____ .000.000

3 costi diretti serv. Produzione Calore _____ .000.000

4 totale ricavi serv.Produzione energia elettrica _____ .000.000

5 totale ricavi serv. Produzione calore _____ .000.000

7 Indicare, se possibile, il criterio d'imputazione alla fase Produzione delle variabili contabili di carattere generale

_____

_____

4 Trasporto energia elettrica

1 investimenti nell'esercizio _____ .000.000

2 n. medio annuo dipendenti* _____ n.

ore lavorate (migliaia) _____ .000

costo del personale _____ .000.000

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio Trasporto.

3 rete di trasporto alta tensione (Km) _____ km

4 stazioni di trasformazione

numero _____ n.

potenza installata _____ MVA

5 energia elettrica trasportata _____ GWh

5 Distribuzione energia elettrica e calore

1 investimenti nell'esercizio |_____| .000.000

2 n. medio annuo dipendenti* |_____| n.

ore lavorate (migliaia) |_____| .000

costo del personale |_____| .000.000

(*) indicare il personale direttamente impiegato e quello assegnato alla fase in base alla quota di costo del personale imputata al servizio Distribuzione.

3 utenze domestiche energia elettrica

n. |_____| n.

consumi |_____| GWh

4 utenze non domestiche energia elettrica

n. |_____| n.

consumi |_____| GWh

5 utenze teleriscaldamento |_____| n.

6 illuminazione pubblica

n. punti luce |_____| n.

consumi |_____| GWh

7 impianti semaforici

n. |_____| n.

consumi |_____| GWh

8 abitanti serviti |_____| n.

9 elenco comuni serviti (in allegato)

10 rete di distribuzione (km)

energia elettrica media tensione |_____| km

energia elettrica bassa tensione |_____| km

teleriscaldamento (doppio tubo) |_____| km

11 cabine di trasformazione energia elettrica

numero |_____| n.

potenza installata |_____| MVA

12 energia elettrica distribuita

energia prodotta |_____| GWh

energia ricevuta (acquistata) |_____| GWh

energia ceduta ad altre imprese di distribuzione |_____| GWh

energia autoconsumata |_____| GWh

perdite |_____| GWh

totale energia distribuita |_____| GWh

13 Calore distribuito (erogato) |_____| Gcal

14 Contabilità industriale

1 costi generali serv. Distribuzione |_____| .000.000

2 costi diretti serv. Distribuzione energia elet. |_____| .000.000

3 costi diretti serv. Distribuzione calore |_____| .000.000

4 totale ricavi serv.Distribuzione energia elet. |_____| .000.000

5 totale ricavi servizio teleriscaldamento |_____| .000.000

15 Indicare, se possibile, il criterio d'imputazione alla fase Distribuzione delle variabili contabili di carattere generale

_____

_____

APPENDIX 2

GRUPPO ACEA ROMA

Generale

Dati in mllioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	1.089.589	407.019		455.227	186.582	157.828	153.836	898.554	1.243.425
1997	1.130.722	412.148		492.408	123.749	228.795	163.748	955.009	1.294.470
1998	1.086.935	363.313		529.741	147.358	234.542	184.260	1.167.285	1.271.195
1999	1.102.742	358.760		541.009	155.156	222.567	234.002	1.215.035	1.336.744

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Dati di Bilancio Consolidato

Nel 1998 la società si è trasformata in SpA. Il bilancio è pertanto suddiviso in due parti.

Indicatori di intensità dei fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,3736	0,4178	-	0,1712	0,8459
1997	0,3645	0,4355	-	0,1094	1,8489
1998	0,3343	0,4874	-	0,1356	1,5916
1999	0,3253	0,4906	-	0,1407	1,4345

Dati di Bilancio Consolidato

Apporti al Comune

	Utili	Apporti*
1996	70.038	189.343
1997	88.196	206.973
1998	125.421	
1999	1.496.633	

*Gli apporti sono comprensivi di interessi sul capitale

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,7226	0,1237	0,1269	0,1712
1997	0,7378	0,1265	0,1767	0,1715
1998	0,9183	0,1450	0,1845	0,1579
1999	0,9090	0,1751	0,1665	0,1926

Dati in Milioni di lire

SERVIZIO IDRICO

	Abitanti Tot** (ABT)	Addetti medi impianti (AD)	Km rete Tot. (RET)	Costo Totale filiera (CTF)	Costo lavoro filiera (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi *(CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo 'MOLF	Ricavi vendite e prestazioni (RIF)	Valore produzione filiera (VPF)
1996				406.655	188.216		103.238	97.638	44.500	58.921	292.074	465.576
1997									48.000	-	275.002	
1998									53.400	-	282.282	
1999									59.000	-		

* Incluse variazioni rimanenze

**Abit. Distribuzione

Per il 98 e 99 il costo del lavoro è solo diretto

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	ABT/AD
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatore di redditività

	RIF/VPF	MOLF/VPF	IUAF/VPF	MOLF/RIF
1996	0,627	0,127	0,096	0,202
1997	#DIV/0!	#DIV/0!	#DIV/0!	0,000
1998	#DIV/0!	#DIV/0!	#DIV/0!	0,000
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,463	0,254	0,000	0,240	0,456
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

	Dirigenti	Quadri	Imp. e Operai
1996			
1997			
1998			
1999			

Dati in Milioni di lire

ADDUZIONE E DISTRIBUZIONE

	Acqua erogata 000Mc (Qa)	Acqua add.tta 000Mc (Q)	Abitanti Tot (ABT)	Utenze servite distribuzione (U)	Ore lavorate in migliaia(AD)	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo MOLF*	Tot ricavi distribuzione (RIF)	Valore produzione fase (VPF)
1996	435000	532.000		197.687		5.565	265.221	133.451		53.002	63.498	35.054	41.408	275.803	306.629
1997	428000	540.000										44.653	0	275.003	
1998												39.263	306.796	296.506	306.796
1999													0		

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	Qa/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,499	0,251	0,100	0,576	#DIV/0!	1,342	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#RIF!	#RIF!	#RIF!	0,000	#RIF!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di intensità fattori ed Investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,503	0,200	0,000	0,239	0,552
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di struttura ed efficacia

	U/ABT	RET/U	Qa/U	Qa/RET	Qa/Q
1996	#DIV/0!	0,028	2,691	95,597	#RIF!
1997	#DIV/0!	#DIV/0!	#RIF!	#RIF!	#RIF!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,1501	0,8995	0,1350	0,1143
1997	0,0000	#DIV/0!	#DIV/0!	#DIV/0!
1998	1,0347	0,9665	1,0000	0,1280
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di produttività Adduzione e Distribuzione

	Costo lav. Adduzione (CLA)	Ore lavorate Add. In migliaia(OLA)	CLA/OLA	Costo lav. Distribuzione (CLD)	Ore lavorate Distr. In migliaia(OLD)	CLD/OLD
1996			#DIV/0!			#DIV/0!
1997			#DIV/0!			#DIV/0!
1998			#DIV/0!			#DIV/0!
1999			#DIV/0!			#DIV/0!

	Costo totale Adduzione (CTA)	CTA-CLA	CTA/Q	Costo totale Distribuzione (CTD)	CTD-CLD	CTD/Qa	Ricavi Distribuzione (RIFD)	Ricavi contributi c/esercizio (RIFC)	RIFD/RIF	RIFC/RIF
1996		0	#RIF!		0	0,000			0	0,0000
1997		0	#RIF!		0	0,000			0,000	0,0000
1998		-	#DIV/0!		-	#DIV/0!			0,000	0,000
1999		-	#DIV/0!		-	#DIV/0!			#DIV/0!	#DIV/0!

Dati in Milioni di lire

DEPURAZIONE & FOGNATURA

	Quantità Dep. COD Ton. (Qd)	Quantità Fogn.000 (Qf)	Abitanti serviti tot. Fognat. (ABT)	Ore lavorate tot in migliaia (AD)	Km rete fogn. Tot (RET)	Costo Totale (CTF)	Costo lavoro tot (CLF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam.*** (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo "MOLF*	Tot ricavi (RIF)	Valore produzione fase (VPF)***
1996	71.000	460.000				141.434	54.765	50.236	34.140	9.577	17.513	6.682	158.947
1997	78.000	470.000								3.392	-		
1998										14.215	164.854	163.610	164.854
1999											-		

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qd	CLF/Qd	CMPF/Qd	VPF/Qd	Qd/AD	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABT/AD
1996	1,992	0,771	0,708	2,239	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	0,000	0,000	0,000	0,000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,387	0,355	#RIF!	0,241	0,281
1997	#DIV/0!	#DIV/0!	#RIF!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#RIF!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#RIF!	#DIV/0!	#DIV/0!

Indicatori di struttura ed efficacia

	Qf/RET	ABT/RET	Qd/ABT	Qf/ABT	Qd/Qf
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0,154
1997	#DIV/0!	#DIV/0!	0,000	#DIV/0!	0,166
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	2,621	0,042	0,110	0,060
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	1,008	0,992	1,000	0,086
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di produttività Fognatura e Depurazione

	Costo lav. Depurazione (CLD)	Ore lavorate Depur. (OLD)	CLD/OLD	CLD/Qd	Costo lav. Fognatura (CLF)	Ore lavorate Fogn. (OLF)	CLD/OLD
1996			#DIV/0!	0,0000			#DIV/0!
1997			#DIV/0!	0,0000			#DIV/0!
1998			#DIV/0!	#DIV/0!			#DIV/0!
1999			#DIV/0!	#DIV/0!			#DIV/0!

	Costo Tot. Depurazione (CTD)	CTD/Qd	CTD-CLD	CLD/CTD	Ricavi acque reflue tariffa civile (RIFTC)	Ricavi a.r. ind. Tariffa reg.le (RIFTR)	Ricavi attività commerciale (RIFC)	RIFTC/RIF	RIFTR/RIF	RIFC/RIF
1996		0	0	#DIV/0!		-	-	0,0000	-	0,0000
1997		0	0	#DIV/0!		-	-	#DIV/0!	#DIV/0!	#DIV/0!
1998		#DIV/0!	0	#DIV/0!		-	-	0,0000	-	0,0000
1999		#DIV/0!	-	#DIV/0!		-	-	#DIV/0!	#DIV/0!	#DIV/0!

Dati in milioni di lire

SERVIZIO DI TELERISCALDAMENTO ED ENERGIA ELETTRICA

	Quantità lorda prodotta (Ql) GWh	Quantità distribuita (Qa) GWh	Calore Prodotto (Qc) Gcal	Calore distr. (QcD)Gcal	Abitanti Tot (ABT)	Utenze servite elettrico (U)	Utenze servite calore (Uc)	Addetti medi impianti (AD)	Km rete trasporto (RET)	Km rete distrib.ne elettr. (RED)	Km rete calore distr. (REC)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF) *	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF**	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	517	517	51	51		756.686	31547			13.508	26,5	595.129	184.343		261.788	72.263	100.293	95.938	632.092	691.067
1997																	154.316	-		
1998												726.203	203.007		343.237	112.330	152.000	97.926	700.082	824.129
1999												732.096	201.172		339.709	114.778	132.857	144.909	771.426	877.005

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Per il 98 e 99 il costo del lavoro è quello diretto

* Incluse variazioni rimanenze

Gas metano+gas GPL

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	VPF/AD
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di struttura ed efficacia

	U/ABT	Uc/ABT	U/RET	Qa/U	Qa/RED	Qc/Uc	Qc/REC
1996	#DIV/0!	#DIV/0!	#DIV/0!	0,0007	0,0383	0,0016	1,9245
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF	Investimenti Prod.	Investimenti Prod./IUAF	Investimenti trasporto	Investimenti trasp./IUAF	Investimenti Distr.	Investimenti Distr./IUAF
1996	0,3098	0,4399	0,0000	0,1214	1,3879		0,0000		0,0000		0,0000
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		0,0000		0,0000		0,0000
1998	0,2795	0,4726	0,0000	#RIF!	#RIF!		0,0000		0,0000		0,0000
1999	0,2748	0,4640	0,0000	0,1568	1,1575		0,0000		0,0000		0,0000

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,1517785	0,91466095	0,1388259	0,1451
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	0,1398779	0,84948109	0,1188236	0,1844
1999	0,1878456	0,87961414	0,1652317	0,1515

	CTF-CLF	CLF/CTF
1996	410.786	0,3098
1997	-	#DIV/0!
1998	523.196	0,2795
1999	530.924	0,2748

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996				
1997				
1998				
1999				

Indicatori di struttura ed efficienza per tipologia di utenza

	Elettricità domestica (Ed) GWh	Utenze domestiche (Ud) GWh	Ed/Ud	Elettricità non domestica(End) GWH	Utenze non domestiche (Und)	End/Und	Calore distribuito (QcD) Gcal	Utenze calore (Uc)	Qc/Uc
1996			#DIV/0!			#DIV/0!	51	31.547	0,0016
1997			#DIV/0!			#DIV/0!	-	-	#DIV/0!
1998			#DIV/0!			#DIV/0!	-	-	#DIV/0!
1999			#DIV/0!			#DIV/0!	-	-	#DIV/0!

Ricavi per tipologia di utenza

	Ricavi da prod. e.e (RIPE)	Ricavi da prod. Calore (RIPC)	Ricavi da distrib. e.e. (RIDE)	Ricavi da distr.cal. (RIDC)	RIPE/RIF	RIPC/RIF	RIDE/RIF	RIDC/RIF	RIDE/Qa	RIDC/Qc
1996					-	-	-	-	0	0,0000
1997					#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998					-	-	-	-	#DIV/0!	#DIV/0!
1999					-	-	-	-	#DIV/0!	#DIV/0!

Indicatori di produttività Produzione/Trasporto/Distribuzione

	Costo lav. Produzione (CLP)	Ore lavorate Produz. (OLP)	CLP/OLP	Addetti medi Prod. (ADP)	Costo lav. trasporto (CLT)	Ore lavorate trasporto (OLT)	CLT/OLT	Addetti medi Trasporto (ADT)	Costo lav. Distrib. (CLD)	Ore lavorate Distr. (OLD)	CLD/OLD	Addetti medi Distribuzione(ADD)
1996			#DIV/0!				#DIV/0!				#DIV/0!	
1997			#DIV/0!				#DIV/0!				#DIV/0!	
1998			#DIV/0!				#DIV/0!				#DIV/0!	
1999			#DIV/0!				#DIV/0!				#DIV/0!	

	Costo totale Produzione (CTP)	CTP-CLP	CLP/CTP	Costo totale Trasporto (CTT)	CTT-CLT	CLT/CTT	Costo totale Distrib. (CTD)	CTD-CLD	CLD/CTD
1996		-	#DIV/0!		-	#DIV/0!		-	#DIV/0!
1997		-	#DIV/0!		-	#DIV/0!		-	#DIV/0!
1998		-	#DIV/0!		-	#DIV/0!		-	#DIV/0!
1999		-	#DIV/0!		-	#DIV/0!		-	#DIV/0!

AEM TORINO

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	345.179	105.011		165.906	43.030	82.531	7.890	310.816	353.069
1997	330.822	102.383		161.157	36.888	128.564	35.788	322.473	366.610
1998	351.766	94.887		180.358	41.206	144.647	44.822	353.793	396.588
1999	60.898	95.201		187.671	49.152	169.558	363.243	369.797	424.141

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Dati di Bilancio Ufficiale

Nel 1997 la società si è trasformata in SpA. Il bilancio è pertanto suddiviso in due parti.

Indicatori di intensità dei fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,3042	0,4806	-	0,1247	1,9180
1997	0,3095	0,4871	-	0,1115	3,4853
1998	0,2697	0,5127	-	0,1171	3,5103
1999	1,5633	3,0817	-	0,8071	3,4497

Dati di Bilancio Consolidato

Apporti al Comune

	Utili	Apporti
1996	14.076	14.076
1997	35.821	33.554
1998	40.153	35.499
1999	45.747	41.307

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,8803	0,0223	0,2338	0,0254
1997	0,8796	0,0976	0,3507	0,1110
1998	0,8921	0,1130	0,3647	0,1267
1999	0,8719	0,8564	0,3998	0,9823

Dati in milioni di lire

SERVIZIO DI TELERISCALDAMENTO ED ENERGIA ELETTRICA

	Quantità lorda prodotta (Ql) GWh	Quantità distribuita (Qa) GWh	Calore Prodotto (Qc) Gcal	Calore distr. (QcD)Gcal	Abitanti Tot (ABT)	Utenze servite elettrico (U)	Utenze servite calore (Uc)	Addetti medi impianti (AD)	Km rete trasporto (RET)	Km rete distrib.ne elettr. (RED)	Km rete calore distr. (REC)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF) *	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF**	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	1.178	1.408	382.566	414	n.d.	247.564	55.345	n.d.	249	2.733	97	345.179	105.011	n.d.	165.906	43.030	82.531	7.890	227.447	353.069
1997	1.347	1.415	452.733	489	n.d.	247.691	71.326	n.d.	247	2.706	142	330.822	102.383	n.d.	161.157	36.888	128.564	35.788	245.047	366.610
1998	1.274	1.429	709.894	768	n.d.	247.879	99.121	n.d.	249	2.726	182	351.766	94.887	n.d.	180.358	41.206	144.647	44.822	263.130	396.588
1999	1.588	1.442	901.017	975	500.000	248.593	117.386	537	178	2.693	214	379.855	45.214	n.d.	260.721	46.078	169.558	60.174	291.445	440.029

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Per il 96-97-98 i dati contabili sono presi dai bilanci ufficiali. I questionari risultavan incompleti.

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	VPF/AD
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	112,0559	707,3650	84,1974	819,4209

Indicatori di struttura ed efficacia

	U/ABT	Uc/ABT	U/RET	Qa/U	Qa/RED	Qc/Uc	Qc/REC
1996	#VALORE!	#VALORE!	994,2329	0,0057	0,5152	6,9124	3.943,9794
1997	#VALORE!	#VALORE!	1.002,7976	0,0057	0,5229	6,3474	3.188,2606
1998	#VALORE!	#VALORE!	995,4980	0,0058	0,5242	7,1619	3.900,5165
1999	0,4972	0,2348	1.396,5899	0,0058	0,5355	7,6757	4.210,3598

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	iUAF/AF	Investimenti Prod.	Investimenti Prod./iUAF	Investimenti trasporto	Investimenti trasp./IUAF	Investimenti Distr.	Investimenti Distr./IUAF
1996	0,3042	0,4806	#VALORE!	0,1247	1,9180	n.d.	#VALORE!	n.d.	#VALORE!	n.d.	#VALORE!
1997	0,3095	0,4871	#VALORE!	0,1115	3,4853	n.d.	#VALORE!	n.d.	#VALORE!	n.d.	#VALORE!
1998	0,2697	0,5127	0,0000	0,1171	3,5103	n.d.	#VALORE!	n.d.	#VALORE!	n.d.	#VALORE!
1999	0,1190	0,6864	#VALORE!	0,1213	3,6798	96.649	0,5700	623	0,0037	72.286	0,4263

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,0346894	0,64419986	0,0223469	0,2338
1997	0,1460455	0,6684133	0,0976187	0,3507
1998	0,1703417	0,66348452	0,1130191	0,3647
1999	0,2064678	0,66233135	0,1367501	0,3853

	CTF-CLF	CLF/CTF
1996	240.168	0,3042
1997	228.439	0,3095
1998	256.879	0,2697
1999	334.641	0,1190

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	n.d.	n.d.	n.d.	n.d.
1997	n.d.	n.d.	n.d.	n.d.
1998	n.d.	n.d.	n.d.	n.d.
1999	5	10	522	537

Indicatori di struttura ed efficienza per tipologia di utenza

	Elettricità domestica (Ed) GWh	Utenze domestiche (Ud)	Ed/Ud	Elettricità non domestica(End) GWH	Utenze non domestiche (Und)	End/Und	Calore distribuito (QcD) Gcal	Utenze calore (Uc)	Qc/Uc
1996	378	196.248	0,0019	1.042	51.316	0,0203	414	55.345	0,0075
1997	375	196.526	0,0019	1.040	51.165	0,0203	489	71.326	0,0069
1998	387	197.140	0,0020	1.050	50.739	0,0207	768	99.121	0,0077
1999	379	197.832	0,0019	1.063	50.761	0,0209	975	117.386	0,0083

Ricavi per tipologia di utenza

	Ricavi da prod. e.e (RIPE)	Ricavi da prod. Calore (RIPC)	Ricavi da distrib. e.e. (RIDE)	Ricavi da distr.cal. (RIDC)	RIPE/RIF	RIPC/RIF	RIDE/RIF	RIDC/RIF	RIDE/Qa	RIDC/Qc
1996	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Produzione/Trasporto/Distribuzione

	Costo lav. Produzione (CLP)	Ore lavorate Produz. (OLP)	CLP/OLP	Addetti medi Prod. (ADP)	Costo lav. trasporto (CLT)	Ore lavorate trasporto (OLT)	CLT/OLT	Addetti medi Trasporto (ADT)	Costo lav. Distrib. (CLD)	Ore lavorate Distr. (OLD)	CLD/OLD	Addetti medi Distribuzione(ADD)
1996	n.d.	n.d.	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	n.d.
1997	n.d.	n.d.	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	n.d.
1998	n.d.	n.d.	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	n.d.
1999	n.d.	n.d.	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	n.d.

	Costo totale Produzione (CTP)	CTP-CLP	CLP/CTP	Costo totale Trasporto (CTT)	CTT-CLT	CLT/CTT	Costo totale Distrib. (CTD)	CTD-CLD	CLD/CTD
1996	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!
1997	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!
1998	151.072	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	94.833	#VALORE!	#VALORE!
1999	165.944	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	88.639	#VALORE!	#VALORE!

AGAC REGGIO EMILIA

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	431.522	62.941		310.240	45.043	66.244	6.238	365.704	437.760
1997	491.173	67.100		365.337	41.857	100.081	3.804	388.342	494.977
1998	486.871	63.332		350.718	55.012	104.792	9.557	396.607	496.428
1999	504.006	64.505		364.788	55.745	99.814	11.848	417.914	515.854

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Dati di Bilancio Consolidato

Indicatori di intensità dei fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,1459	0,7189	-	0,1044	1,4707
1997	0,1366	0,7438	-	0,0852	2,3910
1998	0,1301	0,7204	-	0,1130	1,9049
1999	0,1280	0,7238	-	0,1106	1,7905

Dati di Bilancio Consolidato

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,8354	0,0142	0,1513	0,0171
1997	0,7846	0,0077	0,2022	0,0098
1998	0,7989	0,0193	0,2111	0,0241
1999	0,8101	0,0230	0,1935	0,0284

Apporti al Comune

	Utili	Apporti
1996	12.910	12.910
1997	15.614	15.614
1998	2	2
1999	914	914

Dati in Milioni di lire

SERVIZIO IDRICO

	Abitanti Tot (ABT)	Addetti medi Implanti (AD)	Km rete Tot. (RET)	Costo Totale fillera (CTF)	Costo lavoro filiera (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi *(CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo 'MOLF	Ricavi vendite e prestazioni (RIF)	Valore produzione filiera (VPF)
1996	375.820	296	-	107.578	21.727	-	67.357	15.640	30.241	- 8.765	67.344	98.813
1997	379.210	300	-	118.398	23.235	-	78.956	13.753	40.167	- 2.370	73.963	116.028
1998	382.238	308	-	125.343	22.811	-	79.418	20.787	42.170	- 4.718	72.389	120.625
1999	387.085	306	-	135.069	23.233	-	86.972	21.487	48.639	- 5.051	74.631	130.018

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	ABT/AD
1996	-29,61	363,44	73,40	1269,662162
1997	-7,90	394,66	77,45	1264,033333
1998	-15,32	406,96	74,06	1241,032468
1999	-16,51	441,40	75,92	1264,98366

Indicatore di redditività

	RIF/VPF	MOLF/VPF	IUAF/VPF	MOLF/RIF
1996	0,682	-0,089	0,306	-0,130
1997	0,637	-0,020	0,346	-0,032
1998	0,600	-0,039	0,350	-0,065
1999	0,574	-0,039	0,374	-0,068

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,202	0,626	#VALORE!	0,145	1,934
1997	0,196	0,667	#VALORE!	0,116	2,921
1998	0,182	0,634	#VALORE!	0,166	2,029
1999	0,172	0,644	#VALORE!	0,159	2,264

	Dirigenti	Quadri	Imp. eOperai
1996	2	6	288
1997	2	8	290
1998	3	9	296
1999	2	10	234

Dati in Milioni di lire

ADDUZIONE E DISTRIBUZIONE

	Acqua erogata 000Mc (Qa)	Acqua add.tta 000Mc (Q)	Abitanti Tot (ABT)	Utenze servite distribuzione (U)	Ore lavorate in migliaia(AD)	Km rete distr.Tot. (RET)	Costo Totale fase (CTF) ***	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)***	Ammortam. (AF) ***	Investimenti ultimo anno (IUAF)	Reddito operativo MOLF*	Tot ricavi distribuzione (RIF)	Valore produzione fase (VPF)***
1996	33.215	49.257	375.820	120.116	366	3.405	67.599	15.718		40.669	10.514	n.d	911	49.281	68.510
1997	33.862	49.126	379.210	123.942	369	3.512	73.954	16.816		47.276	8.502	n.d	1.437	50.027	75.391
1998	34.019	48.874	382.238	127.956	383	3.564	80.486	16.475		49.466	13.212	27.541	332	48.185	80.818
1999	34.995	50.759	387.085	132.332	372	3.623	80.435	16.780		47.432	14.415	26.645	870	49.473	81.305

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	Qa/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	2,035	0,473	1,224	2,063	90,751	0,563	2,489	184,697	42,945	187,186	328,186
1997	1,505	0,342	0,962	2,226	133,133	0,597	3,894	200,417	45,572	204,312	335,886
1998	2,366	0,484	1,454	2,376	88,822	0,629	0,867	210,146	43,016	211,013	334,089
1999	2,298	0,479	1,355	2,323	94,073	0,629	2,339	216,223	45,108	218,562	343,968

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,233	0,602	0,000	0,156	#VALORE!
1997	0,227	0,639	0,000	0,115	#VALORE!
1998	0,205	0,615	0,000	0,164	2,085
1999	0,209	0,590	0,000	0,179	1,848

Indicatori di struttura ed efficacia

	U/ABT	RET/U	Qa/U	Qa/RET	Qa/Q
1996	0,320	0,028	0,277	9,755	0,674
1997	0,327	0,028	0,396	13,988	0,689
1998	0,335	0,028	0,382	9,545	0,696
1999	0,331	0,028	0,273	9,659	0,689

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,018	0,719	0,013	#VALORE!
1997	0,0287	0,6636	0,0191	#VALORE!
1998	0,0069	0,5962	0,0041	0,3408
1999	0,0176	0,6085	0,0107	0,3277

Indicatori di produttività Adduzione e Distribuzione

	Costo lav. Adduzione (CLA)	Ore lavorate Add. In migliaia(OLA)	CLA/OLA	Costo lav. Distribuzione (CLD)	Ore lavorate Distr. In migliaia(OLD)	CLD/OLD
1996	5287	123	42,984	10431	243	42,926
1997	5656	124	45,613	11160	245	45,551
1998	5038	117	43,060	11437	266	42,996
1999	6441	143	45,042	10339	229	45,148

	Costo totale Adduzione (CTA)	CTA-CLA	CTA/Q	Costo totale Distribuzione (CTD)	CTD-CLD	CTD/Qa	Ricavi Distribuzione (RIFD)	Ricavi contributi c/esercizio (RIFC)	RIFD/RIF	RIFC/RIF
1996	n.d	#VALORE!	#VALORE!	n.d	#VALORE!	#VALORE!	45677	3604	0,927	0,0731
1997	n.d	#VALORE!	#VALORE!	n.d	#VALORE!	#VALORE!	46188	3939	0,923	0,0787
1998	14.984	9.946	0,3066	21.381	9.944	0,6285	48185	0	1,000	0
1999	14.188	7.747	0,2795	22.413	12.074	0,6405	49473	0	1,000	0

Dati in Milioni di lire

DEPURAZIONE & FOGNATURA

	Quantità Dep. COD Ton. (Qd)***	Quantità Fogn. ***(Qf)	Abitanti serviti tot. (ABT)	Ore lavorate tot in migliaia (AD)	Km rete fogn. Tot (RET)	Costo Totale*** (CTF)	Costo lavoro tot (CLF)	Costo acq. Mat. Prime e servizi*** (CMPF)	Ammortam.*** (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo *MOLF*	Tot ricavi (RIF)	Valore produzione fase (VPF)***
1996	19.401	26.544	314.403	140	288	39.979	6.010	26.686	5.126	12.215	- 9.677	17.744	30.302
1997	18.229	30.981	325.483	141	319	44.443	6.419	31.678	5.250	16.356	- 3.806	23.264	40.637
1998	21.065	31.310	335.998	147	319	44.856	6.336	29.950	7.573	14.629	- 4.508	23.737	40.348
1999	19.677	32.906	342.153	143	332	54.634	6.554	39.538	7.071	21.994	- 5.921	24.804	48.713

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qd	CLF/Qd	CMPF/Qd	VPF/Qd	Qd/AD	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABT/AD
1996	2,061	0,310	1,376	1,562	138,579	-69,119	285,562	42,929	216,443	2245,736
1997	2,438	0,352	1,738	2,229	129,284	-26,991	315,197	45,525	288,206	2308,390
1998	2,129	0,301	1,422	1,915	143,299	-30,664	305,140	43,102	274,476	2285,701
1999	2,777	0,333	2,009	2,476	137,601	-41,405	382,055	45,832	340,650	2392,678

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,150	0,668	#RIF!	0,128	2,383
1997	0,144	0,713	#RIF!	0,118	3,115
1998	0,141	0,668	#RIF!	0,169	1,932
1999	0,120	0,724	#RIF!	0,129	3,111

Indicatori di struttura ed efficacia

	Qf/RET	ABT/RET	Qd/ABT	Qf/ABT	Qd/Qf
1996	92,167	1091,677	0,062	0,084	0,731
1997	97,119	1020,323	17,855	0,095	0,588
1998	98,150	1053,285	15,951	0,093	0,673
1999	99,114	1030,581	17,388	0,096	0,598

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	-0,545	0,586	-0,319	0,403
1997	-0,164	0,572	-0,094	0,402
1998	-0,190	0,588	-0,112	0,363
1999	-0,239	0,509	-0,122	0,452

Indicatori di produttività Fognatura e Depurazione

	Costo lav. Depurazione (CLD)	Ore lavorate Depur. (OLD)	CLD/OLD	CLD/Qd
1996	6010	140	42,929	0,3098
1997	6419	141	45,525	0,3521
1998	6336	147	43,102	0,3008
1999	6454	143	45,133	0,3280

	Costo Tot. Depurazione (CTD)	CTD/Qd	CTD-CLD	CLD/CTD	Ricavi acque reflue tariffa civile (RIFTC)	Ricavi a.r. ind. Tariffa reg.le (RIFTR)	Ricavi attività commerciale (RIFC)	RIFTC/RIF	RIFTR/RIF	RIFC/RIF
1996	n.d	#VALORE!	#VALORE!	#VALORE!	12.319	4.366	1.059	0,6943	0,2461	0,0597
1997	n.d.	#VALORE!	#VALORE!	#VALORE!	17.498	4.340	1.426	0,7521	0,1866	0,0613
1998	n.d	#VALORE!	#VALORE!	#VALORE!	17.637	4.202	1.898	0,7430	0,1770	0,0800
1999	23.861	1,212634	17.407	0,2705	18.801	4.163	1.840	0,7580	0,1678	0,0742

Dati in milioni di lire

SERVIZIO IGIENE URBANA

	Quantità raccolta ton. (Qa)	Quantità smaltita ton. (Qs)	Abitanti Raccolta (ABTR)	Abitanti Smaltimento (ABTSm)	Abitanti Spazzamento (ABTSp)	Addetti medi impianti (AD)	Km rete spazzati (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	227.662	227.662	376.000	301.000	301.000	228		69.923	16.712		36.313	7.796	9.394	1.515	59.642	71.438
1997	217.349	217.349	376.000	301.000	301.000	228		83.244	17.693		44.969	9.151	15.788	- 1.514	63.369	81.730
1998	222.351	208.180	376.550	301.392	301.392	217		79.766	16.062		42.310	9.451	13.428	- 385	67.408	79.381
1999	244.313	247.385	403.750	403.750	300.000	216		83.838	16.362		43.624	11.269	10.476	1.054	76.626	84.892

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.
* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	CTF/ABTSm	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABTR/AD	ABTS/AD
1996	0,307	0,073	0,160	0,314	0,232	6,645	306,680	73,298	313,325	1649,123	1320,175
1997	0,383	0,081	0,207	0,376	0,277	-6,640	365,105	77,601	358,465	1649,123	1320,175
1998	0,359	0,072	0,190	0,357	0,265	-1,774	367,585	74,018	365,811	1735,253	1388,903
1999	0,343	0,067	0,179	0,347	0,208	4,880	388,139	75,750	393,019	1869,213	1869,213

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,239	0,519	0,000	0,111	1,205
1997	0,213	0,540	0,000	0,110	1,725
1998	0,201	0,530	0,000	0,118	1,421
1999	0,195	0,520	0,000	0,134	0,930

Indicatori di struttura ed efficacia

	RET/ABTSp	Qa/ABTR	Qs/ABTSp	Qa/Qs
1996	0	0,605	0,756	1
1997	0	0,578	0,722	1
1998	0	0,590	0,691	1,068
1999	0	0,605	0,825	0,988

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,025	0,835	0,021	0,131
1997	-0,024	0,775	-0,019	0,193
1998	-0,006	0,849	-0,005	0,169
1999	0,014	0,903	0,012	0,123

Indicatori di produttività Spazzamento/Raccolta/Smaltimento

	Costo lav. Spazzam. (CLS)	Ore lavorate Spazzam. (OLS)	CLS/OLS	Addetti medi Spazz. (ADSp)	RET/ADSp	Costo lav. Raccolta (CLR)	Ore lavorate Racc. (OLR)	CLR/OLR	CLR/Qa	Addetti medi Raccolta (ADR)	Qa/ADR	Costo lav. Smaltimento (CLSm)	Ore lavorate Smalt. (OLSm)	CLSm/OLSm	CLSm/Qs	Addetti medi Smaltimento (ADSm)	Qs/ADSm
1996	1959	49000	0,040	30	0	3400	75000	0,045	0,0149	40	5691,550	2400	54000	0,044	0,0105	29	7850,414
1997	1708	42000	0,041	30	0	3400	75000	0,045	0,0156	40	5433,725	2400	54000	0,044	0,0110	29	7494,793
1998	**1586**	39000	0,041	21	0	**3400**	75000	0,045	0,0153	40	5558,775	2430	54000	0,045	0,0117	29	7178,621
1999	1547	40000	0,039	28	0	3500	76000	0,046	0,0143	47	5198,149	2430	54000	0,045	0,0098	29	8530,517

*Il CLS e il CLR per il 1998 sono stati stimati

	Costo totale Spazzamento (CTSp)	CTSp-CLSp	CLSp/CTSp	Costo totale Raccolta (CTR)	Costo differenz.	Costo differ./CTR	CTR-CLR	CLR/CTR	CTR/Qa	Costo totale Smaltimento (CTSm)	CTSm-CLSm	CLSm/CTSm	CTSm/Qs	Ricavi Smaltimento (RISm)	Ricavi smaltimento rifiuti terzi (RISmT)	Ricavi vendita materiale recuperato o energia	RISmT/RISm
1996	5.025	3066	0,3899	21.379	2460	0,1151	17.979	0,1590	0,0939	22.757	20357	0,10546	0,09996	32339	0	1.722	0,0000
1997	5.205	3497	0,3281	23.519	4547	0,1933	20.119	0,1446	0,1082	21.488	19088	0,11169	0,0989	31712	0	2.301	0,0000
1998	6.114	4.528	0,2594	29.004	7.385	0,2546	25.604	0,1172	0,1304	27.663	25233	0,0878	0,1329	31558	2513	3.705	0,0796
1999	6.827	5.280	0,2266	33.038	10.234	0,3098	29.538	0,1059	0,1352	28.111	25681	0,0864	0,1136	35095	5277	7.097	0,1504

	Dirigenti	Quadri	Imp. e Operai
1996	2	4	222
1997	2	6	220
1998	2	8	289
1999	2	7	207

Tipologia di raccolta differenziata

	carta Tonn.	carta/Qa	vetro Tonn.	vetro/Qa	plastica Tonn.	plastoca/Qa	organico Tonn.	Organico/Qa
1996	7294	0,0320	7016	0,0308	894	0,0039	0	0,0000
1997	10061	0,0463	7823	0,0360	1288	0,0059	235	0,0011
1998	14028	0,0631	8949	0,0402	1344	0,0060	1630	0,0073
1999	18906	0,0774	9344	0,0382	1551	0,0063	3183	0,0130

Dati in milioni di lire

SERVIZIO DI TELERISCALDAMENTO ED ENERGIA ELETTRICA

	Quantità lorda prodotta (Ql) GWh	Quantità distribuita (Qa) GWh	Calore Prodotto (Qc) Gcal	Calore distr. (QcD)Gcal	Abitanti Tot (ABT)	Utenze servite elettrico (U)	Utenze servite calore (Uc)	Addetti medi impianti (AD)	Km rete trasporto (RET)	Km rete distrib.ne elettr. (RED)	Km rete calore (REC)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF) *	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF**	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	60	-	224.000	205.943	32.394	-	13554	38	-	-	88	56.001	2.774		42.816	10.681	14.997	2.857	43.136	58.858
1997	62	-	228.000	209.863	36.488	-	15267	38	-	-	94	58.263	2.963		47.718	7.126	16.231	3.796	45.259	62.059
1998	61	-	267.000	247.432	39.394	-	16622	43	-	-	118	64.854	3.168		50.730	10.110	15.804	5.328	52.990	70.182
1999	71	-	298.000	267.345	41.923	-	17916	42	-	-	132	66.115	3.227		51.782	10.095	12.683	3.151	55.097	69.266

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Gas metano+gas GPL

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	VPF/AD
1996	75,1842	1473,7105	73,0000	1548,8947
1997	99,8947	1533,2368	77,9737	1633,1316
1998	123,9070	1508,2326	73,6744	1632,1395
1999	75,0238	1574,1667	76,8333	1649,1905

Indicatori di struttura ed efficacia

	U/ABT	Uc/ABT	U/RET	Qa/U	Qa/RED	Qc/Uc	Qc/REC
1996	-	#DIV/0!	0	-	#DIV/0!	#DIV/0!	636
1997	-	#DIV/0!	0	-	#DIV/0!	#DIV/0!	620
1998	-	#DIV/0!	0	-	#DIV/0!	#DIV/0!	550
1999	-	#DIV/0!	0	-	#DIV/0!	#DIV/0!	501

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF	Investimenti Prod.	Investimenti Prod./IUAF	Investimenti trasporto	Investimenti trasp./IUAF	Investimenti Distr.	Investimenti Distr./IUAF
1996	0,049535	0,764558	-	0,190729	1,404082	2489	0,1660	-	-	10.281	0,6855
1997	0,050856	0,819010	-	0,122307	2,2777154	2.054	0,1265	-	-	12.890	0,7942
1998	0,048848	0,78221852	-	0,155889	1,5632047	4.488	0,2840	-	-	11.316	0,7160
1999	0,048809	0,78321107	-	0,152688	1,2563645	2.201	0,1735	-	-	10.482	0,8265

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,066232	0,73288253	0,0485406	0,2548
1997	0,083873	0,72928987	0,0611676	0,2615
1998	0,100547	0,7550369	0,0759169	0,2252
1999	0,05719	0,79544076	0,0454913	0,1831

	CTF-CLF	CLF/CTF
1996	53.227	0,0495
1997	55.300	0,0509
1998	61.686	0,0488
1999	62.888	0,0488

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	0	1	37	38
1997	0	1	37	38
1998	0	1	42	43
1999	1	0	41	42

Indicatori di struttura ed efficienza per tipologia di utenza

	Elettricità domestica (Ed)	Utenze domestiche (Ud)	Ed/Ud	Elettricità non domestica(End)	Utenze non domestiche (Und)	End/Und	Calore distribuito (QcD)	Utenze calore (Uc)	Qc/Uc
1996	-	-	#DIV/0!	-	-	#DIV/0!	205.943	13.554	15,1943
1997	-	-	#DIV/0!	-	-	#DIV/0!	209.863	15.267	13,7462
1998	-	-	#DIV/0!	-	-	#DIV/0!	247.432	16.622	14,8858
1999	-	-	#DIV/0!	-	-	#DIV/0!	267.345	17.916	14,9221

Ricavi per tipologia di utenza

	Ricavi da prod. e.e (RIPE)	Ricavi da prod. Calore (RIPC)	Ricavi da distrib. e.e. (RIDE)	Ricavi da distr.cal. (RIDC)	RIPE/RIF	RIPC/RIF	RIDE/RIF	RIDC/RIF	RIDE/Qa	RIDC/Qc
1996	8.799	26.710	-	-	0,2040	0,6192044	-	-	#DIV/0!	0,0000
1997	7.800	28.074	-	-	0,1723	0,6202965	-	-	#DIV/0!	0,0000
1998	7.727	33.776	-	-	0,1458	0,6374033	-	-	#DIV/0!	0,0000
1999	7.554	35.650	-	-	0,1371	0,6470407	-	-	#DIV/0!	0,0000

Indicatori di produttività Produzione/Trasporto/Distribuzione

	Costo lav. Produzion e (CLP)	Ore lavorate Produz. (OLP)	CLP/OLP	Addetti medi Prod. (ADP)	Costo lav. trasporto (CLT)	Ore lavorate trasporto (OLT)	CLT/OLT	Addetti medi Trasporto (ADT)	Costo lav. Distrib. (CLD)	Ore lavorate Distr. (OLD)	CLD/OLD	Addetti medi Distribuzione(A DD)
1996	n.d	n.d.	#VALORE!	n.d.	0	0	#DIV/0!	0	n.d.	n.d.	#VALORE!	n.d
1997	n.d.	n.d.	#VALORE!	n.d.	0	0	#DIV/0!	0	n.d.	n.d.	#VALORE!	n.d
1998	n.d.	n.d.	#VALORE!	n.d.	0	0	#DIV/0!	0	n.d.	n.d.	#VALORE!	n.d
1999	n.d.	n.d.	#VALORE!	n.d.	0	0	#DIV/0!	0	n.d.	n.d.	#VALORE!	n.d

	Costo totale Produzion e (CTP)	CTP-CLP	CLP/CTP	Costo totale Trasporto (CTT)	CTT-CLT	CLT/CTT	Costo totale Distrib. (CTD)	CTD-CLD	CLD/CTD
1996	17.814	#VALORE!	#VALORE!	-	-	#DIV/0!	859	#VALORE!	#VALORE!
1997	18.560	#VALORE!	#VALORE!	-	-	#DIV/0!	1.425	#VALORE!	#VALORE!
1998	21.237	#VALORE!	#VALORE!	-	-	#DIV/0!	2.803	#VALORE!	#VALORE!
1999	23.689	#VALORE!	#VALORE!	-	-	#DIV/0!	3.386	#VALORE!	#VALORE!

Dati in milioni di lire

SERVIZIO GAS

	Volume gas in rete migliaia mc (Qr)	Volume gas venduto migliaia mc (Qv)	Abitanti Tot (ABT)	Utenze servite (U)	Addetti medi anno	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	449.799	437.788	339.935	158.981	296	2.066	198.020	21.727		163.753	10.925	11.612	10.630	195.581	208.650
1997	432.152	423.890	354.468	167.716	299	2.140	231.268	23.209		193.695	11.827	27.895	3.892	205.751	235.160
1998	466.072	457.045	371.310	167.717	287	2.262	216.273	21.290		178.261	14.664	16.425	9.425	203.821	225.698
1999	520.165	510.077	384.300	173.313	286	2.268	218.984	21.684		182.411	13.032	16.399	12.694	211.561	231.678

Per il 98 e 99 solo costi lavoro diretti

Indicatori di produttività ed economicità

	CTF/Qv	CLF/Qv	CMPF/Qv	VPF/Qv	Qv/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,4523	0,0496	0,3740	0,4766	1479,01	1,2456	35,91	668,99	73,4020	704,8986	537,0980
1997	0,5456	0,0548	0,4569	0,5548	1417,69	1,3789	13,02	773,47	77,6221	786,4883	560,9231
1998	0,4732	0,0466	0,3900	0,4938	1592,49	1,2895	32,84	753,56	74,1812	786,4042	584,3798
1999	0,4293	0,0425	0,3576	0,4542	1783,49	1,2635	44,38	765,68	75,8182	810,0629	605,9895

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,110	0,827	0,000	0,055	1,063
1997	0,100	0,838	0,000	0,051	2,359
1998	0,098	0,824	0,000	0,068	1,120
1999	0,099	0,833	0,000	0,060	1,258

Indicatori di struttura ed efficacia

	ABT/U	U/RET	Qv/U	Qv/RET	Qv/Qr
1996	2,138	76,951	2,754	211,901	0,973
1997	2,114	78,372	2,527	198,079	0,981
1998	2,214	74,145	2,725	202,053	0,981
1999	2,217	76,417	2,943	224,902	0,981

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,054	0,937	0,051	0,056
1997	0,019	0,875	0,017	0,119
1998	0,046	0,903	0,042	0,073
1999	0,060	0,913	0,055	0,071

	Gas domestico/ gas Tot	Gas ut. Promisc.+risc./gas Tot	Gas utenze ind./gas Tot.	Gas altre utenze/gas Tot.
1996	0,005	0,288	0,388	0,319
1997	0,006	0,321	0,282	0,390
1998	0,006	0,326	0,282	0,386
1999	0,005	0,293	0,325	0,377

Indicatori di struttura ed efficienza per tipologia di utenza

	Gas domest.migliaia mc	Utenze domestiche (Ud)	Gas dom/Ud	Gas promls+riscal damento migliaia mc	Utenze Promscuo+riscal damento (Up)	Gas prom./Up	Gas industriale migliai mc	Utenze Industriale (Ui)	Gas Ind./Ui	Gas altre utenze migliai mc	altre utenze (Ua)	Gas altre utenze/Ua
1996	2.352	24.156	0,097	125.956	113.296	1,1117	169.645	220	771,114	139.666	21.309	6,554
1997	2.707	25.036	0,108	136.236	120.058	1,1348	119.433	237	503,937	165.514	22.385	7,394
1998	2.524	25.036	0,101	149.148	120.059	1,2423	128.839	237	543,624	176.534	22.385	7,886
1999	2.330	25.541	0,091	149.596	124.679	1,1998	165.857	249	666,092	192.294	22.844	8,418

Ricavi per tipologia di utenza

	Ricavi da utenze civili	Ricavi da utenze industriali	Ricavi da altre utenze	Ric.u.c./RIF	Ricavi da u.i./RIF	Ricavi da a.u./RIF
1996	75.613	34.349	68.266	0,3866	0,1756	0,3490
1997	75.597	39.459	73.081	0,3674	0,1918	0,3552
1998	98.135	38.135	53.573	0,4815	0,1871	0,2628
1999	78.316	44.295	74.816	0,3702	0,2094	0,3536

	CTF-CLF	CLF/CTF	CTF/Qa
1996	176.293	0,1097	0,4523
1997	208.059	0,1004	0,5456
1998	194.983	0,0984	0,4732
1999	197.300	0,0990	0,4293

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	2	6	288	296
1997	2	8	289	299
1998	2	8	277	287
1999	2	9	275	286

AGEA Ferrara

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	103.419	28.031		63.146	5.331	9.506	1.187	99.187	104.606
1997	112.730	29.471		78.539	3.695	19.191	4.219	111.659	116.949
1998	112.320	26.680		72.517	3.900	27.962	10.870	112.303	123.190
1999	130.527	27.540		85.454	4.442	46.629	7.771	127.563	138.298

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.
Mancano i dati di Bilancio Consolidato

Indicatori di intensità dei fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,2710	0,6106	-	0,0515	1,7832
1997	0,2614	0,6967	-	0,0328	5,1938
1998	0,2375	0,6456	-	0,0347	7,1697
1999	0,2110	0,6547	-	0,0340	10,4973

Dati di Bilancio Consolidato

Apporti al Comune

	Utili	Apporti
1996	481	433
1997	2.944	2.944
1998	6.359	6.359
1999	4.322	3.000

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,9482	0,0113	0,0909	0,0120
1997	0,9548	0,0361	0,1641	0,0378
1998	0,9116	0,0882	0,2270	0,0968
1999	0,9224	0,0562	0,3372	0,0609

Dati in milioni di lire

SERVIZIO IGIENE URBANA

	Quantità raccolta ton. (Qa)	Quantità smaltita ton. (Qs)	Abitanti Raccolta (ABTR)	Abitanti Smaltimento (ABTSm)	Abitanti Spazzamento (ABTSp)	Addetti medi impianti (AD)	Km rete spazzati (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF) + Svalutazioni	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF) + altri	Valore produzione fase (VPF)
1996	79.259	104.008	134.297	134.297	134.297	248	100.000	25.318	12.446		7.341	1.652	1.926	6.644	31.602	31.962
1997	76.388	90.621	133.270	133.270	133.270	241	100.000	25.350	13.363		8.882	878	2.962	6.430	31.622	31.780
1998	80.312	81.991	132.681	132.681	132.681	227	100.000	24.645	12.126		8.867	1.126	3.865	8.228	32.648	32.873
1999	89.047	78.999	132.085	132.085	132.085	227	100.000	24.946	12.620		6.548	1.524	4.474	8.392	33.338	33.338

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.
* Incluse variazioni rimanenze
Ammortamenti e svalutazioni non sono distinti
I ricavi comprendono "altri" oltre vendite e prestazioni
Trasformazione in S.p.a. nel luglio 2000
Smaltimento in impianti propri dell'azienda eccetto il '99 (anche in impianti di terzi).

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	CTF/ABTSm	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABTR/AD	ABTS/AD
1996	0,319	0,157	0,093	0,403	0,189	26,790	102,089	50,185	128,879	541,520	541,520
1997	0,332	0,175	0,116	0,416	0,190	26,680	105,187	55,448	131,867	552,988	552,988
1998	0,307	0,151	0,110	0,409	0,186	36,247	108,568	53,419	144,815	584,498	584,498
1999	0,280	0,142	0,096	0,374	0,189	36,969	109,894	55,595	146,863	581,872	581,872

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,492	0,290	0,000	0,065	1,166
1997	0,527	0,350	0,000	0,035	3,374
1998	0,492	0,360	0,000	0,046	3,433
1999	0,506	0,343	0,000	0,061	2,936

Indicatori di struttura ed efficacia

	RET/ABTSp	Qa/ABTR	Qs/ABTSp	Qa/Qs
1996	0,7446	0,590	0,774	0,762
1997	0,750	0,573	0,680	0,843
1998	0,754	0,605	0,618	0,980
1999	0,757	0,674	0,598	1,127

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,210	0,989	0,208	0,060
1997	0,203	0,995	0,202	0,093
1998	0,252	0,993	0,250	0,118
1999	0,252	1,000	0,252	0,134

Indicatori di produttività Spazzamento/Raccolta/Smaltimento

	Costo lav. Spazzam. (CLS)	Ore lavorate Spazzam. (OLS) 000	CLS/OLS	Addetti medi Spazz. (ADSp)	RET/ADSp	Costo lav. Raccolta (CLR)	Ore lavorate Racc. (OLR) 000	CLR/OLR	CLR/Qa	Addetti medi Raccolta (ADR)	Qa/ADR	Costo lav. Smaltimento (CLSm)	Ore lavorate Smalt. (OLSm)	CLSm/OLSm	CLSm/Qs	Addetti medi Smaltimento (ADSm)	Qs/ADSm
1996	3282	nd	#VALORE!	63	1587,30159	6373	nd	#VALORE!	0,0804	129	614,411	2791	nd	#VALORE!	0,0268	68	1529,529
1997	3382	nd	#VALORE!	63	1587,30159	6634	nd	#VALORE!	0,0868	124	616,032	3348	nd	#VALORE!	0,0369	54	1678,167
1998	52	nd	#VALORE!	63	1587,30159	755	nd	#VALORE!	0,0094	113	710,726	3143	nd	#VALORE!	0,0383	51	1607,667
1999	3177	74	42,932	57	1754,38596	5762	145	39,738	0,0647	111	802,225	3681	78	47,192	0,0466	59	1338,960

*Il CLS e il CLR per il 1998 sono stati stimati

	Costo totale Spazzamento (CTSp)	CTSp-CLSp	CLSp/CTSp	Costo totale Raccolta (CTR)	Costo differenz.	Costo differ./CTR	CTR-CLR	CLR/CTR	CTR/Qa	Costo totale Smaltimento (CTSm)	CTSm-CLSm	CLSm/CTSm	CTSm/Qs	Ricavi Smaltimento (RISm)	Ricavi smaltimento rifiuti terzi (RISmT)	Ricavi vendita materiale recuperato o energia	RISmT/RISm
1996	5.803	2521	0,5656	15.157	nd	#VALORE!	8.784	0,4205	0,1912	12.810	10019	0,21788	0,12316	12422	5030	725	0,4049
1997	6.051	2669	0,5589	13.876	nd	#VALORE!	7.242	0,4781	0,1817	12.729	9381	0,26302	0,1405	11990	2516	1.125	0,2098
1998	6.090	6.038	0,0085	15.496	nd	#VALORE!	14.741	0,0487	0,1929	13.190	10047	0,2383	0,1609	11617	2220	1.126	0,1911
1999	7.100	3.923	0,4475	16.587	nd	#VALORE!	10.825	0,3474	0,1863	12.461	8780	0,2954	0,1577	11112	1380	1.245	0,1242

Tipologia di raccolta differenziata

	Dirigenti	Quadri	Imp. e Operai
1996	2	5	241
1997	2	5	234
1998	1	4	222
1999	1	6	220

	carta Tonn.	carta/Qa	vetro Tonn.	vetro/Qa	plastica Tonn.	plastoca/Qa	organico Tonn.	Organico/Qa
1996	1078	0,0136	1386	0,0175	150	0,0019	2825	0,0356
1997	1586	0,0208	1842	0,0241	269	0,0035	1930	0,0253
1998	3296	0,0410	2097	0,0261	291	0,0036	0	0,0000
1999	6840	0,0768	2223	0,0250	319	0,0036	530	0,0060

Dati in milioni di lire

SERVIZIO DI TELERISCALDAMENTO ED ENERGIA ELETTRICA

	Quantità lorda prodotta (Ql) GWh	Quantità distribuita (Qa) GWh	Calore Prodotto (Qc) Gcal	Calore distr. (QcD)Gcal	Consumi illuminaz. pubbl.(GWh)	Abitanti Tot (ABT)	Utenze servite elettrico (U)	Utenze servite calore (Uc)	Addetti medi impianti (AD)	Km rete trasporto (RET)	Km rete distrib.ne elettr. (RED)	Km rete calore distr. (REC)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Costo acq. Mat. Prime e servizi (CMPF) *	Ammortam. (AF) + Svalutazioni	Investimenti ultimo anno (IUAF)	MOLF**	Ricavi vendite e prestazioni (RIF) + altri	Valore produzione fase (VPF)
1996	5	0	91.764	64.565	11	nd	0	229	27	0	nd	26	4.556	1.748	2.532	0	0	- 275	4.281	4.281
1997	5	0	88.124	62.158	12	nd	0	241	27	0	nd	26	10.509	1.880	8.393	3	3	- 436	10.073	10.073
1998	7	0	93.946	73.420	12	nd	0	247	30	0	nd	26	9.161	974	7.989	38	259	- 1.691	7.470	7.470
1999	8	0	96.810	83.193	12	nd	0	279	25	0	nd	33	22.089	1.589	20.005	242	3.400	251	21.055	22.340

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.
* Incluse variazioni rimanenze
Ammortamenti e svalutazioni non sono distinti
I ricavi comprendono "altri" oltre vendite e prestazioni
Trasformazione in S.p.a. nel luglio 2000
energia elettrica= illuminazione pubblica

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	VPF/AD
1996	-10,1852	168,7407	64,7407	158,5556
1997	-16,1481	389,2222	69,6296	373,0741
1998	-56,3667	305,3667	32,4667	249,0000
1999	10,0400	883,5600	63,5600	893,6000

Indicatori di struttura ed efficacia

	U/ABT	Uc/ABT	U/RET	Qa/U	Qa/RED	Qc/Uc	Qc/REC
1996	#VALORE!	#VALORE!	#DIV/0!	#DIV/0!	#VALORE!	400,7162	3.529,3846
1997	#VALORE!	#VALORE!	#DIV/0!	#DIV/0!	#VALORE!	365,6598	3.389,3846
1998	#VALORE!	#VALORE!	#DIV/0!	#DIV/0!	#VALORE!	380,3482	3.613,3077
1999	#VALORE!	#VALORE!	#DIV/0!	#DIV/0!	#VALORE!	346,9892	2.933,6364

Indicatori dl intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF		AF/CTF	IUAF/AF	Investimenti Prod.	Investimenti Prod./IUAF	Investimenti trasporto	Investimenti trasp./IUAF	Investimenti Distr.	Investimenti Distr./IUAF
1996	0,3837	0,5558		0,0000	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!
1997	0,1789	0,7986		0,0003	1,0000	0	0,0000	0	0,0000	3	1,0000
1998	0,1063	0,8721		0,0041	6,8158	76	0,2934	0	0,0000	183	0,7066
1999	0,0719	0,9057		0,0110	14,0496	3276	0,9635	0	0,0000	124	0,0365

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	-0,064237	1	-0,064237	-
1997	-0,043284	1	-0,043284	0,0003
1998	-0,226372	1	-0,226372	0,0347
1999	0,0119212	0,94247986	0,0112355	0,1522

	CTF-CLF	CLF/CTF
1996	2.808	0,3837
1997	8.629	0,1789
1998	8.187	0,1063
1999	20.500	0,0719

Composizione lavoro

	Dirigenti	Quadrl	Imp. e Operai	Tot
1996	1	1	25	27
1997	1	1	25	27
1998	1	2	27	30
1999	1	1	23	25

Indicatori di struttura ed efficienza per tipologia di utenza

	Elettricità domestica (Ed) GWh	Utenze domestiche (Ud) GWh	Ed/Ud	Elettricità non domestica(End) GWH	Utenze non domestiche (Und)	End/Und	Calore distribulto (QcD) Gcal	Utenze calore (Uc)	Qc/Uc
1996	0	0	#DIV/0!	0	0	#DIV/0!	64.565	229	281,9432
1997	0	0	#DIV/0!	0	0	#DIV/0!	62.158	241	257,9170
1998	0	0	#DIV/0!	0	0	#DIV/0!	73.420	247	297,2470
1999	0	0	#DIV/0!	0	0	#DIV/0!	83.193	279	298,1828

Ricavi per tipologia di utenza

	Ricavi da prod. e.e (RIPE)	Ricavi da prod. Calore (RIPC)	Ricavi da distrib. e.e. (RIDE)	Ricavi da distr.cal. (RIDC)	RIPE/RIF	RIPC/RIF	RIDE/RIF	RIDC/RIF	RIDE/Qa	RIDC/Qc
1996	0	1.582	2699	1582	0	0	1	0	#DIV/0!	0
1997	0	5.422	4651	5422	0	1	0	1	#DIV/0!	0
1998	0	4.499	2971	4499	0	1	0	1	#DIV/0!	0
1999	3977	13.430	5045	3430	0	1	0	0	#DIV/0!	0

Indicatori di produttività Produzione/Trasporto/Distribuzione

	Costo lav. Produzione (CLP)	migliaiaOre lavorate Produz.(OLP)	CLP/OLP	Addetti medi Prod. (ADP)	Costo lav. trasporto (CLT)	Ore lavorate trasporto (OLT)	CLT/OLT	Addetti medi Trasporto (ADT)	Costo lav. Distrib. (CLD)	Ore lavorate Distr. (OLD)	CLD/OLD	Addetti medi Distribuzione(ADD)
1996	1062	nd	#VALORE!	17			#DIV/0!		685	nd	#VALORE!	10
1997	1137	nd	#VALORE!	17			#DIV/0!		743	nd	#VALORE!	10
1998	717	nd	#VALORE!	17			#DIV/0!		689	nd	#VALORE!	13
1999	819	17	48	12			#DIV/0!		770	18	43	13

	Costo totale Produzione (CTP)	CTP-CLP	CLP/CTP	Costo totale Trasporto (CTT)	CTT-CLT	CLT/CTT	Costo totale Distrlb. (CTD)	CTD-CLD	CLD/CTD
1996	1582	520	1		0	#DIV/0!	3776	3091	0
1997	5422	4285	0		0	#DIV/0!	5892	5149	0
1998	8439	7722	0		0	#DIV/0!	4072	3383	0
1999	16402	15583	0		0	#DIV/0!	6704	5934	0

Dati in milioni di lire

SERVIZIO GAS

	Volume gas in rete migliaia mc (Qr)	Volume gas venduto migliaia mc (Qv)	Abitanti Tot (ABT)	Utenze servite (U)	Addetti medi anno	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF) + Svalutazioni	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF) + altri	Valore produzione fase (VPF)
1996	148.000	142.000	nd	64.063	69	706	57.401	4.429		49.701	2.944	2.134	6.593	62.211	63.994
1997	149.000	146.000	nd	64.725	69	712	62.110	4.431		54.629	2.531	4.437	8.286	68.170	70.396
1998	158.000	155.000	nd	65.422	65	720	60.663	4.027		53.071	2.755	4.820	12.504	70.535	73.167
1999	168.000	165.000	nd	66.563	68	720	65.632	4.249		56.313	3.274	4.769	11.944	74.747	77.576

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Ammortamenti e svalutazioni non sono distinti

I ricavi comprendono "altri" oltre vendite e prestazioni

Trasformazione in S.p.a. nel luglio 2000

Indicatori di produttività ed economicità

	CTF/Qv	CLF/Qv	CMPF/Qv	VPF/Qv	Qv/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,4042	0,0312	0,3500	0,4507	2057,97	0,8960	95,55	831,90	64,1884	927,4493	928,4493
1997	0,4254	0,0303	0,3742	0,4822	2115,94	0,9596	120,09	900,14	64,2174	1020,2319	938,0435
1998	0,3914	0,0260	0,3424	0,4720	2384,62	0,9273	192,37	933,28	61,9538	1125,6462	1006,4923
1999	0,3978	0,0258	0,3413	0,4702	2426,47	0,9860	175,65	965,18	62,4853	1140,8235	978,8676

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,077	0,866	0,000	0,051	0,725
1997	0,071	0,880	0,000	0,041	1,753
1998	0,066	0,875	0,000	0,045	1,750
1999	0,065	0,858	0,000	0,050	1,457

Indicatori di struttura ed efficacia

	ABT/U	U/RET	Qv/U	Qv/RET	Qv/Qr
1996	#VALORE!	90,741	2,217	201,133	0,959
1997	#VALORE!	90,906	2,256	205,056	0,980
1998	#VALORE!	90,864	2,369	215,278	0,981
1999	#VALORE!	92,449	2,479	229,167	0,982

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,106	0,972	0,103	0,033
1997	0,122	0,968	0,118	0,063
1998	0,177	0,964	0,171	0,066
1999	0,160	0,964	0,154	0,061

	CTF-CLF	CLF/CTF	CTF/Qa
1996	52.972	0,0772	0,4042
1997	57.679	0,0713	0,4254
1998	56.636	0,0664	0,3914
1999	61.383	0,0647	0,3978

	Gas domestico/ gas Tot	Gas ut. Promisc.+risc. /gas Tot	Gas utenze ind./gas Tot.	Gas altre utenze/ga s Tot.
1996	0,014	0,789	0,197	-
1997	0,010	0,733	0,258	-
1998	0,006	0,723	0,271	-
1999	0,006	0,739	0,255	-

Indicatori di struttura ed efficienza per tipologia di utenza

	Gas domest.migliaia mc	Utenze domestiche (Ud)	Gas dom/Ud	Gas promis+riscal damento migliaia mc	Utenze Promscuo+riscal damento (Up)	Gas prom./Up	Gas industriale migliai mc	Utenze industriale (Ui)	Gas ind./Ui	Gas altre utenze migliai mc	altre utenze (Ua)	Gas altre utenze/Ua
1996	2.000	9.310	0,215	112.000	54.744	2,0459	28.000	9	3111,111	-	-	#DIV/0!
1997	1.452	9.139	0,159	107.000	55.575	1,9253	37.635	11	3421,364	-	-	#DIV/0!
1998	1.000	9.034	0,111	112.000	56.376	1,9867	42.000	12	3500,000	-	-	#DIV/0!
1999	1.000	8.907	0,112	122.000	57.645	2,1164	42.000	11	3818,182	-	-	#DIV/0!

Ricavi per tipologia di utenza

	Ricavi da utenze civili	Ricavi da utenze industriali	Ricavi da altre utenze	Ricavi tot utenze	Ric.u.c./RIF	Ricavi da u.i./RIF	Ricavi da a.u./RIF
1996	nd	nd	nd	55.457	#VALORE!	#VALORE!	#VALORE!
1997	nd	nd	nd	61.132	#VALORE!	#VALORE!	#VALORE!
1998	nd	nd	nd	59.150	#VALORE!	#VALORE!	#VALORE!
1999	nd	nd	nd	63.507	#VALORE!	#VALORE!	#VALORE!

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	1	3	65	69
1997	1	2	66	69
1998	1	1	63	65
1999	1	1	66	68

AMAV Venezia

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	124.749	57.034	619	55.618	9.143	22.823	- 4.521	118.794	120.228
1997	151.187	72.744	795	65.565	9.578	31.208	- 9.447	140.901	141.740
1998	147.920	73.679	642	64.708	9.445	15.235	2.292	148.933	150.212
1999	172.301	81.541	583	77.056	10.822	25.077	3.853	170.065	176.154

Dati da bilancio ufficiale

Indicatori di intensità dei fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,4572	0,4458	0,0050	0,0733	2,4962
1997	0,4812	0,4337	0,0053	0,0634	3,2583
1998	0,4981	0,4375	0,0043	0,0639	1,6130
1999	0,4732	0,4472	0,0034	0,0628	2,3172

Dati di Bilancio Consolidato

Apporti al Comune

	Utili	Apporti
1996	78	
1997	57	
1998	124	
1999	214	

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,9881	-0,0376	0,1898	-0,0381
1997	0,9941	-0,0667	0,2202	-0,0670
1998	0,9915	0,0153	0,1014	0,0154
1999	0,9654	0,0219	0,1424	0,0227

Dati in milioni di lire

SERVIZIO IGIENE URBANA

	Quantità raccolta ton. (Qa)	Quantità smaltita ton. (Qs)	Abitanti Raccolta (ABTR)	Abitanti Smaltimento (ABTSm)	Abitanti Spazzamento (ABTSp)	Addetti medi impianti (AD)	Km rete spazzati (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	189.404	166.262	296.456	296.456	296.456	682	225	102.064	52.230	n.d.	40.471	8.813	11.445	- 3.416	98.648	98.648
1997	189.953	163.997	293.727	293.727	293.727	715	225	119.663	60.937	n.d.	43.642	9.095	13.273	- 9.862	109.801	109.801
1998	196.824	163.561	291.531	291.531	291.531	712	235	104.021	55.484	n.d.	39.969	7.967	13.754	323	104.344	104.344
1999	208.289	172.696	289.205	298.205	289.205	730	235	118.213	nd	n.d.	nd	nd	21.648	- 2.932	115.344	115.281

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

quantità smaltita:solo in impianti di terzi eccetto il 1999 in cui lo smaltimento avviene anche in un inceneritore di proprietà dell'azienda. Per gli anni precedenti le ore lavorate per smaltimento sono pari a 0

km spazzati: giornalmente

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	CTF/ABTSm	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABTR/AD	ABTS/AD
1996	0,539	0,276	0,214	0,521	0,344	-5,009	149,654	76,584	144,645	434,686	434,686
1997	0,630	0,321	0,230	0,578	0,407	-13,793	167,361	85,227	153,568	410,807	410,807
1998	0,528	0,282	0,203	0,530	0,357	0,454	146,097	77,927	146,551	409,454	409,454
1999	0,568	#VALORE!	#VALORE!	0,553	0,396	-4,016	161,936	#VALORE!	157,919	396,171	408,500

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,512	0,397	#VALORE!	0,086	1,299
1997	0,509	0,365	#VALORE!	0,076	1,459
1998	0,533	0,384	#VALORE!	0,077	1,726
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di struttura ed efficacia

	RET/ABTSp	Qa/ABTR	Qs/ABTSp	Qa/Qs
1996	0,000758966	0,639	0,561	1
1997	0,000766017	0,647	0,558	1
1998	0,000806089	0,675	0,561	1,203
1999	0,000812572	0,720	0,597	1.206

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	-0,035	1,000	-0,035	0,116
1997	-0,090	1,000	-0,090	0,121
1998	0,003	1,000	0,003	0,132
1999	-0,025	1,001	-0,025	0,188

Indicatori di produttività Spazzamento/Raccolta/Smaltimento

	Costo lav. Spazzam. (CLS)	Ore lavorate Spazzam. (OLS)	CLS/OLS	Addetti medi Spazz. (ADSp)	RET/ADSp	Costo lav. Raccolta (CLR)	Ore lavorate Racc. (OLR)	CLR/OLR	CLR/Qa	Addetti medi Raccolta (ADR)	Qa/ADR	Costo lav. Smaltimento (CLSm)	Ore lavorate Smalt. (OLSm)	CLSm/OLSm	CLSm/Qs	Addetti medi Smaltimento (ADSm)	Qs/ADSm
1996	14788	333	44,408	230	0,97826087	23036	504	45,706	0,1216	353	536,555	nd	nd	#VALORE!	#VALORE!	nd	#VALORE!
1997	16592	322	51,528	225	1	27566	535	51,525	0,1451	372	510,626	nd	nd	#VALORE!	#VALORE!	nd	#VALORE!
1998	14547	289	50,336	210	1,11904762	26286	520	50,550	0,1336	376	523,468	nd	nd	#VALORE!	#VALORE!	nd	#VALORE!
1999	16259	305	53,308	219	1,07305936	27734	519	53,437	0,1332	371	561,426	nd	nd	#VALORE!	#VALORE!	nd	#VALORE!

*Il CLS e il CLR per il 1998 sono stati stimati

	Costo totale Spazzamento (CTSp)	CTSp-CLSp	CLSp/CTSp	Costo totale Raccolta (CTR)	Costo differenz.	Costo differ./CTR	CTR-CLR	CLR/CTR	CTR/Qa	Costo totale Smaltimento (CTSm)	CTSm-CLSm	CLSm/CTSm	CTSm/Qs	Ricavi Smaltimento (RISm)	Ricavi smaltimento rifiuti terzi (RISmT)	Ricavi vendita materiale recuperato o energia	RISmT/RISm
1996	24.875	10087	0,5945	47.010	3952	0,0841	23.974	0,4900	0,2482	21.019	#VALORE!	#VALORE!	0,12642	nd	nd	nd	#VALORE!
1997	26.483	9891	0,6265	54.457	5921	0,1087	26.891	0,5062	0,2867	25.799	#VALORE!	#VALORE!	0,1573	nd	nd	nd	#VALORE!
1998	24.737	10.190	0,5881	51.770	6.194	0,1196	25.484	0,5077	0,2630	25.295	#VALORE!	#VALORE!	0,1547	nd	nd	nd	#VALORE!
1999	28.691	12.432	0,5667	57.998	8.793	0,1516	30.264	0,4782	0,2784	30.537	#VALORE!	#VALORE!	0,1768	nd	nd	nd	#VALORE!

	Dirigenti	Quadri	Imp. e Operai
1996	2	8	672
1997	2	8	705
1998	3	8	701
1999	3	7	720

Tipologia di raccolta differenziata

	carta Tonn.	carta/Qa	vetro Tonn.	vetro/Qa	plastica Tonn.	plastoca/Qa	rganico Toni	Organico/Qa
1996	5304	0,0280	4068	0,0215	1231	0,0065	5288	0,0279
1997	7170	0,0377	3900	0,0205	1509	0,0079	11273	0,0593
1998	7860	0,0399	3542	0,0180	2022	0,0103	18931	0,0962
1999	8772	0,0421	5024	0,0241	244	0,0012	14535	0,0698

AMGA GENOVA

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT) ***	Costo lavoro (CL) ***	Oneri diversi netto tasse (OD) ***	Costo acq. Mat. Prime e servizi (CMP) ***	Ammortam. (A) ***	Investimenti ultimo anno (IUA) ***	MOL*	Ricavi vendite e prest. (RI)***	Valore della produzione (VP) ***
1996	288.813	70.036	5.321	177.870	19.328	49.238	32.909	294.967	321.722
1997	298.158	72.171	4.391	181.411	29.189	48.278	32.239	301.338	330.397
1998	296.412	67.973	5.746	182.296	32.176	41.760	39.297	301.558	335.709
1999	290.022	68.750	6.391	172.746	33.793	39.962	46.429	303.485	336.451

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

***Dati da Bilancio Ufficiale

Indicatori di intensità del fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,2425	0,6159	0	0,0669	2,5475
1997	0,2421	0,6084	0	0,0979	1,6540
1998	0,2293	0,6150	0	0,1086	1,2979
1999	0,2371	0,5956	0	0,1165	1,1826

Dati di Bilancio Consolidato

Apporti al Comune

	Utili	Apporti
1996	34.076	
1997	33.693	
1998	38.703	
1999	41.734	

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,9168	0,1023	0,1530	0,1116
1997	0,9120	0,0976	0,1461	0,1070
1998	0,8983	0,1171	0,1244	0,1303
1999	0,9020	0,1380	0,1188	0,1530

Dati in Milioni di lire

SERVIZIO IDRICO

	Abitanti Tot** (ABT)	Addetti medi impianti (AD)	Km rete Tot. (RET)	Costo Totale filiera (CTF)	Costo lavoro filiera (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi *(CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo *MOLF	Ricavi vendite e prestazioni (RIF)	Valore produzione filiera (VPF)
1996	360.000	n.d.	1.105	60.235	25.138	-	8.457	6.152	n.d.	8.510	62.388	68.745
1997	360.000	n.d.	1.105	65.946	26.265	-	35.856	7.338	15.700	14.218	73.220	80.164
1998	360.000	295	1.105	79.911	30.077	-	41.013	8.821	20.875	11.543	74.143	91.454
1999	360.000	264	1.105	78.020	32.400	-	37.104	8.516	13.395	14.920	77.865	92.940

* Incluse variazioni rimanenze

**Abit. Distribuzione

Per il 98 e 99 il costo del lavoro è solo diretto

Per il 98-99 i dati sono ricavati di bilanci ufficiali e non dal questionario

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	ABT/AD
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	39,13	270,88	101,96	1220,338983
1999	56,52	295,53	122,73	1363,636364

Indicatore di redditività

	RIF/VPF	MOLF/VPF	IUAF/VPF	MOLF/RIF
1996	0,908	0,124	#VALORE!	0,136
1997	0,913	0,177	0,196	0,194
1998	0,811	0,126	0,228	0,156
1999	0,838	0,161	0,144	0,192

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,417	0,140	#VALORE!	0,102	#VALORE!
1997	0,398	0,544	#VALORE!	0,111	2,140
1998	0,376	0,513	#VALORE!	0,110	2,367
1999	0,415	0,476	#VALORE!	0,109	1,573

	Dirigenti	Quadri	Imp. e Operai
1996	n.d	n.d.	n.d.
1997	n.d	n.d.	n.d.
1998	3	4	288
1999	4	1	259

Dati in Milioni di lire

ADDUZIONE E DISTRIBUZIONE

	Acqua erogata 000Mc (Qa)	Acqua add.tta 000Mc (Q)	Abitanti Tot (ABT)	Utenze servite distribuzione (U)	Ore lavorate in migliaia(AD)	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo MOLF*	Tot ricavi distribuzione (RIF)	Valore produzione fase (VPF)
1996	41.000	n.d.	360.000	n.d.	n.d.	1.105	26.280	11.979	n.d.	3.502	4.242	n.d.	8.124	28.470	34.404
1997	41.089	n.d.	360.000	n.d.	n.d.	1.105	n.d.	n.d.	n.d.	n.d.	n.d.	8.372	#VALORE!	n.d.	n.d.
1998	40.887	47.000	360.000	41.229	n.d.	1.105	n.d.	n.d.	n.d.	n.d.	n.d.	6.682	#VALORE!	n.d.	n.d.
1999	42.408	47.000	360.000	41.500	306	1.105	38.507	15.183	n.d.	n.d.	n.d.	4.595	#VALORE!	n.d.	n.d.

Per il 96-97-98 dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	Qa/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,641	0,292	0,085	0,839	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	0,908	0,358	#VALORE!	#VALORE!	138,588	0,934	#VALORE!	125,840	49,618	#VALORE!	134,735

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,456	0,133	#VALORE!	0,161	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	0,394	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di struttura ed efficacia

	U/ABT	RET/U	Qa/U	Qa/RET	Qa/Q
1996	#VALORE!	#VALORE!	#VALORE!	37,104	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	0,115	0,027	1,140	37,002	0,870
1999	0,115	0,027	1,029	38,378	0,902

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,2854	0,8275	0,2361	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Adduzione e Distribuzione

	Costo lav. Adduzione (CLA)	Ore lavorate Add. In migliaia(OLA)	CLA/OLA	Costo lav. Distribuzione (CLD)	Ore lavorate Distr. In migliaia(OLD)	CLD/OLD
1996	n.d.	n.d.	#VALORE!	15153	313	48,412
1997	n.d.	n.d	#VALORE!	17872	341	52,411
1998	n.d.	n.d.	#VALORE!	n.d.	n.d	#VALORE!
1999	3420	71	48,169	11763	235	50,055

	Costo totale Adduzione (CTA)	CTA-CLA	CTA/Q	Costo totale Distribuzione (CTD)	CTD-CLD	CTD/Qa	Ricavi Distribuzione (RIFD)	Ricavi contributi c/esercizio (RIFC)	RIFD/RIF	RIFC/RIF
1996	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!
1997	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!
1998	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!
1999	7.413	3.993	0,1577	31.094	19.331	0,7332	33437	7681	#VALORE!	#VALORE!

Dati in Milioni di lire

DEPURAZIONE & FOGNATURA

	Quantità Dep. COD Ton. (Qd)	Quantità Fogn. (Qf)	Abitanti serviti tot. Fognat. (ABT)	Ore lavorate tot in migliaia (AD)	Km rete fogn. Tot (RET)	Costo Totale (CTF)	Costo lavoro tot (CLF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam.*** (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo 'MOLF*	Tot ricavi (RIF)	Valore produzione fase (VPF)***
1996	n.d.	n.d.	687.100	n.d.	n.d.	33.955	13.159	4.955	1.910	n.d.	386	33.918	34.341
1997	n.d.	n.d.	687.100	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.
1998	n.d.	n.d.	687.100	n.d.	970	n.d.	n.d.	n.d.	n.d.	14.193	#VALORE!	43.487	n.d.
1999	n.d.	n.d.	687.100	229	970	20.923	10.999	n.d.	n.d.	7.345	#VALORE!	45.430	n.d.

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qd	CLF/Qd	CMPF/Qd	VPF/Qd	Qd/AD	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABT/AD
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	91,367	48,031	#VALORE!	3000,437

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,388	0,146	#RIF!	0,056	#VALORE!
1997	#VALORE!	#VALORE!	#RIF!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#RIF!	#VALORE!	#VALORE!
1999	0,526	#VALORE!	#RIF!	#VALORE!	#VALORE!

Indicatori di struttura ed efficacia

	Qf/RET	ABT/RET	Qd/ABT	Qf/ABT	Qd/Qf
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	708,351	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	708,351	#VALORE!	#VALORE!	#VALORE!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,011	0,988	0,011	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Fognatura e Depurazione

	Costo lav. Depurazione (CLD)	Ore lavorate Depur. (OLD)	CLD/OLD	CLD/Qd	Costo lav. Fognatura (CLF)	Ore lavorate Fogn. (OLF)	CLD/OLD
1996	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!
1997	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!
1998	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!
1999	4865	104	46,779	#VALORE!	6134	125	49,072

	Costo Tot. Depurazione (CTD)	CTD/Qd	CTD-CLD	CLD/CTD	Ricavi acque reflue tariffa civile (RIFTC)	Ricavi a.r. ind. Tariffa reg.ie (RIFTR)	Ricavi attività commerciale (RIFC)	RIFTC/RIF	RIFTR/RIF	RIFC/RIF
1996	33955	#VALORE!	#VALORE!	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!
1997	n.d.	#VALORE!	#VALORE!	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!
1998	n.d.	#VALORE!	#VALORE!	#VALORE!	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!
1999	11.418	#VALORE!	6.553	0,4261	30.780	830	-	0,6775	0,0183	0,0000

Dati in milioni di lire

SERVIZIO DI TELERISCALDAMENTO ED ENERGIA ELETTRICA

	Quantità lorda prodotta (Ql) GWh	Quantità distribuita (Qa) GWh	Calore Prodotto (Qc) Gcal	Calore distr. (QcD)Gcal	Abitanti Tot (ABT)	Utenze servite elettrico (U)	Utenze servite calore (Uc)	Addetti medi impianti (AD)	Km rete trasporto (RET)	Km rete distrib.ne elettr. (RED)	Km rete calore distr. (REC)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF) *	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF**	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	n.d.	40	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-	n.d.	n.d.	21.151	2.840	n.d.	12.123	410	n.d.	8.755	25.641	29.906
1997	n.d.	38	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-	n.d.	n.d.	22.824	3.240	n.d.	12.402	3.250	n.d.	10.470	26.906	33.294
1998	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-	n.d.	n.d.	23.661	4.427	n.d.	15.855	3.379	n.d.	4.793	23,719	28.454
1999	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-	n.d.	n.d.	22.679	3.965	n.d.	15.344	3.370	n.d.	4.330	22.844	27.009

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Per il 98 e 99 il costo del lavoro è quello diretto

* Incluse variazioni rimanenze

Gas metano+gas GPL

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	VPF/AD
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di struttura ed efficacia

	U/ABT	Uc/ABT	U/RET	Qa/U	Qa/RED	Qc/Uc	Qc/REC
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF	Investimenti Prod.	Investimenti Prod./IUAF	Investimenti trasporto	Investimenti trasp./IUAF	Investimenti Distr.	Investimenti Distr./IUAF
1996	0,1343	0,5732	#VALORE!	0,0194	#VALORE!	-	#VALORE!	-	#VALORE!	-	#VALORE!
1997	0,1420	0,5434	#VALORE!	0,1424	#VALORE!	-	#VALORE!	-	#VALORE!	-	#VALORE!
1998	0,1871	0,6701	0,0000	0,1428	#VALORE!	-	#VALORE!	-	#VALORE!	-	#VALORE!
1999	0,1748	0,6766	#VALORE!	0,1486	#VALORE!	-	#VALORE!	-	#VALORE!	-	#VALORE!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,3414453	0,85738648	0,2927506	#VALORE!
1997	0,3891325	0,8081336	0,3144711	#VALORE!
1998	0,2020743	0,83359106	0,1684473	#VALORE!
1999	0,1895465	0,84579214	0,1603169	#VALORE!

	CTF-CLF	CLF/CTF
1996	18.311	0,1343
1997	19.584	0,1420
1998	19.234	0,1871
1999	18.714	0,1748

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	n.d.	n.d.	n.d.	n.d.
1997	n.d.	n.d.	n.d.	n.d.
1998	n.d.	n.d.	n.d.	n.d.
1999	n.d.	n.d.	n.d.	n.d.

Indicatori di struttura ed efficienza per tipologia di utenza

	Elettricità domestica (Ed) GWh	Utenze domestiche (Ud) GWh	Ed/Ud	Elettricità non domestica(End) GWH	Utenze non domestiche (Und)	End/Und	Calore distribuito (QcD) Gcal	Utenze calore (Uc)	Qc/Uc
1996	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!
1997	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!
1998	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!
1999	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!

Ricavi per tipologia di utenza

	Ricavi da prod. e.e (RIPE)	Ricavi da prod. Calore (RIPC)	Ricavi da distrib. e.e. (RIDE)	Ricavi da distr.cal. (RIDC)	RIPE/RIF	RIPC/RIF	RIDE/RIF	RIDC/RIF	RIDE/Qa	RIDC/Qc
1996	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	981	n.d.	n.d.	n.d.	0,0429	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Produzione/Trasporto/Distribuzione

	Costo lav. Produzione (CLP)	Ore lavorate Produz. (OLP)	CLP/OLP	Addetti medi Prod. (ADP)	Costo lav. trasporto (CLT)	Ore lavorate trasporto (OLT)	CLT/OLT	Addetti medi Trasporto (ADT)	Costo lav. Distrib. (CLD)	Ore lavorate Distr. (OLD)	CLD/OLD	Addetti medi Distribuzione(ADD)
1996	0	0	#DIV/0!	0	0	0	#DIV/0!	0	n.d.	n.d.	#VALORE!	n.d.
1997	0	0	#DIV/0!	0	0	0	#DIV/0!	0	n.d.	n.d.	#VALORE!	n.d.
1998	0	0	#DIV/0!	0	0	0	#DIV/0!	0	n.d.	n.d.	#VALORE!	n.d.
1999	0	0	#DIV/0!	0	0	0	#DIV/0!	0	n.d.	n.d.	#VALORE!	n.d.

	Costo totale Produzione (CTP)	CTP-CLP	CLP/CTP	Costo totale Trasporto (CTT)	CTT-CLT	CLT/CTT	Costo totale Distrib. (CTD)	CTD-CLD	CLD/CTD
1996	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!
1997	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!
1998	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!
1999	723	723	0,0000	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!

Dati in milioni di lire

SERVIZIO GAS

	Volume gas in rete migliaia mc (Qr)	Volume gas venduto migliaia mc (Qv)	Abitanti Tot (ABT)	Utenze servite (U)	Addetti medi anno	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	n.d.	368.000	670.000	n.d.	n.d.	1.496	169.722	22.171	n.d.	124.882	15.808	n.d.	37.175	204.648	206.897
1997	n.d.	n.d.	670.000	n.d.	n.d.	1.496	167.855	21.172	n.d.	121.206	17.630	31.600	34.401	198.440	202.256
1998	375.800	346.000	670.000	312.532	290	1.496	182.621	27.202	n.d.	119.016	19.977	19.127	23.406	201.739	206.027
1999	380.000	351.748	670.950	313.819	274	1.496	180.822	26.883	n.d.	132.509	21.430	21.420	28.054	200.278	208.876

Per il 96-97 dati dal Bilancio ufficiale

Indicatori di produttività ed economicità

	CTF/Qv	CLF/Qv	CMPF/Qv	VPF/Qv	Qv/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,4612	0,0602	0,3394	0,5622	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	0,5278	0,0786	0,3440	0,5955	1193,10	0,5843	80,71	629,73	93,8000	710,4379	1077,6966
1999	0,5141	0,0764	0,3767	0,5938	1283,75	0,5762	102,39	659,93	98,1131	762,3212	1145,3248

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,131	0,736	#VALORE!	0,093	#VALORE!
1997	0,126	0,722	#VALORE!	0,105	1,792
1998	0,149	0,652	#VALORE!	0,109	0,957
1999	0,149	0,733	#VALORE!	0,119	1,000

Indicatori di struttura ed efficacia

	ABT/U	U/RET	Qv/U	Qv/RET	Qv/Qr
1996	#VALORE!	#VALORE!	#VALORE!	245,989	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	2,144	208,912	1,107	231,283	0,921
1999	2,138	209,772	1,121	235,126	0,926

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,182	0,989	0,180	#VALORE!
1997	0,173	0,981	0,170	0,156
1998	0,116	0,979	0,114	0,093
1999	0,140	0,969	0,134	0,103

	Gas domestico/ gas Tot	Gas ut. Promisc.+risc./gas Tot	Gas utenze ind./gas Tot.	Gas altre utenze/gas Tot.
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	0,100	0,350	0,090	0,460
1999	0,107	0,339	0,094	0,460

Indicatori di struttura ed efficienza per tipologia di utenza

	Gas domest.migliaia mc	Utenze domestiche (Ud)	Gas dom/Ud	Gas promis+riscaldamento migliaia mc	Utenze Promscuo+riscaldamento (Up)	Gas prom./Up	Gas industriale migliai mc	Utenze Industriale (Ui)	Gas ind./Ui	Gas altre utenze migliai mc	altre utenze (Ua)	Gas altre utenze/Ua
1996	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!
1997	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!
1998	34.600	161.500	0,214	121.100	141.000	0,8589	31.140	32	973,125	159.160	10.000	15,916
1999	37.796	163.728	0,231	119.079	139.831	0,8516	32.958	33	998,727	161.915	10.227	15,832

Ricavi per tipologia di utenza

	Ricavi da utenze civili	Ricavi da utenze industriali	Ricavi da altre utenze	Ric.u.c./RIF	Ricavi da u.i./RIF	Ricavi da a.u./RIF
1996	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!
1997	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!
1998	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!
1999	189.621	10.379	273	0,9468	0,0518	0,0014

	CTF-CLF	CLF/CTF	CTF/Qa
1996	147.551	0,1306	0,4612
1997	146.683	0,1261	#VALORE!
1998	155.419	0,1490	0,5278
1999	153.939	0,1487	0,5141

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	n.d.	n.d.	n.d.	n.d.
1997	n.d.	n.d.	n.d.	n.d.
1998	2	1	287	290
1999	2	1	271	274

AMGA UDINE

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	58.403	10.091		40.755	4.056		- 66	51.834	58.337
1997	56.604	11.595		40.205	5.168		6.542	57.909	63.146
1998	61.193	11.539		42.389	5.274		5.913	59.782	67.106
1999	59.460	11.906		41.094	5.256		5.894	59.040	65.354

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Dati di Bilancio Consolidato

Nel 1998 la società si è trasformata in SpA. Il bilancio è pertanto suddiviso in due parti.

Indicatori di intensità dei fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,1728	0,6978	-	0,0694	0,0000
1997	0,2048	0,7103	-	0,0913	0,0000
1998	0,1886	0,6927	-	0,0862	0,0000
1999	0,2002	0,6911	-	0,0884	0,0000

Dati di Bilancio Consolidato

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,8885	-0,0011	0,0000	-0,0013
1997	0,9171	0,1036	0,0000	0,1130
1998	0,8909	0,0881	0,0000	0,0989
1999	0,9034	0,0902	0,0000	0,0998

Apporti al Comune

	Utili	Apporti
1996		
1997		
1998		
1999	6.706	6.706

Dati in Milioni di lire

SERVIZIO IDRICO

	Abitanti Tot** (ABT)	Addetti medi impianti (AD)	Km rete Tot. (RET)	Costo Totale filiera (CTF)	Costo lavoro filiera (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi *(CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo *MOLF	Ricavi vendite e prestazioni (RIF)	Valore produzione filiera (VPF)
1996	95.100	27	399	6.613	1.936		3.686	828	1.215	- 519	4.668	6.094
1997	98.000	27	447	5.728	2.026		2.434	960	1.065	- 2.370	4.933	5.613
1998	109.000	41	620	8.612	2.930		4.304	1.225	2.111	- 4.718	5.952	8.228
1999	109.000	49	618	9.579	3.415		4.717	1.201	993	- 5.051	6.537	9.480

* Incluse variazioni rimanenze

**Abit. Distribuzione

Per il 98 e 99 il costo del lavoro è solo diretto

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	ABT/AD
1996	-19,22	244,93	71,70	3522,222222
1997	-87,78	212,15	75,04	3629,62963
1998	-115,07	210,05	71,46	2658,536585
1999	-103,08	195,49	69,69	2224,489796

Indicatore di redditività

	RIF/VPF	MOLF/VPF	IUAF/VPF	MOLF/RIF
1996	0,766	-0,085	0,199	-0,111
1997	0,879	-0,422	0,190	-0,480
1998	0,723	-0,573	0,257	-0,793
1999	0,690	-0,533	0,105	-0,773

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,293	0,557	0,000	0,125	1,467
1997	0,354	0,425	0,000	0,168	1,109
1998	0,340	0,500	0,000	0,142	1,723
1999	0,357	0,492	0,000	0,125	0,827

	Dirigenti	Quadri	Imp. e Operai
1996	1	2	24
1997	1	2	24
1998	1	2	38
1999	1	3	45

Dati in Milioni di lire

ADDUZIONE E DISTRIBUZIONE

	Acqua erogata 000Mc (Qa)	Acqua add.tta 000Mc (Q)	Abitanti Tot (ABT)	Utenze servite distribuzione (U)	Ore lavorate in migliaia(AD)	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo MOLF*	Tot ricavi distribuzione (RIF)	Valore produzione fase (VPF)
1996	10.100	12.250	95.100	23.700	n.d.	399	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.
1997	10.464	13.650	98.000	29.120	n.d.	447	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.
1998	11.324	16.600	109.000	29.400	n.d.	620	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.
1999	11.557	17.100	109.000	29.585	n.d.	618	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	#VALORE!	n.d.	n.d.

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.
* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	Qa/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di struttura ed efficacia

	U/ABT	RET/U	Qa/U	Qa/RET	Qa/Q
1996	0,249	0,017	0,426	25,313	0,824
1997	0,297	0,015	0,469	30,537	0,767
1998	0,270	0,021	0,565	18,265	0,682
1999	0,270	0,021	0,393	18,701	0,676

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Adduzione e Distribuzione

	Costo lav. Adduzione (CLA)	Ore lavorate Add. In migliaia(OLA)	CLA/OLA	Costo lav. Distribuzione (CLD)	Ore lavorate Distr. In migliaia(OLD)	CLD/OLD
1996	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!
1997	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!
1998	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!
1999	n.d.	n.d.	#VALORE!	n.d.	n.d.	#VALORE!

	Costo totale Adduzione (CTA)	CTA-CLA	CTA/Q	Costo totale Distribuzione (CTD)	CTD-CLD	CTD/Qa	Ricavi Distribuzione (RIFD)	Ricavi contributi c/esercizio (RIFC)	RIFD/RIF	RIFC/RIF
1996	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!
1997	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!
1998	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!
1999	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!

Dati in Milioni di lire

DEPURAZIONE & FOGNATURA

	Quantità Dep. COD Ton. (Qd)	Quantità Fogn. (Qf)	Abitanti serviti tot. Fognat. (ABT)	Ore lavorate tot in migliaia (AD)	Km rete fogn. Tot (RET)	Costo Totale (CTF)	Costo lavoro tot (CLF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo 'MOLF*	Tot ricavi (RIF)	Valore produzione fase (VPF)
1996													
1997	1.870	n.d.	98.000	17	320	2.614	858	n.d	n.d.	61	#VALORE!	4.134	n.d.
1998	1.870	n.d.	98.000	47	320	4.080	1.992	n.d.	n.d.	215	#VALORE!	4.429	n.d.
1999	1.900	n.d.	100.000	49	330	4.589	2.193	n.d.	n.d.	2	#VALORE!	4.932	n.d.

Nel 96 non vi è stato servizio

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qd	CLF/Qd	CMPF/Qd	VPF/Qd	Qd/AD	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABT/AD
1996	1,398	0,459	#VALORE!	#VALORE!	110,000	#VALORE!	153,765	50,471	#VALORE!	5764,706
1997	#RIF!	#RIF!	#RIF!	#RIF!	#RIF!	#RIF!	#RIF!	#RIF!	#RIF!	#RIF!
1998	2,182	1,065	#VALORE!	#VALORE!	39,787	#VALORE!	86,809	42,383	#VALORE!	2085,106
1999	2,415	1,154	#VALORE!	#VALORE!	38,776	#VALORE!	93,653	44,755	#VALORE!	2040,816

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,328	#VALORE!	#RIF!	#VALORE!	#VALORE!
1997	#RIF!	#RIF!	#RIF!	#RIF!	#RIF!
1998	0,488	#VALORE!	#RIF!	#VALORE!	#VALORE!
1999	0,478	#VALORE!	#RIF!	#VALORE!	#VALORE!

Indicatori di struttura ed efficacia

	Qf/RET	ABT/RET	Qd/ABT	Qf/ABT	Qd/Qf
1996	#VALORE!	306,250	0,019	#VALORE!	#VALORE!
1997	#RIF!	#RIF!	#RIF!	#RIF!	#RIF!
1998	#VALORE!	306,250	52,406	#VALORE!	#VALORE!
1999	#VALORE!	303,030	52,632	#VALORE!	#VALORE!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#RIF!	#RIF!	#RIF!	#RIF!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Fognatura e Depurazione

	Costo lav. Depurazione (CLD)	Ore lavorate Depur. (OLD)	CLD/OLD	CLD/Qd	Costo lav. Fognatura (CLF)	Ore lavorate Fogn. (OLF)	CLD/OLD
1996			#DIV/0!	0,0000			#DIV/0!
1997	741	15	49,400	#RIF!	117	2	58,500
1998	1400	33	42,424	0,7487	592	14	42,286
1999	1368	30	45,600	0,7200	825	19	43,421

	Costo Tot. Depurazione (CTD)	CTD/Qd	CTD-CLD	CLD/CTD	Ricavi acque reflue tariffa civile (RIFTC)	Ricavi a.r. ind. Tariffa reg.le (RIFTR)	Ricavi attività commerciale (RIFC)	RIFTC/RIF	RIFTR/RIF	RIFC/RIF
1996		0	0	#DIV/0!		-	-	0,0000	-	0,0000
1997	2.172	#RIF!	1.431	0,3412	n.d	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!
1998	3.156	1,6877	1.756	0,4436	n.d	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!
1999	3.045	1,6026	1.677	0,4493	n.d	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!

Dati in milioni di lire

SERVIZIO GAS

	Volume gas in rete migliaia mc (Qr)	Volume gas venduto migliaia mc (Qv)	Abitanti Tot (ABT)	Utenze servite (U)	Addetti medi anno	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	89.117	89.547	95.098	44.560	94	345	43.482	6.612		30.376	2.378	1.641	2.355	44.046	45.837
1997	84.776	86.118	94.823	45.062	97	346	43.922	7.190		33.973	2.431	1.253	3.369	46.528	47.291
1998	89.130	89.686	94.821	45.710	66	351	41.221	4.652		33.334	2.693	2.072	5.815	45.573	47.036
1999	90.479	90.847	94.932	46.320	69	353	39.900	4.874		32.129	2.624	1.644	5.698	43.817	45.598

Indicatori di produttività ed economicità

	CTF/Qv	CLF/Qv	CMPF/Qv	VPF/Qv	Qv/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,4856	0,0738	0,3392	0,5119	952,63	0,9758	25,05	462,57	70,3404	487,6277	474,0426
1997	0,5100	0,0835	0,3945	0,5491	887,81	0,9747	34,73	452,80	74,1237	487,5361	464,5567
1998	0,4596	0,0519	0,3717	0,5245	1358,88	0,9018	88,11	624,56	70,4848	712,6667	692,5758
1999	0,4392	0,0537	0,3537	0,5019	1316,62	0,8614	82,58	578,26	70,6377	660,8406	671,3043

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,152	0,699	0,000	0,055	0,690
1997	0,164	0,773	0,000	0,055	0,515
1998	0,113	0,809	0,000	0,065	0,769
1999	0,122	0,805	0,000	0,066	0,627

Indicatori di struttura ed efficacia

	ABT/U	U/RET	Qv/U	Qv/RET	Qv/Qr
1996	2,134	129,159	2,010	259,557	1,005
1997	2,104	130,237	1,911	248,896	1,016
1998	2,074	130,228	1,962	255,516	1,006
1999	2,049	131,218	1,961	257,357	1,004

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,053	0,961	0,051	0,036
1997	0,072	0,984	0,071	0,026
1998	0,128	0,969	0,124	0,044
1999	0,130	0,961	0,125	0,036

	Gas domestico/ gas Tot	Gas ut. Promisc.+risc./gas Tot	Gas utenze ind./gas Tot.	Gas altre utenze/gas Tot.
1996	0,011	0,501	0,090	0,397
1997	0,011	0,496	0,099	0,394
1998	0,012	0,488	0,098	0,402
1999	0,007	0,495	0,098	0,401

Indicatori di struttura ed efficienza per tipologia di utenza

	Gas domest.migliaia mc	Utenze domestiche (Ud)	Gas dom/Ud	Gas promis+riscal damento migliaia mc	Utenze Promscuo+riscal damento (Up)	Gas prom./Up	Gas industriale migliai mc	Utenze Industriale (Ui)	Gas ind./Ui	Gas altre utenze migliai mc	altre utenze (Ua)	Gas altre utenze/Ua
1996	1.028	11.727	0,088	44.867	28.566	1,5706	8.100	7	1157,143	35.552	4.260	8,346
1997	908	11.626	0,078	42.757	29.123	1,4682	8.557	8	1069,625	33.896	4.305	7,874
1998	1.090	11.562	0,094	43.729	29.715	1,4716	8.808	8	1101,000	36.059	4.425	8,149
1999	593	11.423	0,052	44.940	30.394	1,4786	8.907	9	989,667	36.407	4.494	8,101

Ricavi per tipologia di utenza

	Ricavi da utenze civili	Ricavi da utenze Industriali	Ricavi da altre utenze	Ric.u.c./RIF	Ricavi da u.i./RIF	Ricavi da a.u./RIF
1996	35.965	165	2.615	0,8165	0,0037	0,0594
1997	37.587	489	2.732	0,8078	0,0105	0,0587
1998	38.126	590	2.496	0,8366	0,0129	0,0548
1999	36.821	550	2.135	0,8403	0,0126	0,0487

	CTF-CLF	CLF/CTF	CTF/Qa
1996	36.870	0,1521	0,4856
1997	36.732	0,1637	0,5100
1998	36.569	0,1129	0,4596
1999	35.026	0,1222	0,4392

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	2	6	86	94
1997	2	6	89	97
1998	1	4	61	66
1999	1	4	64	69

AMI IMOLA

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	171.763	24.579	919	114.988	22.321	22.184	6.741	144.204	178.504
1997	199.013	25.517	2.420	137.173	23.801	38.119	4.205	159.055	203.218
1998	204.661	25.463	2.647	143.241	26.382	31.623	7.243	169.195	211.904
1999	216.801	26.634	2.442	28.585	28.953	33.137	3.401	175.392	220.202

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Dati da Bilancio Ufficiale

Indicatori di intensità dei fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,1431	0,6695	0,0054	0,1300	0,9939
1997	0,1282	0,6893	0,0122	0,1196	1,6016
1998	0,1244	0,6999	0,0129	0,1289	1,1987
1999	0,1228	0,1318	0,0113	0,1335	1,1445

Dati di Bilancio Consolidato

Apporti al Comune

	Utili	Apporti
1996	8.764	4.350
1997	7.413	4.382
1998	7.591	4.934
1999	7.431	4.830

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,8078	0,0378	0,1243	0,0467
1997	0,7827	0,0207	0,1876	0,0264
1998	0,7985	0,0342	0,1492	0,0428
1999	0,7965	0,0154	0,1505	0,0194

	Dirigenti	Quadri	Imp. e Operai
1996	4	11	312
1997	4	11	316
1998	4	12	315
1999	5	12	319

Dati in Milioni di lire

SERVIZIO IDRICO

	Abitanti Tot** (ABT)	Addetti medi impianti (AD)	Km rete Tot. (RET)	Costo Totale filiera (CTF)	Costo lavoro filiera (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi *(CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo *MOLF	Ricavi vendite e prestazioni (RIF)	Valore produzione filiera (VPF)
1996	139.129	76	-	26.487	5.535	-	12.433	7.068	4.736	- 6.032	15.716	20.455
1997	155.907	84	-	38.741	6.282	-	22.381	7.596	13.889	- 7.184	20.254	31.557
1998	164.913	97	-	43.573	7.207	-	26.339	8.668	13.562	- 6.407	23.890	37.166
1999	177.311	103	-	44.252	7.762	-	25.659	9.682	11.653	- 5.962	26.786	38.290

* Incluse variazioni rimanenze

**Abit. Distribuzione

Per il 98 e 99 il costo del lavoro è solo diretto

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	ABT/AD
1996	-79,37	348,51	72,83	1830,644737
1997	-85,52	461,20	74,79	1856,035714
1998	-66,05	449,21	74,30	1700,134021
1999	-57,88	429,63	75,36	1721,466019

Indicatore di redditività

	RIF/VPF	MOLF/VPF	IUAF/VPF	MOLF/RIF
1996	0,768	-0,295	0,232	-0,384
1997	0,642	-0,228	0,440	-0,355
1998	0,643	-0,172	0,365	-0,268
1999	0,700	-0,156	0,304	-0,223

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,209	0,469	#VALORE!	0,267	0,670
1997	0,162	0,578	#VALORE!	0,196	1,828
1998	0,165	0,604	#VALORE!	0,199	1,565
1999	0,175	0,580	#VALORE!	0,219	1,204

	Dirigenti	Quadri	Imp. e Operai	TOT
1996	n.d.	n.d.	n.d	76
1997	n.d.	n.d.	n.d.	84
1998	n.d.	n.d.	n.d.	97
1999	n.d.	n.d.	n.d.	103

Dati in Milioni di lire

ADDUZIONE E DISTRIBUZIONE

	Acqua erogata 000Mc (Qa)	Acqua add.tta 000Mc (Q)	Abitanti Tot (ABT)	Utenze servite distribuzione (U)	Ore lavorate in migliaia(AD)	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)***	Ammortam. (AF) ***	Investimenti ultimo anno (IUAF)	Reddito operativo MOLF*	Tot ricavi distribuzione (RIF)	Valore produzione fase (VPF)
1996	9.297	11.964	139.129	53.326	99	1.341	14.674	4.249	n.d.	5.124	6.422	3.442	#VALORE!	10.647	n.d.
1997	11.388	14.163	155.907	61.382	111	1.938	18.325	4.773	n.d.	7.052	6.886	10.468	#VALORE!	13.995	n.d
1998	12.554	15.484	164.913	66.014	125	1.964	20.623	5.423	n.d.	8.807	7.701	9.868	#VALORE!	16.256	n.d
1999	12.954	16.188	177.311	70.544	130	2.270	16.612	5.688	n.d.	8.493	7.862	7.524	#VALORE!	18.630	n.d.

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	Qa/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	1,578	0,457	0,551	#VALORE!	93,909	0,275	#VALORE!	148,222	42,919	#VALORE!	538,646
1997	1,294	0,337	0,498	#VALORE!	127,595	0,299	#VALORE!	165,090	43,000	#VALORE!	552,991
1998	1,643	0,432	0,702	#VALORE!	100,432	0,312	#VALORE!	164,984	43,384	#VALORE!	528,112
1999	1,282	0,439	0,656	#VALORE!	99,646	0,252	#VALORE!	127,785	43,754	#VALORE!	507,800

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,290	0,349	#VALORE!	0,438	0,536
1997	0,260	0,385	#VALORE!	0,376	1,520
1998	0,263	0,427	#VALORE!	0,373	1,281
1999	0,342	0,511	#VALORE!	0,473	0,957

Indicatori di struttura ed efficacia

	U/ABT	RET/U	Qa/U	Qa/RET	Qa/Q
1996	0,383	0,025	0,174	6,933	0,777
1997	0,394	0,032	0,231	7,308	0,804
1998	0,400	0,030	0,235	6,392	0,811
1999	0,372	0,034	0,196	5,707	0,800

indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Adduzione e Distribuzione

	Costo lav. Adduzione (CLA)	Ore lavorate Add. In migliaia(OLA)	CLA/OLA	Costo lav. Distribuzione (CLD)	Ore lavorate Distr. In migliaia(OLD)	CLD/OLD
1996	744	17	43,765	3505	82	42,744
1997	739	17	43,471	4034	94	42,915
1998	1634	38	43,000	3789	87	43,552
1999	1738	40	43,450	3950	90	43,889

	Costo totale Adduzione (CTA)	CTA-CLA	CTA/Q	Costo totale Distribuzione (CTD)	CTD-CLD	CTD/Qa	Ricavi Distribuzione (RIFD)	Ricavi contributi c/esercizio (RIFC)	RIFD/RIF	RIFC/RIF
1996	4.192	3.448	0,350	10.482	6.977	1,127	10647	0	1,0000	0,0000
1997	6.150	5.411	0,434	12.175	8.141	1,069	13995	0	1,000	0,0000
1998	6.447	4.813	0,4164	14.176	10.387	1,1292	16256	0	1,000	0,000
1999	6.769	5.031	0,4181	15.751	11.801	1,2159	18630	0	1,000	0,000

Dati in Milioni di lire

DEPURAZIONE & FOGNATURA

	Quantità Dep. COD Ton. (Qd)	Quantità Fogn. (Qf)	Abitanti serviti tot. Fognat. (ABT)	Ore lavorate tot in migliaia (AD)	Km rete fogn. Tot (RET)	Costo Totale (CTF)	Costo lavoro tot (CLF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam.*** (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo 'MOLF*	Tot ricavi (RIF)	Valore produzione fase (VPF)***
1996	n.d.	6.947	139.129	30	500	7.075	1.286	3.050	1.240	1.294	#VALORE!	5.069	n.d
1997	n.d.	10.200	155.907	33	500	9.113	1.509	3.825	1.310	3.421	#VALORE!	6.259	n.d.
1998	n.d.	9.187	164.913	41	700	9.674	1.532	4.281	1.489	3.694	#VALORE!	7.634	n.d.
1999	n.d.	9.933	177.311	46	700	10.228	2.074	4.639	1.648	4.129	#VALORE!	8.156	n.d.

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qd	CLF/Qd	CMPF/Qd	VPF/Qd	Qd/AD	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABT/AD
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	235,833	42,867	#VALORE!	4637,633
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	276,152	45,727	#VALORE!	4724,455
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	235,951	37,366	#VALORE!	4022,268
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	222,348	45,087	#VALORE!	3854,587

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,182	0,431	#RIF!	0,175	1,044
1997	0,166	0,420	#RIF!	0,144	2,611
1998	0,158	0,443	#RIF!	0,154	2,481
1999	0,203	0,454	#RIF!	0,161	2,505

Indicatori di struttura ed efficacia

	Qf/RET	ABT/RET	Qd/ABT	Qf/ABT	Qd/Qf
1996	13,894	278,258	#VALORE!	0,050	#VALORE!
1997	20,400	311,814	#VALORE!	0,065	#VALORE!
1998	13,124	235,590	#VALORE!	0,056	#VALORE!
1999	14,190	253,301	#VALORE!	0,056	#VALORE!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Fognatura e Depurazione

	Costo lav. Depurazione (CLD)	Ore lavorate Depur. (OLD)	CLD/OLD	CLD/Qd	Costo lav. Fognatura (CLF)	Ore lavorate Fogn. (OLF)	CLD/OLD
1996	925	22	42,045	#VALORE!	361	8	45,125
1997	1111	24	46,292	#VALORE!	398	9	44,222
1998	1094	28	39,071	#VALORE!	438	13	33,692
1999	1394	31	44,968	#VALORE!	680	15	45,333

	Costo Tot. Depurazione (CTD)	CTD/Qd	CTD-CLD	CLD/CTD	Ricavi acque reflue tariffa civile (RIFTC)	Ricavi a.r. ind. Tariffa reg.le (RIFTR)	Ricavi attività commerciale (RIFC)	RIFTC/RIF	RIFTR/RIF	RIFC/RIF
1996	5073	#VALORE!	4148	0,1823	3.122	230	330	0,6159	0,0454	0,0651
1997	6.410	#VALORE!	5299	0,1733	4.201	267	102	0,6712	0,0427	0,0163
1998	6.662	#VALORE!	5568	0,1642	5.005	314	85	0,6556	0,0411	0,0111
1999	7.043	#VALORE!	5.649	0,1979	5.209	388	147	0,6387	0,0476	0,0180

Dati in milioni di lire

SERVIZIO IGIENE URBANA

	Quantità raccolta ton. (Qa)	Quantità smaltita ton. (Qs)	Abitanti Raccolta (ABTR)	Abitanti Smaltimento (ABTSm)	Abitanti Spazzamento (ABTSp)	Addetti medi impianti (AD)	Km rete spazzati (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	40.892	161.270	84.411	151.364	76.772	53	130.000	19.836	3.872	n.d.	10.948	728	2.542	4.547	21.841	24.383
1997	50.455	169.366	104.068	152.172	84.403	49	134.000	21.810	3.749	n.d.	12.634	1.534	3.085	3.507	22.119	25.317
1998	52.526	201.980	104.400	152.841	84.612	50	134.000	22.575	3.748	n.d.	13.858	2.196	1.977	5.730	26.328	28.305
1999	55.614	n.d.	108.339	161.507	102.196	36	135.000	23.022	2.726	n.d.	15.579	2.206	2.279	897	21.685	23.919

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.
* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	CTF/ABTSm	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABTR/AD	ABTS/AD
1996	0,485	0,095	0,268	0,596	0,131	85,792	374,264	73,057	460,057	1592,660	2855,925
1997	0,432	0,074	0,250	0,502	0,143	71,571	445,102	76,510	516,673	2123,837	3105,551
1998	0,430	0,071	0,264	0,539	0,148	114,600	451,500	74,960	566,100	2088,000	3056,820
1999	0,414	0,049	0,280	0,430	0,143	24,917	639,500	75,722	664,417	3009,417	4486,306

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,195	0,552	#VALORE!	0,037	3,492
1997	0,172	0,579	#VALORE!	0,070	2,011
1998	0,166	0,614	#VALORE!	0,097	0,900
1999	0,118	0,677	#VALORE!	0,096	1,033

Indicatori di struttura ed efficacia

	RET/ABTSp	Qa/ABTR	Qs/ABTSp	Qa/Qs
1996	1,6933	0,484	2,101	0,2536
1997	1,5876	0,485	2,007	0,2979
1998	1,583699712	0,503	2,387	0,260
1999	1,320991037	0,513	#VALORE!	#VALORE!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,208	0,896	0,186	0,104
1997	0,159	0,874	0,139	0,122
1998	0,218	0,930	0,202	0,070
1999	0,041	0,907	0,038	0,095

Indicatori di produttività Spazzamento/Raccolta/Smaltimento

	Costo lav. Spazzam. (CLS)	Ore lavorate Spazzam. (OLS) 000	CLS/OLS	Addetti medi Spazz. (ADSp)	RET/ADSp	Costo lav. Raccolta (CLR)	Ore lavorate Racc. (OLR) 000	CLR/OLR	CLR/Qa	Addetti medi Raccolta (ADR)	Qa/ADR	Costo lav. Smaltimento (CLSm)	Ore lavorate Smalt. (OLSm)	CLSm/OLSm	CLSm/Qs	Addetti medi Smaltimento (ADSm)	Qs/ADSm
1996	0	n.d.	#VALORE!	n.d.	#VALORE!	0	n.d.	#VALORE!	-	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!
1997	0	n.d.	#VALORE!	n.d.	#VALORE!	0	n.d.	#VALORE!	-	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!
1998	0	n.d.	#VALORE!	n.d.	#VALORE!	0	n.d.	#VALORE!	-	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!
1999	0	n.d.	#VALORE!	n.d.	#VALORE!	0	n.d.	#VALORE!	-	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!

*Il CLS e il CLR per il 1998 sono stati stimati

	Costo totale Spazzamento (CTSp)	CTSp-CLSp	CLSp/CTSp	Costo totale Raccolta (CTR)	Costo differenz.	Costo differ./CTR	CTR-CLR	CLR/CTR	CTR/Qa	Costo totale Smaltimento (CTSm)	CTSm-CLSm	CLSm/CTSm	CTSm/Qs	Ricavi Smaltimento (RISm)	Ricavi smaltimento rifiuti terzi (RISmT)	Ricavi vendita materiale recuperato o energia	RISmT/RISm
1996	1.514	1514	0,0000	3.294	817	0,2480	3.294	0,0000	0,0806	2.557	#VALORE!	#VALORE!	0,01586	14846	14738	108	0,9927
1997	1.887	1887	0,0000	4.013	855	0,2131	4.013	0,0000	0,0795	3.687	#VALORE!	#VALORE!	0,0218	14408	14286	122	0,9915
1998	1.993	1.993	0,0000	4.773	1.137	0,2382	4.773	-	0,0909	4.743	#VALORE!	#VALORE!	0,0235	18146	17925	221	0,9878
1999	2.619	2.619	0,0000	6.161	2.048	0,3324	6.161	0,0000	0,1108	4.690	#VALORE!	#VALORE!	#VALORE!	12417	12290	127	0,9898

	Dirigenti	Quadri	Imp. e Operai
1996	n.d.	n.d.	n.d.
1997	n.d.	n.d.	n.d.
1998	n.d.	n.d.	n.d.
1999	n.d.	n.d.	n.d.

Tipologia di raccolta differenziata

	carta Tonn.	carta/Qa	vetro Tonn.	vetro/Qa	plastica Tonn.	plastica/Qa	organico Tonn.	Organico/Qa
1996	2097	0,0513	867	0,0212	47	0,0011	0	0,0000
1997	2361	0,0468	0	0,0000	0	0,0000	354	0,0070
1998	2361	0,0449	0	0,0000	0	0,0000	354	0,0067
1999	3011	0,0541	0	0,0000	0	0,0000	371	0,0067

Dati in milioni di lire

SERVIZIO DI TELERISCALDAMENTO ED ENERGIA ELETTRICA

	Quantità lorda prodotta e.e. (Ql) GWh	Quantità distribuita e.e. (Qa) GWh	Calore Prodotto (Qc) Gcal	Calore distr. (QcD)Gcal	Abitanti Tot (ABT)	Utenze servite elettrico (U)	Utenze servite calore (Uc)	Addetti medi impianti (AD)	Km rete trasporto (RET)	Km rete distrib.ne elettr. (RED)	Km rete calore distr. (REC)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF) *	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF**	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	90	396	55	46	80.016	46.954	2787	119	-	1.311	71	62.648	8.746	n.d.	42.699	8.097	6.588	6.437	56.192	69.085
1997	78	407	55	45	71.997	47.761	2832	113	-	1.331	71	65.770	8.321	n.d.	45.892	8.615	9.729	6.592	59.266	72.362
1998	69	429	58	52	80.251	47.831	2906	106	-	1345	75	70.108	8.040	n.d.	48.800	9.241	9.198	5.923	62.502	76.031
1999	80	443	59	52	80.866	46.991	2977	113	-	1.359	79	71.280	8.439	n.d.	49.121	10.286	7.829	6.796	65.249	78.076

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Gas metano+gas GPL

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	VPF/AD
1996	54,0924	526,4538	73,4958	580,5462
1997	58,3363	582,0354	73,6372	640,3717
1998	55,8774	661,3962	75,8491	717,2736
1999	60,1416	630,7965	74,6814	690,9381

Indicatori di struttura ed efficacia

	U/ABT	Uc/ABT	U/RET	Qa/U	Qa/RED	Qc/Uc	Qc/REC
1996	0,5868	0,0348	#DIV/0!	0,0084	0,3021	0,0197	0,7752
1997	0,6634	0,0393	#DIV/0!	0,0085	0,3058	0,0194	0,7752
1998	0,5960	0,0362	#DIV/0!	0,0090	0,3190	0,0198	0,7683
1999	0,5811	0,0368	#DIV/0!	0,0094	0,3260	0,0199	0,7511

Indicatori di intensità fattori ed Investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF	Investimenti Prod.	Investimenti Prod./IUAF	Investimenti trasporto	Investimenti trasp./IUAF	Investimenti Distr.	Investimenti Distr./IUAF
1996	0,1396	0,6816	#VALORE!	0,1292	0,8136	442	0,0671	-	0,0000	6.146	0,9329
1997	0,1265	0,6978	#VALORE!	0,1310	1,1293	2.499	0,2569	-	0,0000	7.230	0,7431
1998	0,1147	0,6961	0,0000	0,1318	0,9953	2.668	0,2901	-	0,0000	6.530	0,7099
1999	0,1184	0,6891	#VALORE!	0,1443	0,7611	1.587	0,2027	-	0,0000	6.242	0,7973

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,1145537	0,81337483	0,09317507	0,0954
1997	0,1112273	0,81902103	0,09109754	0,1344
1998	0,094765	0,82205942	0,07790243	0,1210
1999	0,1041549	0,83571136	0,08704339	0,1003

	CTF-CLF	CLF/CTF
1996	53.902	0,1396
1997	57.449	0,1265
1998	62.068	0,1147
1999	62.841	0,1184

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	n.d.	n.d.	n.d.	119
1997	n.d.	n.d.	n.d.	113
1998	n.d.	n.d.	n.d.	106
1999	n.d.	n.d.	n.d.	113

Indicatori di struttura ed efficienza per tipologia di utenza

	Elettricità domestica (Ed) GWh	Utenze domestiche (Ud) GWh	Ed/Ud	Elettricità non domestica(End) GWH	Utenze non domestiche (Und)	End/Und	Calore distribuito (QcD) Gcal	Utenze calore (Uc)	Qc/Uc
1996	73	35.235	0,0021	323	11.719	0,0276	46	2.787	0,0164
1997	73	35.947	0,0020	334	11.814	0,0283	45	2.832	0,0158
1998	78	36.760	0,0021	351	11.071	0,0317	52	2.906	0,0181
1999	81	36.019	0,0022	362	10.972	0,0330	52	2.977	0,0176

Ricavi per tipologia di utenza

	Ricavi da prod. e.e (RIPE)	Ricavi da prod. Calore (RIPC)	Ricavi da distrib. e.e. (RIDE)	Ricavi da distr.cal. (RIDC)	RIPE/RIF	RIPC/RIF	RIDE/RIF	RIDC/RIF	RIDE/Qa	RIDC/Qc
1996	-	3.490	46.503	6.199	-	0,0621085	0,8276	0,1103	117	112,6272
1997	-	3.903	49.057	6.306	-	0,0658556	0,8277	0,1064	121	114,5712
1998	-	3.851	51.238	7.413	-	0,0616140	0,8198	0,1186	119	128,6532
1999	-	4.558	53.315	7.376	-	0,0698555	0,8171	0,1130	120	124,3006

Indicatori di produttività Produzione/Trasporto/Distribuzione

	Costo lav. Produzione (CLP)	Ore lavorate Produz. (OLP)	CLP/OLP	Addetti medi Prod. (ADP)	Costo lav. trasporto (CLT)	Ore lavorate trasporto (OLT)	CLT/OLT	Addetti medi Trasporto (ADT)	Costo lav. Distrib. (CLD)	Ore lavorate Distr. (OLD)	CLD/OLD	Addetti medi Distribuzione(ADD)
1996	735	17	43,235	10	0	0	#DIV/0!	0	8011	184	43,538	109
1997	663	15	44,200	9	0	0	#DIV/0!	0	7659	173	44,272	104
1998	531	12	44,250	7	0	0	#DIV/0!	0	7509	170	44,171	99
1999	694	15	46,267	9	0	0	#DIV/0!	0	8023	178	45,073	104

	Costo totale Produzione (CTP)	CTP-CLP	CLP/CTP	Costo totale Trasporto (CTT)	CTT-CLT	CLT/CTT	Costo totale Distrib. (CTD)	CTD-CLD	CLD/CTD
1996	11.109	10.374	0,0662	-	-	#DIV/0!	35.327	27.316	0,22677
1997	10.472	9.809	0,0633	-	-	#DIV/0!	37.868	30.209	0,20226
1998	9.482	8.951	0,0560	-	-	#DIV/0!	41.166	33.657	0,18241
1999	10.405	9.711	0,0667	-	-	#DIV/0!	41.871	33.848	0,19161

Dati in milioni di lire

SERVIZIO GAS

	Volume gas in rete migliaia mc (Qr)	Volume gas venduto migliaia mc (Qv)	Abitanti Tot (ABT)	Utenze servite (U)	Addetti medi anno	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	101.993	100.760	112.417	43.825	45	732	43.778	3.331	n.d.	35.386	3.844	2.232	2.498	44.044	46.276
1997	100.637	102.826	117.128	45.861	45	783	47.640	3.411	n.d.	38.671	4.265	2.358	3.463	49.473	51.103
1998	108.683	106.382	130.703	53.023	39	795	47.414	2.950	n.d.	38.447	4.407	1.745	2.521	48.205	49.935
1999	123.084	120.489	131.756	52.869	47	947	51.216	3.507	n.d.	41.455	4.831	2.347	3.404	52.287	54.620

Indicatori di produttività ed economicità

	CTF/Qv	CLF/Qv	CMPF/Qv	VPF/Qv	Qv/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,4345	0,0331	0,3512	0,4593	2239,11	0,9989	55,51	972,84	74,0222	1028,3556	973,8889
1997	0,4633	0,0332	0,3761	0,4970	2285,02	1,0388	76,96	1058,67	75,8000	1135,6222	1019,1333
1998	0,4457	0,0277	0,3614	0,4694	2727,74	0,8942	64,64	1215,74	75,6410	1280,3846	1359,5641
1999	0,4251	0,0291	0,3441	0,4533	2563,60	0,9687	72,43	1089,70	74,6170	1162,1277	1124,8723

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,076	0,808	#VALORE!	0,088	0,581
1997	0,072	0,812	#VALORE!	0,090	0,553
1998	0,062	0,811	#VALORE!	0,093	0,396
1999	0,068	0,809	#VALORE!	0,094	0,486

Indicatori di struttura ed efficacia

	ABT/U	U/RET	Qv/U	Qv/RET	Qv/Qr
1996	2,565	59,870	2,299	137,650	0,988
1997	2,554	58,571	2,242	131,323	1,022
1998	2,465	66,696	2,006	133,814	0,979
1999	2,492	55,828	2,279	127,232	0,979

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,057	0,952	0,054	0,048
1997	0,070	0,968	0,068	0,046
1998	0,052	0,965	0,050	0,035
1999	0,065	0,957	0,062	0,043

	Gas domestico/ gas Tot	Gas ut. Promisc.+risc./gas Tot	Gas utenze ind./gas Tot.	Gas altre utenze/gas Tot.
1996	0,016	0,595	0,384	0,005
1997	0,017	0,569	0,409	0,005
1998	0,025	0,549	0,417	0,009
1999	0,011	0,565	0,420	0,004

Indicatori di struttura ed efficienza per tipologia di utenza

	Gas domest.migliaia mc	Utenze domestiche (Ud)	Gas dom/Ud	Gas promis+riscaldamento migliaia mc	Utenze Promscuo+riscaldamento (Up)	Gas prom./Up	Gas industriale migliai mc	Utenze Industriale (Ui)	Gas ind./Ui	Gas altre utenze migliai mc	altre utenze (Ua)	Gas altre utenze/Ua
1996	1.639	9.628	0,170	59.906	30.727	1,9496	38.651	3.409	11,338	543	61	8,902
1997	1.730	9.561	0,181	58.489	32.629	1,7925	42.067	3.604	11,672	540	67	8,060
1998	2.637	9.942	0,265	58.441	38.957	1,5001	44.332	4.060	10,919	972	64	15,188
1999	1.339	9.942	0,135	68.072	38.948	1,7478	50.580	3.915	12,920	498	64	7,781

Ricavi per tipologia di utenza

	Ricavi da utenze civili	Ricavi da utenze industriali	Ricavi da altre utenze	Ric.u.c./RIF	Ricavi da u.i./RIF	Ricavi da a.u./RIF
1996	27.565	15.247	6	0,6259	0,3462	0,0001
1997	30.976	16.722	247	0,6261	0,3380	0,0050
1998	29.850	16.476	448	0,6192	0,3418	0,0093
1999	32.594	17.416	214	0,6234	0,3331	0,0041

	CTF-CLF	CLF/CTF	CTF/Qa
1996	40.447	0,0761	0,4345
1997	44.229	0,0716	0,4633
1998	44.464	0,0622	0,4457
1999	47.709	0,0685	0,4251

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	n.d.	n.d.	n.d.	45
1997	n.d.	n.d.	n.d.	45
1998	n.d.	n.d.	n.d.	39
1999	n.d.	n.d.	n.d.	47

ASM BRESCIA

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	580.271	139.838	13.534	290.368	99.004	213.734	48.755	479.264	629.026
1997	610.457	148.890	n.d.	316.744	104.313	280.259	54.355	511.246	664.812
1998	n.d.	n.d.	n.d.	295.034	119.922	n.d.	#VALORE!	562.825	731.840
1999	666.272	148.374	n.d.	333.089	188.084	152.612	160.740	616.080	827.012

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Dati di Bilancio Consolidato

Nel 1998 la società si è trasformata in SpA. Il bilancio è pertanto suddiviso in due parti.

Indicatori di intensità del fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,2410	0,5004	0,0233	0,1706	2,1588
1997	0,2439	0,5189	#VALORE!	0,1709	2,6867
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	0,2227	0,4999	#VALORE!	0,2823	0,8114

Dati di Bilancio Consolidato

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,7619	0,0775	0,3398	0,1017
1997	0,7690	0,0818	0,4216	0,1063
1998	0,7691	#VALORE!	#VALORE!	#VALORE!
1999	0,7449	0,1944	0,1845	0,2609

Apporti al Comune

	Utili	Apporti
1996	62.852	30.000
1997	59.577	30.000
1998	84.560	45.637
1999	165.250	60.095

Dati in Milioni di lire

SERVIZIO IDRICO

	Abitanti Tot** (ABT)	Addetti medi impianti (AD)	Km rete Tot. (RET)	Costo Totale filiera (CTF)	Costo lavoro filiera (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi *(CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo 'MOLF	Ricavi vendite e prestazioni (RIF)	Valore produzione filiera (VPF)
1996	386.941	227	-	56.529	19.324	-	24.941	8.301	23.297	- 7.318	42.475	49.211
1997	408.374	269	-	70.687	24.404	-	31.472	9.570	33.967	- 2.370	54.357	63.588
1998	426.420	302	-	85.407	15.798	-	53.225	8.742	51.865	- 4.718	58.321	67.447
1999	436.715	293	-	91.266	14.439	-	58.332	7.694	37.796	- 5.051	62.806	71.743

* Incluse variazioni rimanenze

**Abit. Distribuzione

Per il 98 e 99 il costo del lavoro è solo diretto

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	ABT/AD
1996	-32,24	249,03	85,13	1704,585903
1997	-8,81	262,78	90,72	1518,118959
1998	-15,62	282,80	52,31	1411,986755
1999	-17,24	311,49	49,28	1490,494881

Indicatore di redditività

	RIF/VPF	MOLF/VPF	IUAF/VPF	MOLF/RIF
1996	0,863	-0,149	0,473	-0,172
1997	0,855	-0,037	0,534	-0,044
1998	0,865	-0,070	0,769	-0,081
1999	0,875	-0,070	0,527	-0,080

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,342	0,441	#VALORE!	0,147	2,807
1997	0,345	0,445	#VALORE!	0,135	3,549
1998	0,185	0,623	#VALORE!	0,102	5,933
1999	0,158	0,639	#VALORE!	0,084	4,912

	Dirigenti	Quadri	Imp. e Operai
1996	n.d.	n.d.	227
1997	n.d.	n.d.	269
1998	n.d.	n.d.	302
1999	n.d.	n.d.	293

Dati in Milioni di lire

ADDUZIONE E DISTRIBUZIONE

	Acqua erogata 000Mc (Qa)	Acqua add.tta 000Mc (Q)	Abitanti Tot (ABT)	Utenze servite distribuzione (U)	Ore lavorate in migliaia(AD)	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo MOLF*	Tot ricavi distribuzione (RIF)	Valore produzione fase (VPF)
1996	41.139	56.487	386.941	112.121	313	1.957	37.212	15.718				18.854	#VALORE!	31.669	n.d.
1997	43.709	61.132	408.374	121.506	341	2.104	42.215	17.872				24.521	#VALORE!	35.245	n.d
1998	46.819	64.640	426.420	130.200	404	2.237	57.353	20.809				22.651	#VALORE!	44.678	n.d.
1999	45.876	62.823	436.715	137.572	395	2.275	51.631	21.247				20.487	#VALORE!	40.990	n.d.

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	Qa/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,905	0,382	0,000	#VALORE!	131,435	0,332	#VALORE!	118,888	50,217	#VALORE!	358,214
1997	0,691	0,292	0,000	#VALORE!	179,273	0,347	#VALORE!	123,798	52,411	#VALORE!	356,323
1998	1,225	0,444	0,000	#VALORE!	115,889	0,440	#VALORE!	141,963	51,507	#VALORE!	322,277
1999	1,125	0,463	0,000	#VALORE!	116,142	0,397	#VALORE!	130,711	53,790	#VALORE!	329,620

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,422	0,000	0,000	0,000	#DIV/0!
1997	0,423	0,000	0,000	0,000	#DIV/0!
1998	0,363	0,000	0,000	0,000	#DIV/0!
1999	0,412	0,000	0,000	0,000	#DIV/0!

Indicatori di struttura ed efficacia

	U/ABT	RET/U	Qa/U	Qa/RET	Qa/Q
1996	0,290	0,017	0,367	21,021	0,728
1997	0,298	0,017	0,503	29,055	0,715
1998	0,305	0,017	0,496	20,929	0,724
1999	0,298	0,017	0,352	20,165	0,730

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Adduzione e Distribuzione

	Costo lav. Adduzione (CLA)	Ore lavorate Add. In migliaia(OLA)	CLA/OLA	Costo lav. Distribuzione (CLD)	Ore lavorate Distr. In migliaia(OLD)	CLD/OLD
1996	n.d.	n.d.	#VALORE!	15153	313	48,412
1997	n.d.	n.d	#VALORE!	17872	341	52,411
1998	n.d.	n.d.	#VALORE!	20809	404	51,507
1999	n.d.	n.d.	#VALORE!	21247	395	53,790

	Costo totale Adduzione (CTA)	CTA-CLA	CTA/Q	Costo totale Distribuzione (CTD)	CTD-CLD	CTD/Qa	Ricavi Distribuzione (RIFD)	Ricavi contributi c/esercizio (RIFC)	RIFD/RIF	RIFC/RIF
1996	n.d.	#VALORE!	#VALORE!	37212	22059	0,905	27669	8	1	0,0003
1997	n.d	#VALORE!	#VALORE!	42215	24343	0,966	31222	10	0,886	0,0003
1998	n.d.	#VALORE!	#VALORE!	57.353	36.544	1,2250	34937	260	0,782	0,006
1999	n.d.	#VALORE!	#VALORE!	51.631	30.384	1,1254	36352	193	0,887	0,005

Dati in Milioni di lire

DEPURAZIONE & FOGNATURA

	Quantità Dep. COD Ton. (Qd)	Quantità Fogn. (Qf)	Abitanti serviti tot. Fognat. (ABT)	Ore lavorate tot in migliaia (AD)	Km rete fogn. Tot (RET)	Costo Totale (CTF)	Costo lavoro tot (CLF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam.*** (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo 'MOLF*	Tot ricavi (RIF)	Valore produzione fase (VPF)***
1996	11.969	n.d.	248.130	86	767	14.977	4.171			4.443	#VALORE!	13.173	n.d.
1997	12.450	n.d.	288.820	125	965	22.399	6.532			9.446	#VALORE!	22.270	n.d.
1998	13.458	n.d.	339.594	98	965	28.053	4.597			22.632	#VALORE!	20.024	n.d.
1999	15.171	n.d.	341.685	33	1.198	33.874	5.122			17.309	#VALORE!	24.992	n.d.

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qd	CLF/Qd	CMPF/Qd	VPF/Qd	Qd/AD	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABT/AD
1996	1,251	0,348	0,000	#VALORE!	139,174	#VALORE!	174,151	48,500	#VALORE!	2885,233
1997	1,799	0,525	0,000	#VALORE!	99,600	#VALORE!	179,192	52,256	#VALORE!	2310,560
1998	2,084	0,342	0,000	#VALORE!	137,327	#VALORE!	286,255	46,908	#VALORE!	3465,245
1999	2,233	0,338	0,000	#VALORE!	459,727	#VALORE!	1026,485	155,212	#VALORE!	10354,091

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,278	0,000	#RIF!	0,000	#DIV/0!
1997	0,292	0,000	#RIF!	0,000	#DIV/0!
1998	0,164	0,000	#RIF!	0,000	#DIV/0!
1999	0,151	0,000	#RIF!	0,000	#DIV/0!

Indicatori di struttura ed efficacia

	Qf/RET	ABT/RET	Qd/ABT	Qf/ABT	Qd/Qf
1996	#VALORE!	323,507	0,048	#VALORE!	#VALORE!
1997	#VALORE!	299,295	23,198	#VALORE!	#VALORE!
1998	#VALORE!	351,911	25,234	#VALORE!	#VALORE!
1999	#VALORE!	285,213	22,522	#VALORE!	#VALORE!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Fognatura e Depurazione

	Costo lav. Depurazione (CLD)	Ore lavorate Depur. (OLD)	CLD/OLD	CLD/Qd	Costo lav. Fognatura (CLF)	Ore lavorate Fogn. (OLF)	CLD/OLD
1996	3469	72	48,181	0,2898	702	14	50,143
1997	4452	85	52,376	0,3576	2080	40	52,000
1998	2972	50	59,440	0,2208	1625	48	33,854
1999	3256	58	56,138	0,2146	1866	91	20,505

	Costo Tot. Depurazione (CTD)	CTD/Qd	CTD-CLD	CLD/CTD	Ricavi acque refiue tariffa civile (RIFTC)	Ricavi a.r. ind. Tariffa reg.le (RIFTR)	Ricavi attivlta commerciale (RIFC)	RIFTC/RIF	RIFTR/RIF	RIFC/RIF
1996	10949	0,91477985	7480	0,3168	9.938	-	-	0,7544	-	0,0000
1997	15.846	1,27277108	11394	0,2810	15.311	-	-	0,6875	-	0,0000
1998	16.557	1,23027196	13585	0,1795	14.507	-	-	0,7245	-	0,0000
1999	17.471	1,151605	14.215	0,1864	15.649	-	-	0,6262	-	0,0000

Dati in milioni di lire

SERVIZIO IGIENE URBANA

	Quantità raccolta ton. (Qa)	Quantità smaltita ton. (Qs)	Abitanti Raccolta (ABTR)	Abitanti Smaltimento (ABTSm)	Abitanti Spazzamento (ABTSp)	Addetti medi impianti (AD)	Km rete spazzati (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	120.301	283.663	189.767	675.292	189.767	292	205.000	79.365	17.886		33.405	3.896	5.304	4.343	78.354	83.708
1997	122.790	221.640	190.518	725.867	190.518	286	195.000	87.497	18.323		50.723	5.806	17.473	- 356	81.468	87.141
1998	128.995	581.811	190.909	944.801	190.909	288	230.000	91.570	18.293		46.042	7.816	18.143	16.242	96.752	107.812
1999	139.167	758.730	191.317	955.172	191.317	290	220.000	115.523	18.652		70.300	11.138	11.686	18.550	121.717	134.073

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.
* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	CTF/ABTSm	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABTR/AD	ABTS/AD
1996	0,660	0,149	0,278	0,696	0,118	14,873	271,798	61,253	286,671	649,887	2312,644
1997	0,713	0,149	0,413	0,710	0,121	-1,245	305,934	64,066	304,689	666,147	2537,997
1998	0,710	0,142	0,357	0,836	0,097	56,396	317,951	63,517	374,347	662,878	3280,559
1999	0,830	0,134	0,505	0,963	0,121	63,966	398,355	64,317	462,321	659,714	3293,697

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,225	0,421	0,000	0,049	1,361
1997	0,209	0,580	0,000	0,066	3,009
1998	0,200	0,503	0,000	0,085	2,321
1999	0,161	0,609	0,000	0,096	1,049

Indicatori di struttura ed efficacia

	RET/ABTSp	Qa/ABTR	Qs/ABTSp	Qa/Qs
1996	1,0803	0,634	1,495	0,4241
1997	1,023525336	0,645	1,163	0,5540
1998	1,204762478	0,676	3,048	0,222
1999	1,149923948	0,727	3,966	0,183

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,055	0,936	0,052	0,063
1997	-0,004	0,935	-0,004	0,201
1998	0,168	0,897	0,151	0,168
1999	0,152	0,908	0,138	0,087

Indicatori di produttività Spazzamento/Raccolta/Smaltimento

	Costo lav. Spazzam. (CLS)	Ore lavorate Spazzam. (OLS) 000	CLS/OLS	Addetti medi Spazz. (ADSp)	RET/ADSp	Costo lav. Raccolta (CLR)	Ore lavorate Racc. (OLR) 000	CLR/OLR	CLR/Qa	Addetti medi Raccolta (ADR)	Qa/ADR	Costo lav. Smaltimento (CLSm)	Ore lavorate Smalt. (OLSm)	CLSm/OLSm	CLSm/Qs	Addetti medi Smaltimento (ADSm)	Qs/ADSm
1996	n.d.	n.d.	#VALORE!	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	2384	n.d.	#VALORE!	0,0084	39	7273,410
1997	n.d.	n.d.	#VALORE!	n.d.	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	2750	72	38,194	0,0124	43	5154,419
1998	7267	189	38,450	114	2017,54386	8438	220	38,355	0,0654	133	969,887	8438	220	38,355	0,0145	34	17112,088
1999	7405	186	39,812	115	1913,04348	8617	217	39,710	0,0619	134	1038,560	2220	55	40,364	0,0029	34	22315,588

*Il CLS e il CLR per il 1998 sono stati stimati

	Costo totale Spazzamento (CTSp)	CTSp-CLSp	CLSp/CTSp	Costo totale Raccolta (CTR)	Costo differenz.	Costo differ./CTR	CTR-CLR	CLR/CTR	CTR/Qa	Costo totale Smaltimento (CTSm)	CTSm-CLSm	CLSm/CTSm	CTSm/Qs	Ricavi Smaltimento (RISm)	Ricavi smaltimento rifiuti terzi (RISmT)	Ricavi vendita materiale recuperato o energia	RISmT/RISm
1996	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	49.707	47323	0,04796	0,17523	55284	53354	935	0,9651
1997	n.d.	#VALORE!	#VALORE!	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	58.520	55770	0,04699	0,2640	58161	56271	1.114	0,9675
1998	13.454	6.187	0,5401	19.792	8.365	0,4226	11.354	0,4263	0,1534	50.501	42063	0,1671	0,0868	73493	67104	814	0,9131
1999	14.847	7.442	0,4988	21.778	9.167	0,4209	13.161	0,3957	0,1565	69.445	67225	0,0320	0,0915	93671	86666	1.639	0,9252

	Dirigenti	Quadri	Imp. e Operai
1996	n.d.	n.d.	n.d.
1997	n.d.	n.d.	n.d.
1998	1	3	284
1999	1	3	286

Tipologia di raccolta differenziata

	carta Tonn.	carta/Qa	vetro Tonn.	vetro/Qa	plastica Tonn.	plastoca/Qa	organico Tonn.	Organico/Qa
1996	11254	0,0935	3620	0,0301	233	0,0019	9407	0,0782
1997	12251	0,0998	3867	0,0315	369	0,0030	9743	0,0793
1998	13723	0,1064	3948	0,0306	371	0,0029	13199	0,1023
1999	16017	0,1151	4536	0,0326	576	0,0041	18131	0,1303

Dati in milioni di lire

SERVIZIO DI TELERISCALDAMENTO ED ENERGIA ELETTRICA

	Quantità lorda prodotta (Ql) GWh	Quantità distribuita (Qa) GWh	Calore Prodotto (Qc) Gcal	Calore distr. (QcD)Gcal	Abitanti Tot (ABT)	Utenze servite elettrico (U)	Utenze servite calore (Uc)	Addetti medi impianti (AD)	Km rete trasporto (RET)	Km rete distrib.ne elettr. (RED)	Km rete calore distr. (REC)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF) *	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF**	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	1.303	880	903	779	189.767	112.392	6947	599	121	1.929	348	292.829	50.487		163.295	65.490	146.042	62.974	236.689	355.803
1997	1.172	1.010	871	750	190.518	114.414	7876	619	132	1.971	367	298.173	55.441		160.518	66.906	183.894	69.223	246.410	367.396
1998	1.526	1.028	961	836	190.909	85.086	8778	642	135	2010	396	402.144	33.392		283.135	66.478	109.224	99.592	399.556	501.736
1999	1.685	1.127	1.011	885	191.317	117.631	9765	598	30	2.041	414	437.361	30.641		306.791	67.618	61.504	163.387	448.865	600.748

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Per il 98 e 99 il costo del lavoro è quello diretto

* Incluse variazioni rimanenze

Gas metano+gas GPL

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	VPF/AD
1996	105,1319	488,8631	84,2855	593,9950
1997	111,8304	481,7011	89,5654	593,5315
1998	155,1277	626,3925	52,0125	781,5202
1999	273,2224	731,3729	51,2391	1004,5953

Indicatori di struttura ed efficacia

	U/ABT	Uc/ABT	U/RET	Qa/U	Qa/RED	Qc/Uc	Qc/REC
1996	0,5923	0,0366	928,8595	0,0078	0,4562	0,1300	2,5948
1997	0,6005	0,0413	866,7727	0,0088	0,5124	0,1106	2,3733
1998	0,4457	0,0460	630,2667	0,0121	0,5114	0,1095	2,4268
1999	0,6148	0,0510	3.921,0333	0,0096	0,5522	0,1035	2,4420

Indicatori di Intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF	Investimenti Prod.	Investimenti Prod./IUAF	Investimenti trasporto	Investimenti trasp./IUAF	Investimenti Distr.	Investimenti Distr./IUAF
1996	0,1724	0,5576	0,0000	0,2236	2,2300	101.545	0,6953	10.000	0,0685	7.279	0,0498
1997	0,1859	0,5383	0,0000	0,2244	2,7485	136.539	0,7425	10.620	0,0578	36.106	0,1963
1998	0,0830	0,7041	0,0000	0,1653	1,6430	63.961	0,5856	16.465	0,1507	28.798	0,2637
1999	0,0701	0,7015	0,0000	0,1546	0,9096	32.562	0,5294	2.421	0,0394	26.521	0,4312

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,2660622	0,66522486	0,1769912	0,4105
1997	0,2809261	0,6706932	0,1884152	0,5005
1998	0,2492567	0,79634708	0,1984948	0,2177
1999	0,3640003	0,74717685	0,2719726	0,1024

	CTF-CLF	CLF/CTF
1996	242.342	0,1724
1997	242.732	0,1859
1998	368.752	0,0830
1999	406.720	0,0701

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	n.d.	n.d.	n.d.	599
1997	n.d.	n.d.	n.d.	619
1998	n.d.	n.d.	n.d.	642
1999	n.d.	n.d.	n.d.	598

Indicatori di struttura ed efficienza per tipologia di utenza

	Elettricità domestica (Ed) GWh	Utenze domestiche (Ud) GWh	Ed/Ud	Elettricità non domestica(End) GWH	Utenze non domestiche (Und)	End/Und	Calore distribuito (QcD) Gcal	Utenze calore (Uc)	Qc/Uc
1996	194	83.376	0,0023	668	29.016	0,0230	779	6.947	0,1121
1997	197	84.252	0,0023	794	30.162	0,0263	750	7.876	0,0952
1998	201	85.086	0,0024	809	31.257	0,0259	836	8.778	0,0952
1999	208	85.152	0,0024	899	32.479	0,0277	885	9.765	0,0906

Ricavi per tipologia di utenza

	Ricavi da prod. e.e (RIPE)	Ricavi da prod. Calore (RIPC)	Ricavi da distrib. e.e. (RIDE)	Ricavi da distr.cal. (RIDC)	RIPE/RIF	RIPC/RIF	RIDE/RIF	RIDC/RIF	RIDE/Qa	RIDC/Qc
1996	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1997	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1998	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!
1999	n.d.	n.d.	n.d.	n.d.	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!	#VALORE!

Indicatori di produttività Produzione/Trasporto/Distribuzione

	Costo lav. Produzione (CLP)	Ore lavorate Produz. (OLP)	CLP/OLP	Addetti medi Prod. (ADP)	Costo lav. trasporto (CLT)	Ore lavorate trasporto (OLT)	CLT/OLT	Addetti medi Trasporto (ADT)	Costo lav. Distrib. (CLD)	Ore lavorate Distr. (OLD)	CLD/OLD	Addetti medi Distribuzione(ADD)
1996	22847	515	44,363	293	n.d.	n.d.	#VALORE!	n.d.	19452	538	36,156	306
1997	25765	514	50,126	297	6088	115	52,939	66	23588	443	53,246	256
1998	26930	576	46,753	347	2610	78	33,462	47	24998	412	60,675	248
1999	28638	565	50,687	340	2505	66	37,955	40	19727	362	54,494	218

	Costo totale Produzione (CTP)	CTP-CLP	CLP/CTP	Costo totale Trasporto (CTT)	CTT-CLT	CLT/CTT	Costo totale Distrib. (CTD)	CTD-CLD	CLD/CTD
1996	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!
1997	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!
1998	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!
1999	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!	n.d.	#VALORE!	#VALORE!

Dati in milioni di lire

SERVIZIO GAS

	Volume gas in rete migliaia mc (Qr)	Volume gas venduto migliaia mc (Qv)	Abitanti Tot (ABT)	Utenze servite (U)	Addetti medi anno	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	287.467	282.502	336.688	136.059	250	1.881	126.330	21.282		93.583	9.289	10.225	3.877	122.149	130.207
1997	282.780	278.237	349.157	141.189	215	1.935	134.895	19.506		102.904	10.101	11.454	5.828	132.061	140.723
1998	312.816	306.627	353.321	145.850	189	1.997	136.007	8.573		113.281	9.275	12.756	8.344	138.243	144.351
1999	337.538	332.003	359.508	149.485	150	2.029	136.557	6.331		113.913	9.104	11.607	8.310	139.278	144.867

Indicatori di produttività ed economicità

	CTF/Qv	CLF/Qv	CMPF/Qv	VPF/Qv	Qv/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,4472	0,0753	0,3313	0,4609	1130,01	0,9285	15,51	505,32	85,1280	520,8280	544,2360
1997	0,4848	0,0701	0,3698	0,5058	1294,13	0,9554	27,11	627,42	90,7256	654,5256	656,6930
1998	0,4436	0,0280	0,3694	0,4708	1622,37	0,9325	44,15	719,61	45,3598	763,7619	771,6931
1999	0,4113	0,0191	0,3431	0,4363	2213,35	0,9135	55,40	910,38	42,2067	965,7800	996,5667

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,168	0,741	0,000	0,074	1,101
1997	0,145	0,763	0,000	0,075	1,134
1998	0,063	0,833	0,000	0,068	1,375
1999	0,046	0,834	0,000	0,067	1,275

Indicatori di struttura ed efficacia

	ABT/U	U/RET	Qv/U	Qv/RET	Qv/Qr
1996	2,475	72,333	2,076	150,187	0,983
1997	2,473	72,966	1,971	143,792	0,984
1998	2,422	73,035	2,102	153,544	0,980
1999	2,405	73,674	2,221	163,629	0,984

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,032	0,938	0,030	0,079
1997	0,044	0,938	0,041	0,081
1998	0,060	0,958	0,058	0,088
1999	0,060	0,961	0,057	0,080

	Gas domestico/ gas Tot	Gas ut. Promisc.+risc./gas Tot	Gas utenze ind./gas Tot.	Gas altre utenze/gas Tot.
1996	0,023	0,467	0,281	0,229
1997	0,023	0,447	0,312	0,218
1998	0,021	0,440	0,325	0,214
1999	0,021	0,430	0,342	0,208

Indicatori di struttura ed efficienza per tipologia di utenza

	Gas domest.migliaia mc	Utenze domestiche (Ud)	Gas dom/Ud	Gas promis+riscaldamento migliaia mc	Utenze Promscuo+riscaldamento (Up)	Gas prom./Up	Gas industriale migliai mc	Utenze Industriale (Ui)	Gas ind./Ui	Gas altre utenze migliai mc	altre utenze (Ua)	Gas altre utenze/Ua
1996	6.626	42.227	0,157	132.053	81.556	1,6192	79.254	89	890,494	64.569	12.187	5,298
1997	6.502	43.992	0,148	124.314	84.771	1,4665	86.731	92	942,728	60.690	12.334	4,921
1998	6.507	45.030	0,145	134.808	88.100	1,5302	99.759	97	1028,443	65.553	12.623	5,193
1999	6.819	46.401	0,147	142.670	90.281	1,5803	113.504	104	1091,385	69.010	12.699	5,434

Ricavi per tipologia di utenza

	Ricavi da utenze civili	Ricavi da utenze industriali	Ricavi da altre utenze	Ric.u.c./RIF	Ricavi da u.i./RIF	Ricavi da a.u./RIF
1996	95.053	24.741	-	0,7782	0,2025	-
1997	100.462	29.353	-	0,7607	0,2223	-
1998	105.613	30.291	-	0,7640	0,2191	-
1999	106.400	30.616	-	0,7639	0,2198	-

	CTF-CLF	CLF/CTF	CTF/Qa
1996	105.048	0,1685	0,4472
1997	115.389	0,1446	0,4848
1998	127.434	0,0630	0,4436
1999	130.226	0,0464	0,4113

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996				599
1997				215
1998				189
1999				150

INTESA Siena

Generale

Dati in milioni di lire

	Costo Totale Produzione (CT)	Costo lavoro (CL)	Oneri diversi netto tasse (OD)	Costo acq. Mat. Prime e servizi (CMP)	Ammortam. e svalutaz. (A)	Investimenti ultimo anno (IUA)	MOL*	Ricavi vendite e prest. (RI)	Valore della produzione (VP)
1996	65.414	6.146		49.715	5.869	5.491	3.707	62.612	69.121
1997	83.076	9.474		61.441	7.002	9.386	4.098	79.279	87.174
1998	83.318	10.960		65.101	7.904	10.536	10.723	83.997	94.041
1999	94.478	11.700		68.896	9.480		5.324	83.120	99.802

*Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

Dati di Bilancio Consolidato

Ammortamenti e svalutazioni

Indicatori di intensità dei fattori e investimenti

	CL/CT	CMP/CT	OD/CT	A/CT	IUA/A
1996	0,0940	0,7600	-	0,0897	1,1060
1997	0,1140	0,7396	-	0,0843	1,3405
1998	0,1315	0,7814	-	0,0949	1,3330
1999	0,1238	0,7292	-	0,1003	0,0000

Dati di Bilancio Consolidato

Apporti al Comune

	Utili	Apporti
1996	3.098	2.335
1997	2.995	2.470
1998	14.057	4.165
1999	2.123	3.303

Indicatori di redditività

	RI/VP	MOL/VP	IUA/VP	MOL/RI (ROS)
1996	0,9058	0,0536	0,0939	0,0592
1997	0,9094	0,0470	0,1077	0,0517
1998	0,8932	0,1140	0,1120	0,1277
1999	0,8328	0,0533	0,0000	0,0641

Dati in Milioni di lire

dati dai questionari Cispel

SERVIZIO IDRICO

	Abitanti Tot** (ABT)	Addetti medi impianti (AD)	Km rete Tot. (RET)	Costo Totale filiera (CTF)	Costo lavoro filiera (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi *(CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo 'MOLF	Ricavi vendite e prestazioni (RIF)	Valore produzione filiera (VPF)
1996				1.269	418		830	21		- 3	1.266	1.266
1997				15.567	3.787		11.420	360	3.108	- 60	13.772	15.507
1998	92.638	70	1.069	19.035	4.831		13.242	962	3.694	378	14.556	19.413
1999				19.767	5.161		13.781	715	4.779	773	15.157	20.540

Acquedotto e depurazione dal gennaio '97; depurazione da ottobre '96

**Abit. Distribuzione

Indicatori di produttività ed economicità

	MOLF/AD	CTF/AD	CLF/AD	ABT/AD
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	5,40	271,93	69,01	1323,4
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatore di redditività

	RIF/VPF	MOLF/VPF	IUAF/VPF	MOLF/RIF
1996	1,000	-0,002	0,000	-0,002
1997	0,888	-0,004	0,200	-0,004
1998	0,750	0,019	0,190	0,026
1999	0,738	0,038	0,233	0,051

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,329	0,654	0,000	0,017	0,000
1997	0,243	0,734	0,000	0,023	8,633
1998	0,254	0,696	0,000	0,051	3,840
1999	0,261	0,697	0,000	0,036	6,684

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	3	47	36	86
1997	3	69	82	154
1998				0
1999				0

Promiscui acqua e gas

Dati in Milioni di lire

dati da bilancio

ADDUZIONE E DISTRIBUZIONE

	Acqua erogata 000Mc (Qa)	Acqua add.tta 000Mc (Q)	Abitanti Tot (ABT)	Utenze servite distribuzione (U)	Ore lavorate in migliaia(AD)	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo MOLF*	Tot ricavi distribuzione (RIF)	Valore produzione fase (VPF)
1996															
1997	6.299														
1998	8.897			31.064		1.069									
1999	8.903			31.564											

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qa	CLF/Qa	CMPF/Qa	VPF/Qa	Qa/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	0,000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	0,000	0,000	0,000	0,000	#DIV/0!	0,000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	0,000	0,000	0,000	0,000	#DIV/0!	0,000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di struttura ed efficacia

	U/ABT	RET/U	Qa/U	Qa/RET	Qa/Q
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	0,034	0,000	8,323	#DIV/0!
1999	#DIV/0!	0,000	0,287	#DIV/0!	#DIV/0!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di produttività Adduzione e Distribuzione

	Costo lav. Adduzione (CLA)	Ore lavorate Add. In migliaia(OLA)	CLA/OLA	Costo lav. Distribuzione (CLD)	Ore lavorate Distr. In migliaia(OLD)	CLD/OLD
1996			#DIV/0!			#DIV/0!
1997			#DIV/0!			#DIV/0!
1998			#DIV/0!			#DIV/0!
1999			#DIV/0!			#DIV/0!

	Costo totale Adduzione (CTA)	CTA-CLA	CTA/Q	Costo totale Distribuzione (CTD)	CTD-CLD	CTD/Qa	Ricavi Distribuzione (RIFD)	Ricavi contributi c/esercizio (RIFC)	RIFD/RIF	RIFC/RIF
1996		0	#DIV/0!		0	#DIV/0!			#DIV/0!	#DIV/0!
1997		0	#DIV/0!		0	0,000			#DIV/0!	#DIV/0!
1998		-	#DIV/0!		-	-			#DIV/0!	#DIV/0!
1999		-	#DIV/0!		-	-			#DIV/0!	#DIV/0!

Dati in Milioni di lire

DEPURAZIONE & FOGNATURA

	Quantità Dep. COD Ton. (Qd)	Quantità Fogn. (Qf)	Abitanti serviti tot. Fognat. (ABT)	Ore lavorate tot In migliaia (AD)	Km rete fogn. Tot (RET)	Costo Totale (CTF)	Costo lavoro tot (CLF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam.*** (AF)	Investimenti ultimo anno (IUAF)	Reddito operativo *MOLF*	Tot ricavi (RIF)	Valore produzione fase (VPF)***
1996													
1997													
1998													
1999													

***Dati da bilancio ufficiale

**Il MOL è calcolato facendo riferimento al valore della produzione complessiva e non solo ai ricavi delle vendite.

* Incluse variazioni rimanenze

Indicatori di produttività ed economicità

	CTF/Qd	CLF/Qd	CMPF/Qd	VPF/Qd	Qd/AD	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	ABT/AD
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	#DIV/0!	#DIV/0!	#RIF!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#RIF!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#RIF!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#RIF!	#DIV/0!	#DIV/0!

Indicatori di struttura ed efficacia

	Qf/RET	ABT/RET	Qd/ABT	Qf/ABT	Qd/Qf
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di produttività Fognatura e Depurazione

	Costo lav. Depurazione (CLD)	Ore lavorate Depur. (OLD)	CLD/OLD	CLD/Qd	Costo lav. Fognatura (CLF)	Ore lavorate Fogn. (OLF)	CLD/OLD
1996			#DIV/0!	#DIV/0!			#DIV/0!
1997			#DIV/0!	#DIV/0!			#DIV/0!
1998			#DIV/0!	#DIV/0!			#DIV/0!
1999			#DIV/0!	#DIV/0!			#DIV/0!

	Costo Tot. Depurazione (CTD)	CTD/Qd	CTD-CLD	CLD/CTD	Ricavi acque reflue tariffa civile (RIFTC)	Ricavi a.r. ind. Tariffa reg.le (RIFTR)	Ricavi attività commerciale (RIFC)	RIFTC/RIF	RIFTR/RIF	RIFC/RIF
1996		#DIV/0!	0	#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!
1997		#DIV/0!	0	#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!
1998		#DIV/0!	0	#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!
1999		#DIV/0!	-	#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!

Dati in milioni di lire

dati dai questionari Cispel

dati da bilancio

SERVIZIO GAS

	Volume gas in rete migliaia mc (Qr)	Volume gas venduto migliaia mc (Qv)	Abitanti Tot (ABT)	Utenze servite (U) gas metano	Addetti medi anno	Km rete distr.Tot. (RET)	Costo Totale fase (CTF)	Costo lavoro fase (CLF)	Oneri diversi netto tasse (ODF)	Costo acq. Mat. Prime e servizi (CMPF)	Ammortam. (AF)	Investimenti ultimo anno (IUAF)	MOLF*	Ricavi vendite e prestazioni (RIF)	Valore produzione fase (VPF)
1996	127.973	127.689		62.509		881	64.146	5.729		50.345	5.579	6.491	3.709	62.104	67.855
1997	126.869	126.248		65.030		980	67.509	5.687		53.202	6.297	4.483	4.159	66.316	71.668
1998	137.747	135.916	219.810	67.422	88	859	67.230	6.129		54.160	6.236	5.861	7.338	69.031	74.568
1999	143.384	142.227		70.043								10.383	-		

indicatori di produttività ed economicità

	CTF/Qv	CLF/Qv	CMPF/Qv	VPF/Qv	Qv/AD	CTF/U	MOLF/AD	CTF/AD	CLF/AD	VPF/AD	U/AD
1996	0,5024	0,0449	0,3943	0,5314	#DIV/0!	1,0262	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	0,5347	0,0450	0,4214	0,5677	#DIV/0!	1,0381	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	0,4946	0,0451	0,3985	0,5486	1544,50	0,9972	83,39	763,98	69,6477	847,3636	766,1591
1999	0,0000	0,0000	0,0000	0,0000	#DIV/0!	0,0000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di intensità fattori ed investimenti

	CLF/CTF	CMPF/CTF	ODF/CTF	AF/CTF	IUAF/AF
1996	0,089	0,785	0,000	0,087	1,163
1997	0,084	0,788	0,000	0,093	0,712
1998	0,091	0,806	0,000	0,093	0,940
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Indicatori di struttura ed efficacia

	ABT/U	U/RET	Qv/U	Qv/RET	Qv/Qr
1996	0,000	70,952	2,043	144,936	0,998
1997	0,000	66,357	1,941	128,824	0,995
1998	3,260	78,489	2,016	158,226	0,987
1999	0,000	#DIV/0!	2,031	#DIV/0!	0,992

Indicatore di redditività

	MOLF/RIF	RIF/VPF	MOLF/VPF	IUAF/VPF
1996	0,060	0,915	0,055	0,096
1997	0,063	0,925	0,058	0,063
1998	0,106	0,926	0,098	0,079
1999	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

	Gas domestico/ gas Tot	Gas ut. Promisc.+risc./gas Tot	Gas utenze ind./gas Tot.	Gas altre utenze/gas Tot.
1996	-	-	-	-
1997	-	-	-	-
1998	-	-	-	-
1999	-	-	-	-

Indicatori di struttura ed efficienza per tipologia di utenza

	Gas domest.migliaia mc	Utenze domestiche (Ud)	Gas dom/Ud	Gas promis+riscal damento migliaia mc	Utenze Promscuo+riscal damento (Up)	Gas prom./Up	Gas industriale migliai mc	Utenze Industriale (Ui)	Gas ind./Ui	Gas altre utenze migliai mc	altre utenze (Ua)	Gas altre utenze/Ua
1996			#DIV/0!			#DIV/0!			#DIV/0!			#DIV/0!
1997			#DIV/0!			#DIV/0!			#DIV/0!			#DIV/0!
1998			#DIV/0!			#DIV/0!			#DIV/0!			#DIV/0!
1999			#DIV/0!			#DIV/0!			#DIV/0!			#DIV/0!

Gas metano venduto

uso civile	uso industrilae
94.825	33.093
91.025	
100.974	36.755
105.907	37.314

Ricavi per tipologia di utenza

	Ricavi da utenze civili	Ricavi da utenze industriali	Ricavi da altre utenze	Ric.u.c./RIF	Ricavi da u.i./RIF	Ricavi da a.u./RIF
1996				-	-	-
1997				-	-	-
1998				-	-	-
1999				#DIV/0!	#DIV/0!	#DIV/0!

Composizione lavoro

	Dirigenti	Quadri	Imp. e Operai	Tot
1996	3	47	36	86
1997	3	69	82	154
1998				0
1999				0

Promiscui acqua e gas

	CTF-CLF	CLF/CTF	CTF/Qa
1996	58.417	0,0893	0,5024
1997	61.822	0,0842	0,5347
1998	61.101	0,0912	0,4946
1999	-	#DIV/0!	0,0000

APPENDIX 3

FIRM	DENOMINATION
1	Consorzio Intesa - Siena
2	AGEA - Ferrara
3	AMGA - Udine
4	AEM - Turin
5	AMAV - Venice
6	ASM - Brescia
7	AGAC - Reggio Emilia
8	AMGA - Genoa
9	AMI - Imola

FIG.9 GROWTH RATES, SIZE AND DIVERSIFICATION

Firm	Development rate % VP 96/99	Size PV 1999 Low -Divers.	Size PV 1999 Medium	Size PV 1999 High
1	38	95		
2	33	136		
3	6	55		
4	24		440	
5	17		115	
6	54			951
7	18			515
8	8	328		
9	21			194
MEDIA	**33**			

Average	Average
33	0
33	150
33	300
33	450
33	600
33	750
33	900
33	1000
33	
33	

Diversification degree - low
Diversification degree - medium
Diversidfication degree - high

FIG.9 GROWTH RATES, SIZE AND DIVERSIFICATION

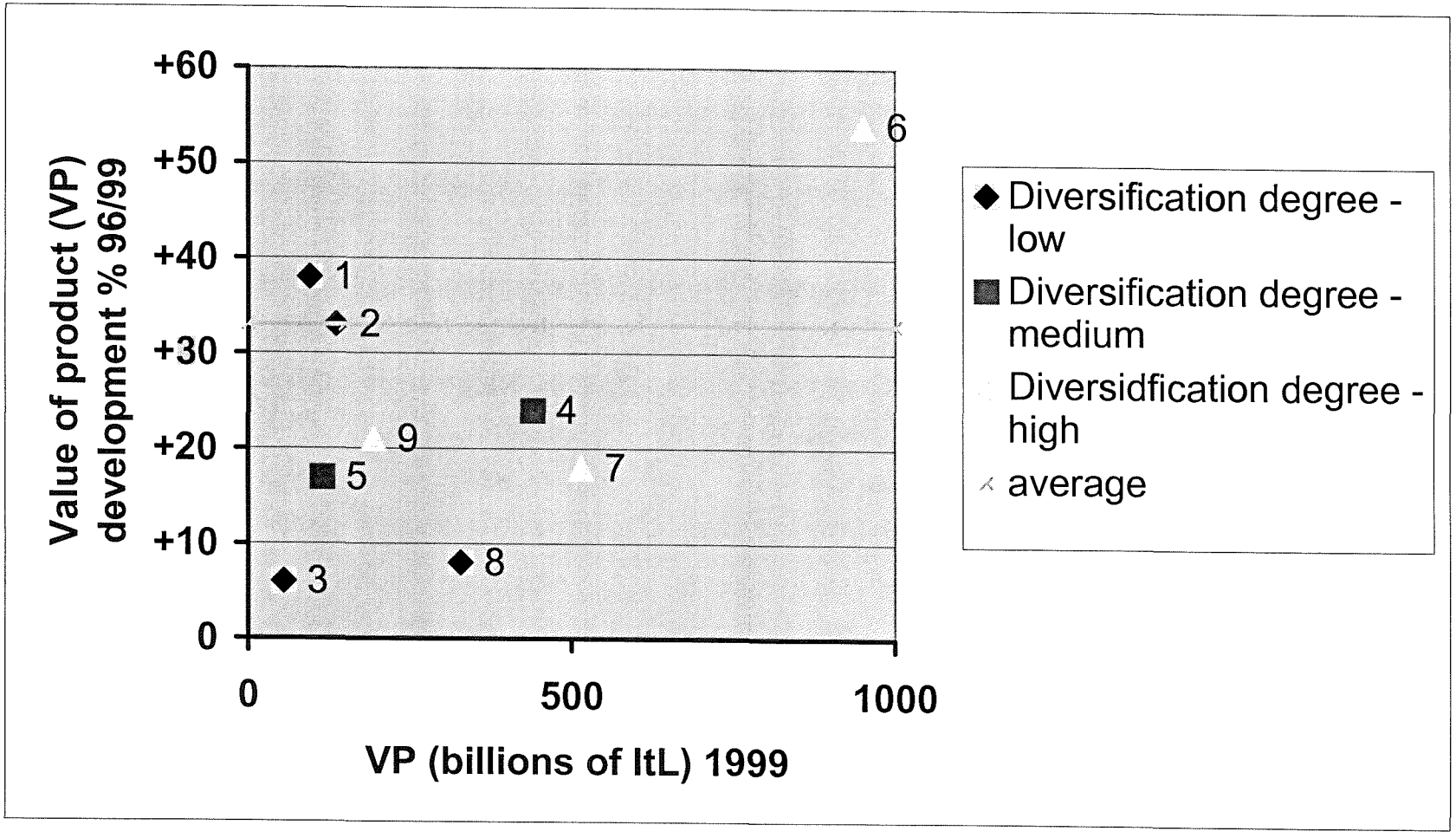


FIG.10 PRODUCTION VALUE GROWTH
1996-1999

Firm	Delta VP (%)	Delta AV (%)
1	38	36
2	33	16
3	6	2
4	24	-4
5	17	-8
6	54	30
7	18	18
8	8	2
9	21	12
average	**33**	**14**

FIG.10 PRODUCTION VALUE GROWTH
1996-1999

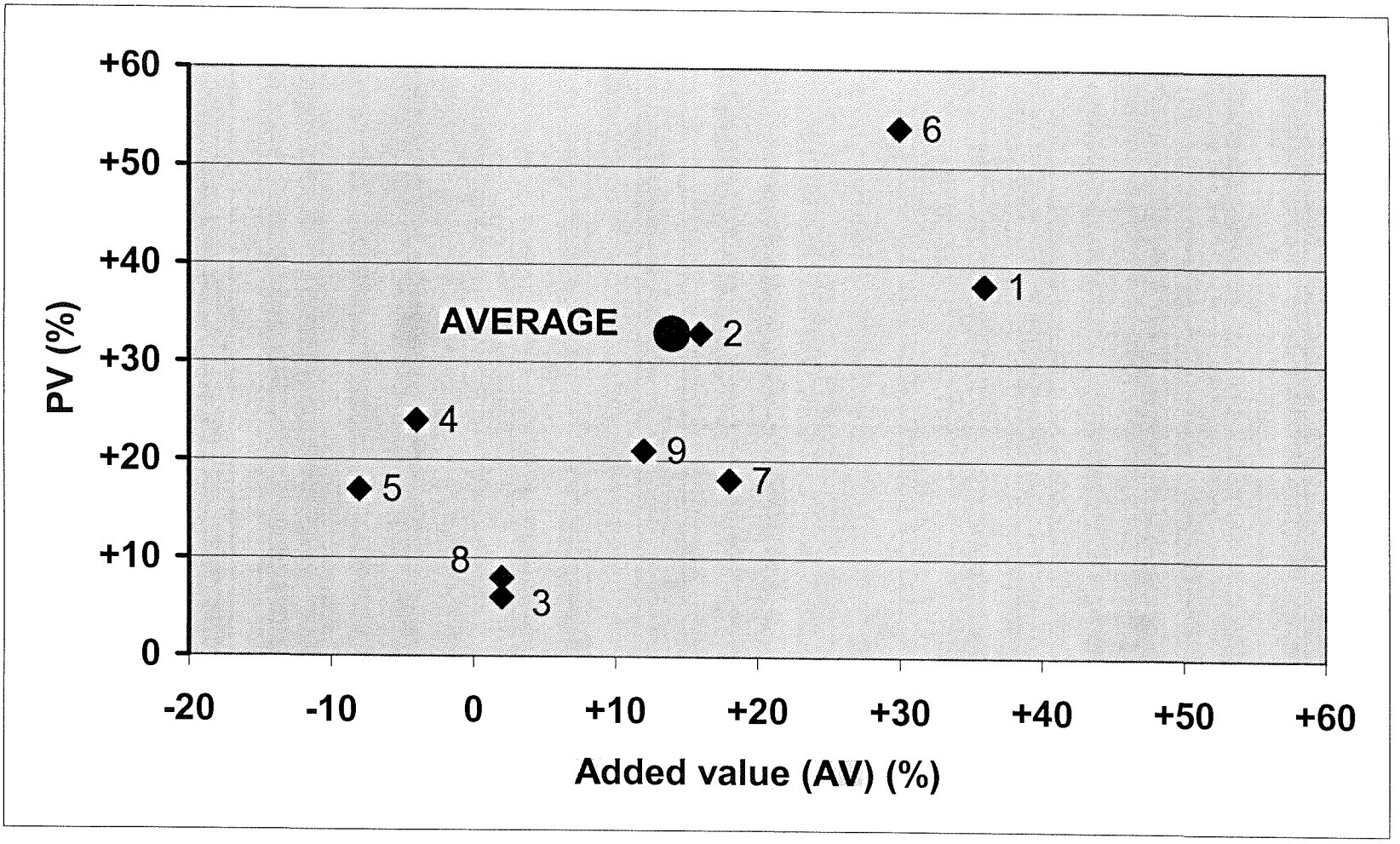


FIG.11 ADDED VALUE VARIATION AND GROWTH OF THE ADDED VALUE PER WORKER
1996-1999

Firm	Delta AV (%)	Delta AV/W (%)
1	36	36
2	16	49
3	2	1
4		
5	-8	-6
6	30	37
7	18	33
8	2	9
9		
Average	**14**	**16**

FIG.11 ADDED VALUE VARIATION AND GROWTH OF THE ADDED VALUE PER WORKER
1996-1999

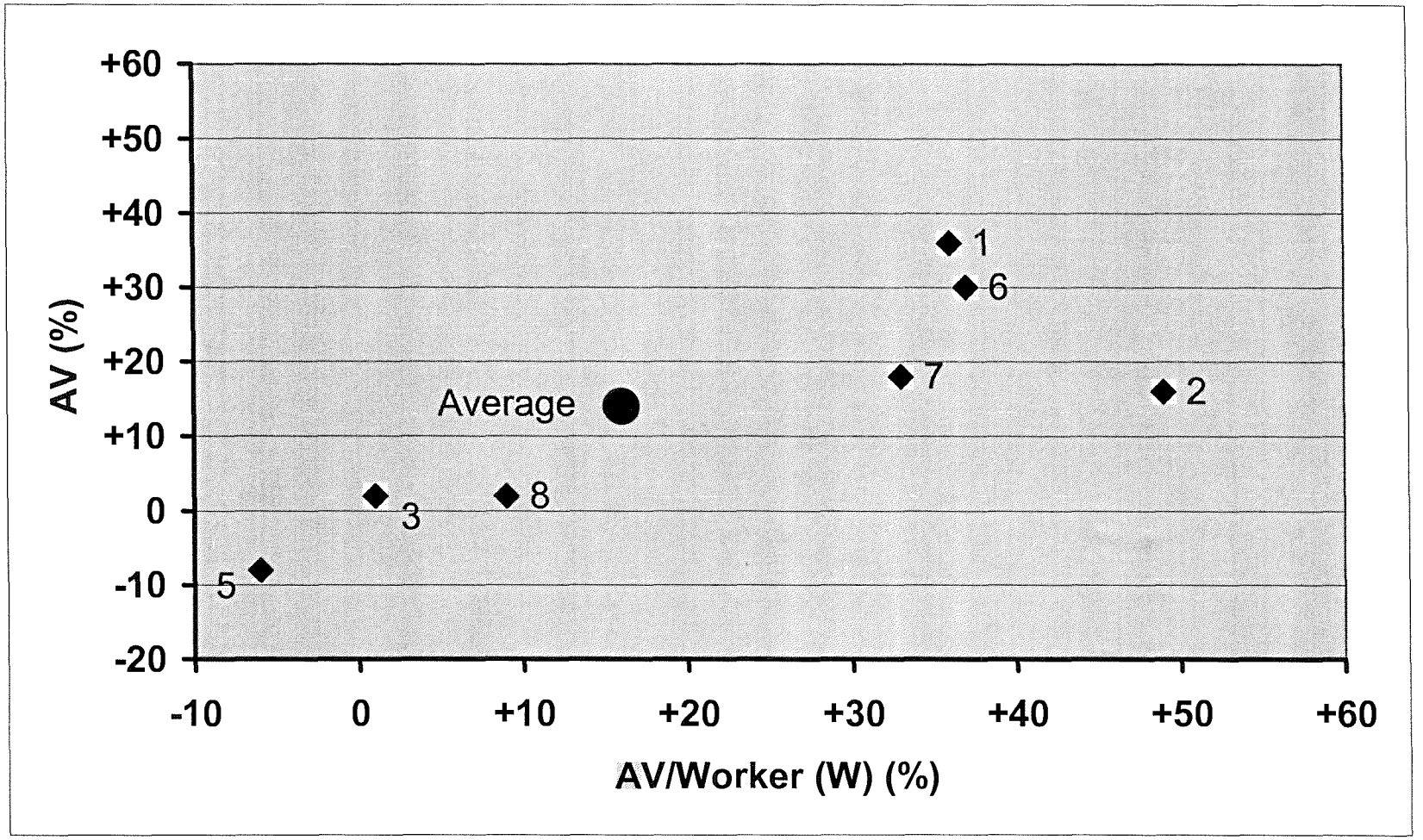


FIG.12 EMPLOYMENT AND THE GROWTH OF ADDED VALUE (1996-1999)

Firm	Delta W (%)	Delta AV/W (%)
1	0	36
2	-22	49
3	0	1
4		
5	9	-6
6	-5	37
7	-11	33
8	-6	9
9		
Average	**-3**	**16**

FIG.12 EMPLOYMENT AND THE GROWTH OF ADDED VALUE (1996-1999)

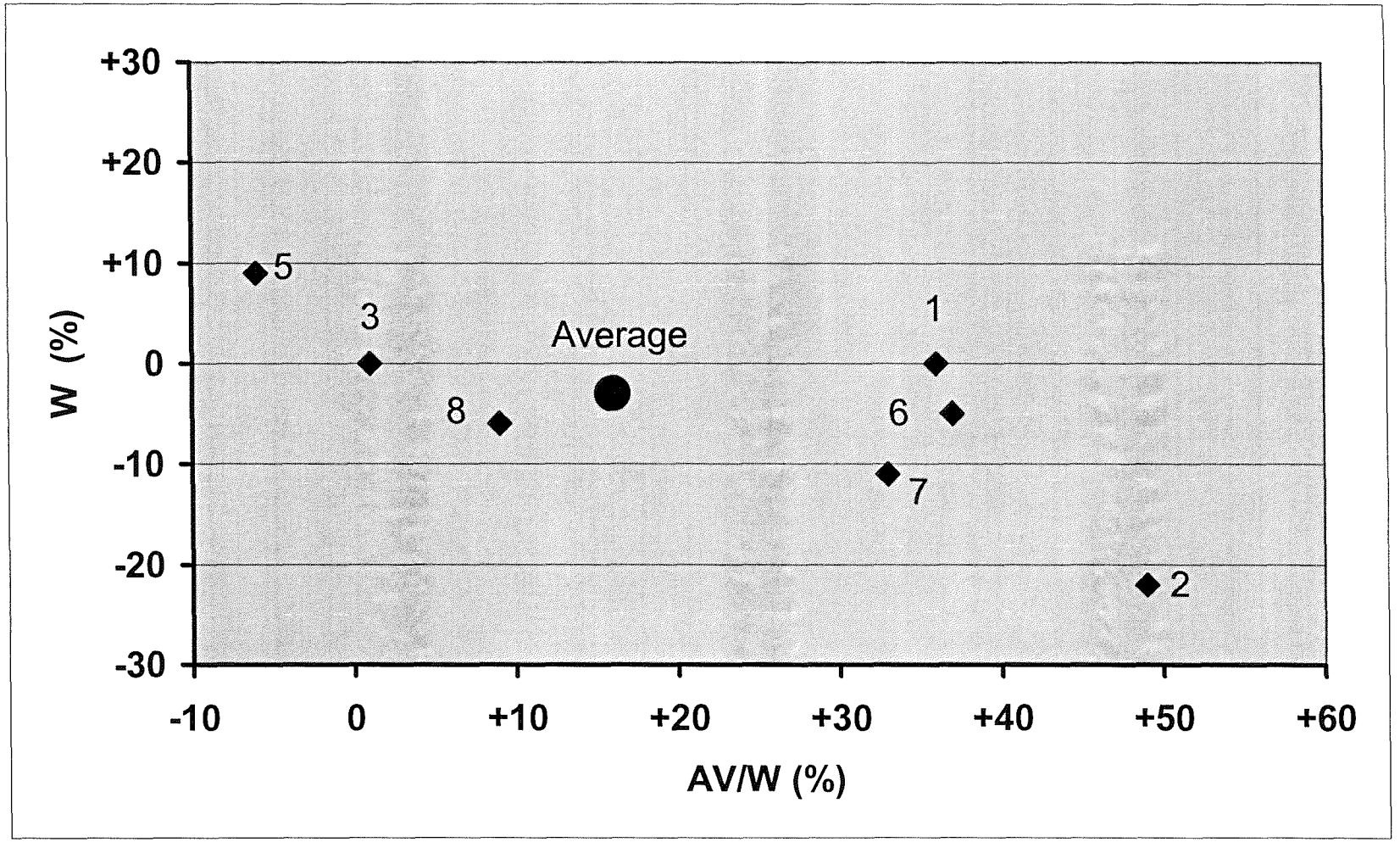


FIG.13 PROFITABILITY, SIZE AND THE FIRM'S JURIDICAL STATUS (1999)

Firm	(PV-TC)/PV %	PV 1999- Corporate Co	PV 1999 Other companies
1	7,7		95
2	15,4	136	
3	1,4		55
4	13,6	440	
5	-2,5	115	
6	19,5	951	
7	2,1		515
8	14,4	328	
9	2,6		194
Average	**33**		

Average	Average
33	0
33	150
33	300
33	450
33	600
33	750
33	900
33	1000
33	
33	

FIG.13 PROFITABILITY, SIZE AND THE FIRM'S JURIDICAL STATUS (1999)

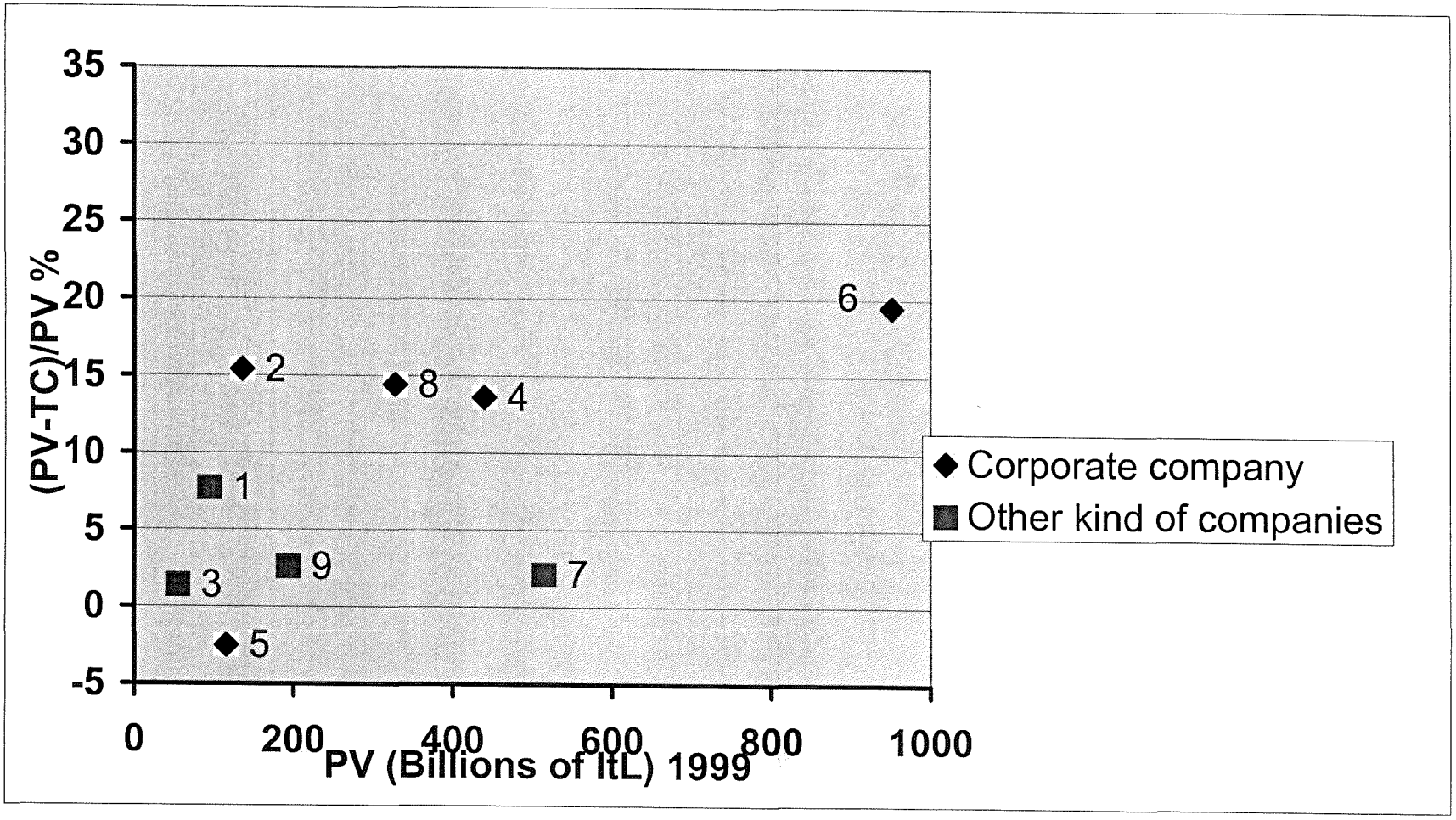


FIG.14 PROFITABILITY AND GROWTH 96/99

Firm	(PV-TC)/PV (%)	Delta PV (%)
1	7,7	38
2	15,4	33
3	1,4	6
4	13,6	24
5	-2,5	17
6	19,5	54
7	2,1	18
8	14,4	8
9	2,6	21
Average	**11,4**	**33**

FIG.14 PROFITABILITY AND GROWTH 96/99

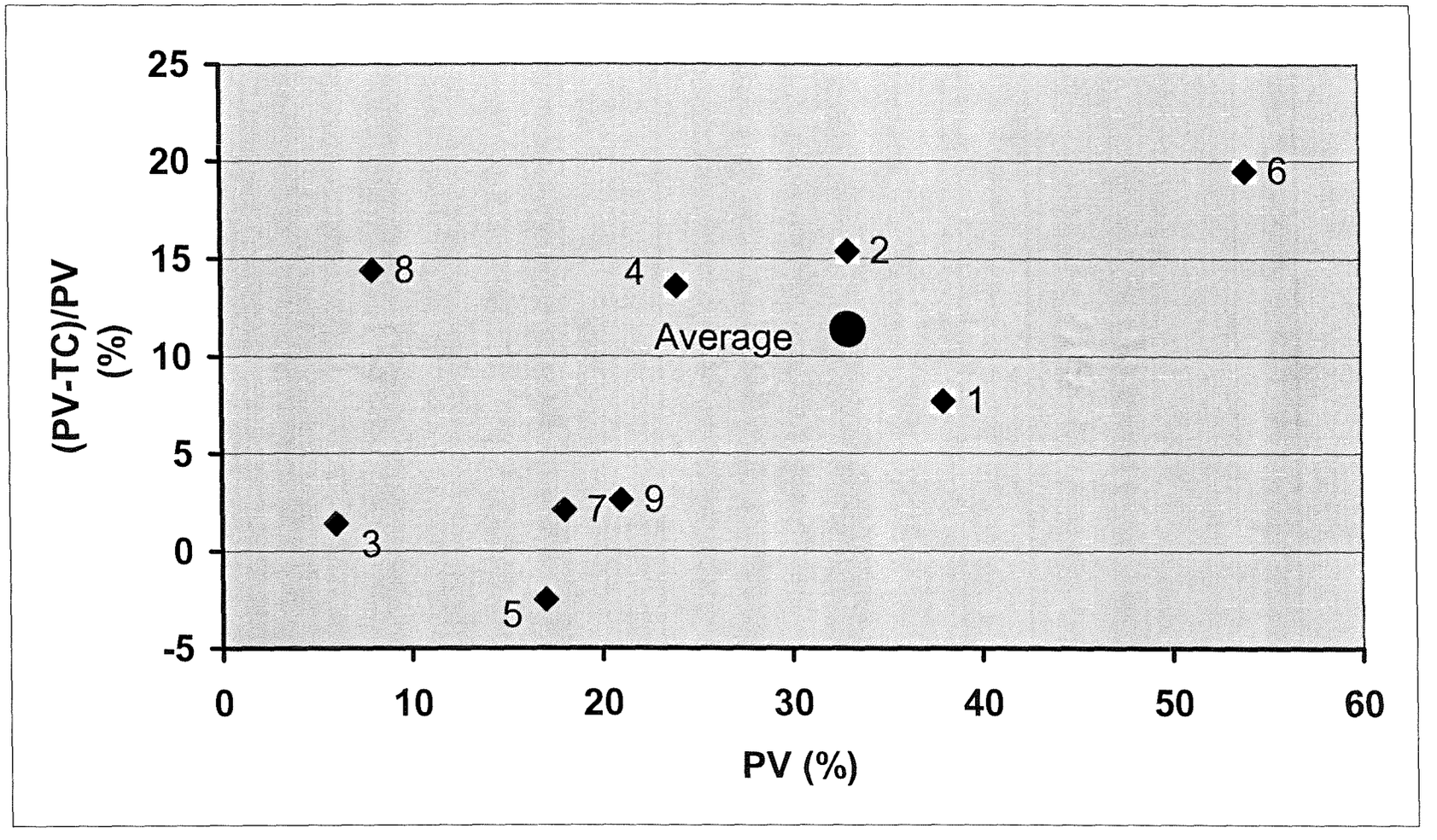


FIG.15 INVESTMENT AND DEPRECIATION

Firm	INV /PV (%)	AD/VP (%)
1	16,2	12,5
2	9,5	0,9
3	4,8	6,8
4	38,5	10,4
5	18,8	8,2
6	18,4	23
7	19,3	10,7
8	11,9	9,9
9	15	13,6
Average		

Media	Media
0	0
10	10
20	20
30	30
40	40

FIG.15 INVESTMENT AND DEPRECIATION

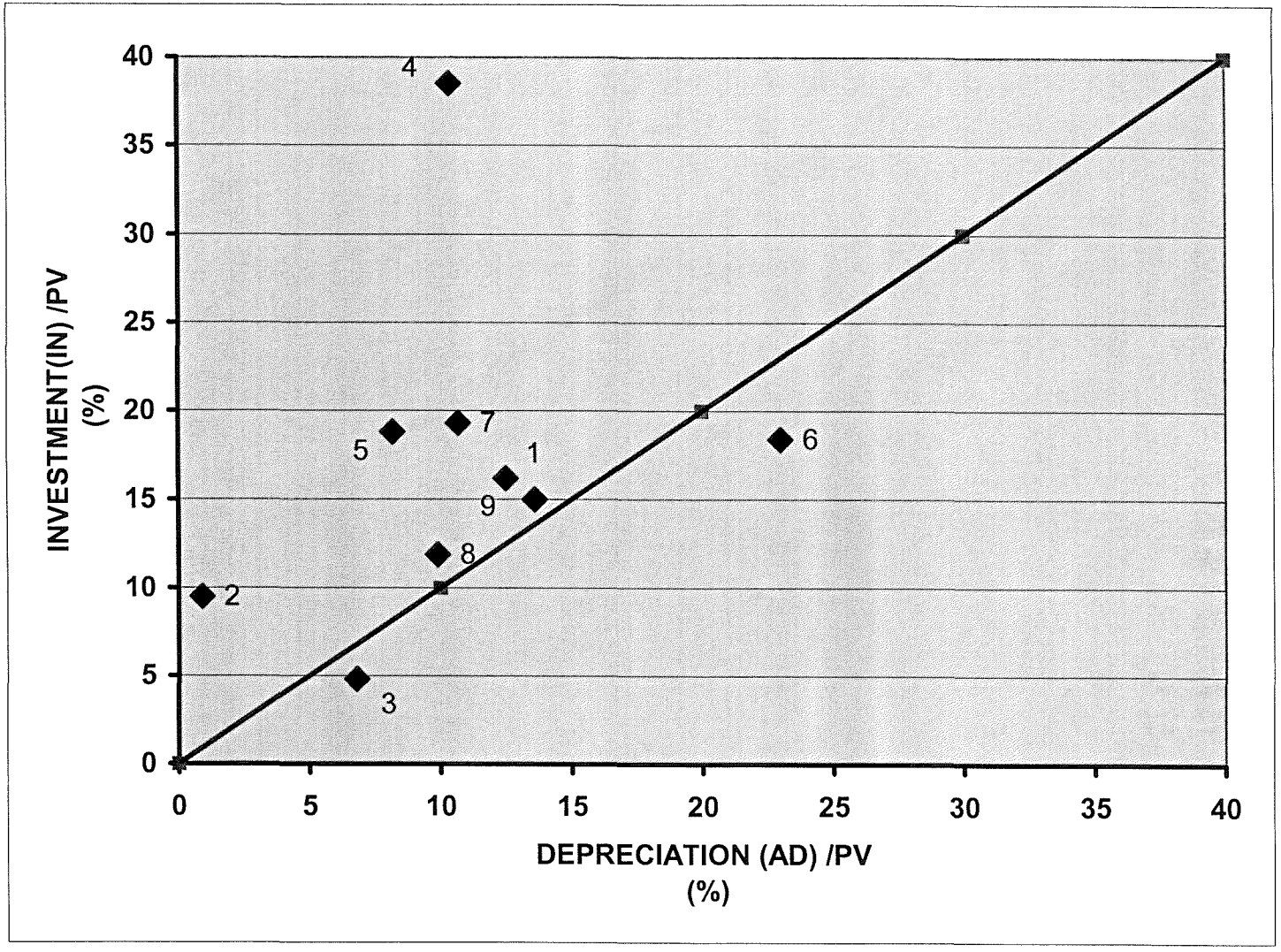


FIG.16 FIRM SIZE AND INVESTMENT

Firm	PV	IN/PV (%)
1	95	16,2
2	136	9,5
3	55	4,8
4	440	38,5
5	115	18,8
6	951	18,4
7	515	19,3
8	328	11,9
9	194	15
Average		

FIG.16 FIRM SIZE AND INVESTMENT

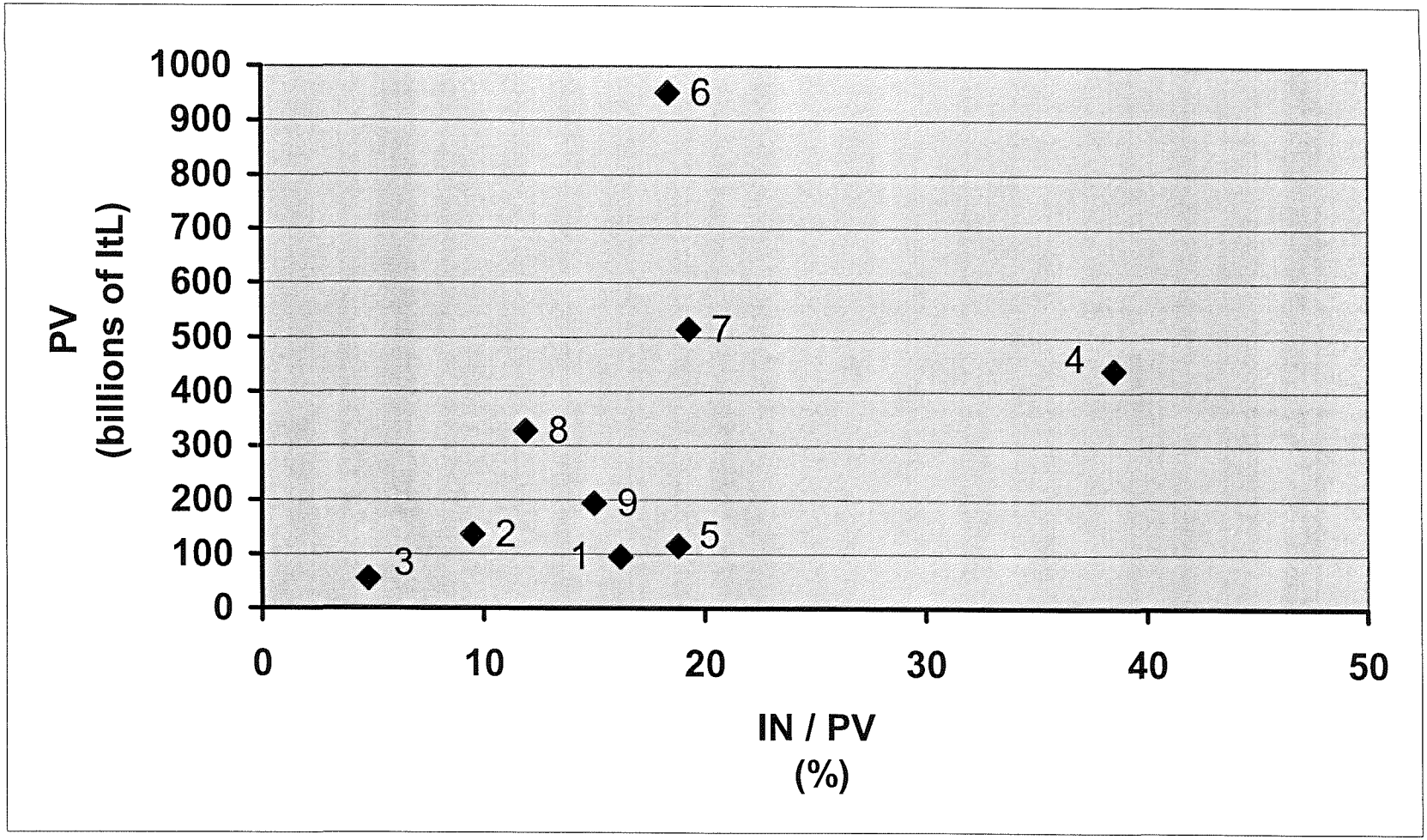


FIG.17 COST STRUCTURES IN THE WASTE MANAGEMENT SECTOR
(1999)

Firm	LC/TC (%)	CSA/TC (%)
1		
2	51	34
3		
4		
5	53	38
6	16	61
7	19	52
8		
9	12	68
Average	**30**	**44**

FIG.17 COST STRUCTURES IN THE WASTE MANAGEMENT SECTOR
(1999)

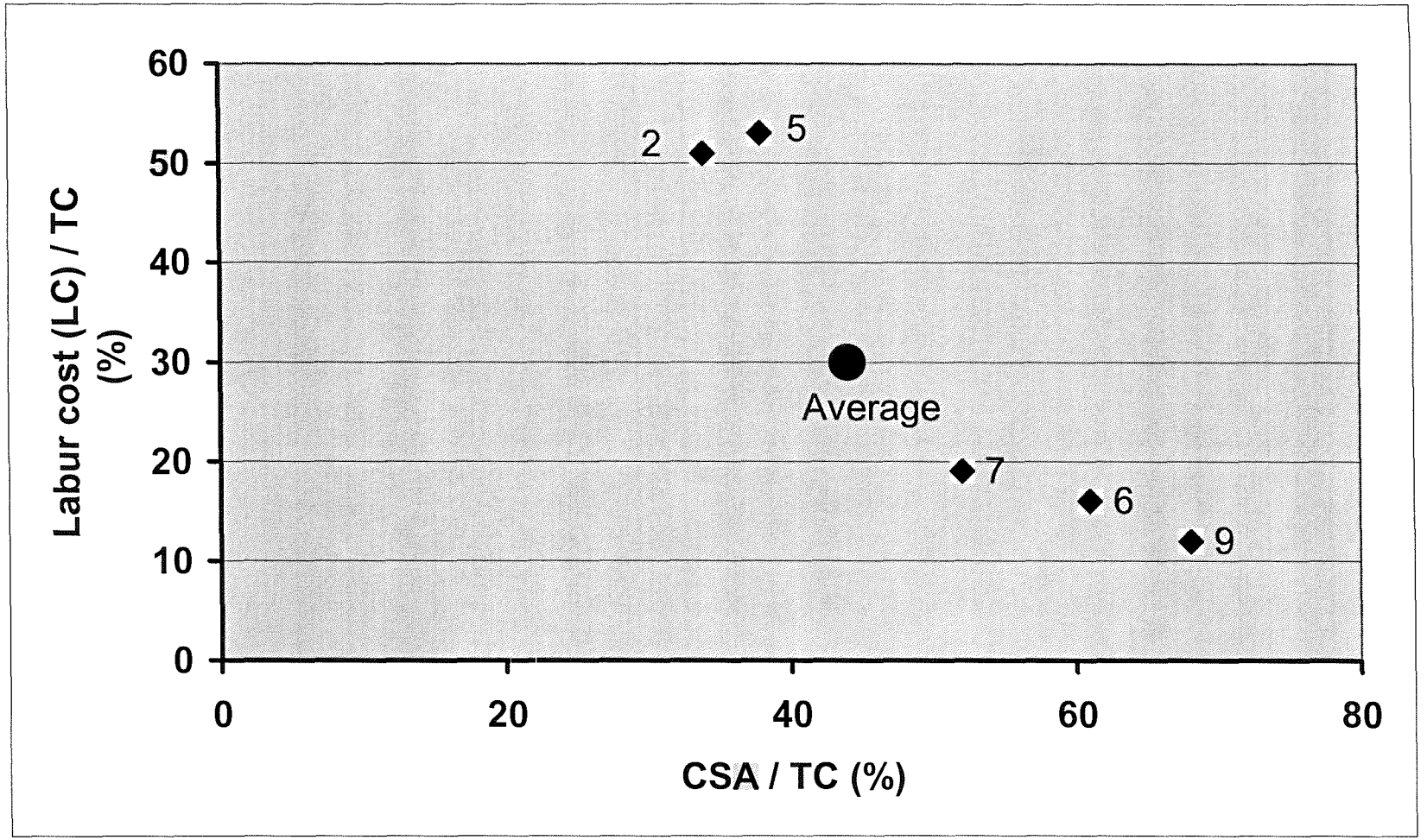


FIG.18 COST STRUCTURES IN THE WATER SECTOR (1999)

Firm	CSA/TC (%)	LC/TC (%)
1	70	26
2		
3	49	36
4		
5		
6	64	16
7	64	17
8	48	42
9	58	17
Average	**61**	**24**

FIG.18 COST STRUCTURES IN THE WATER SECTOR (1999)

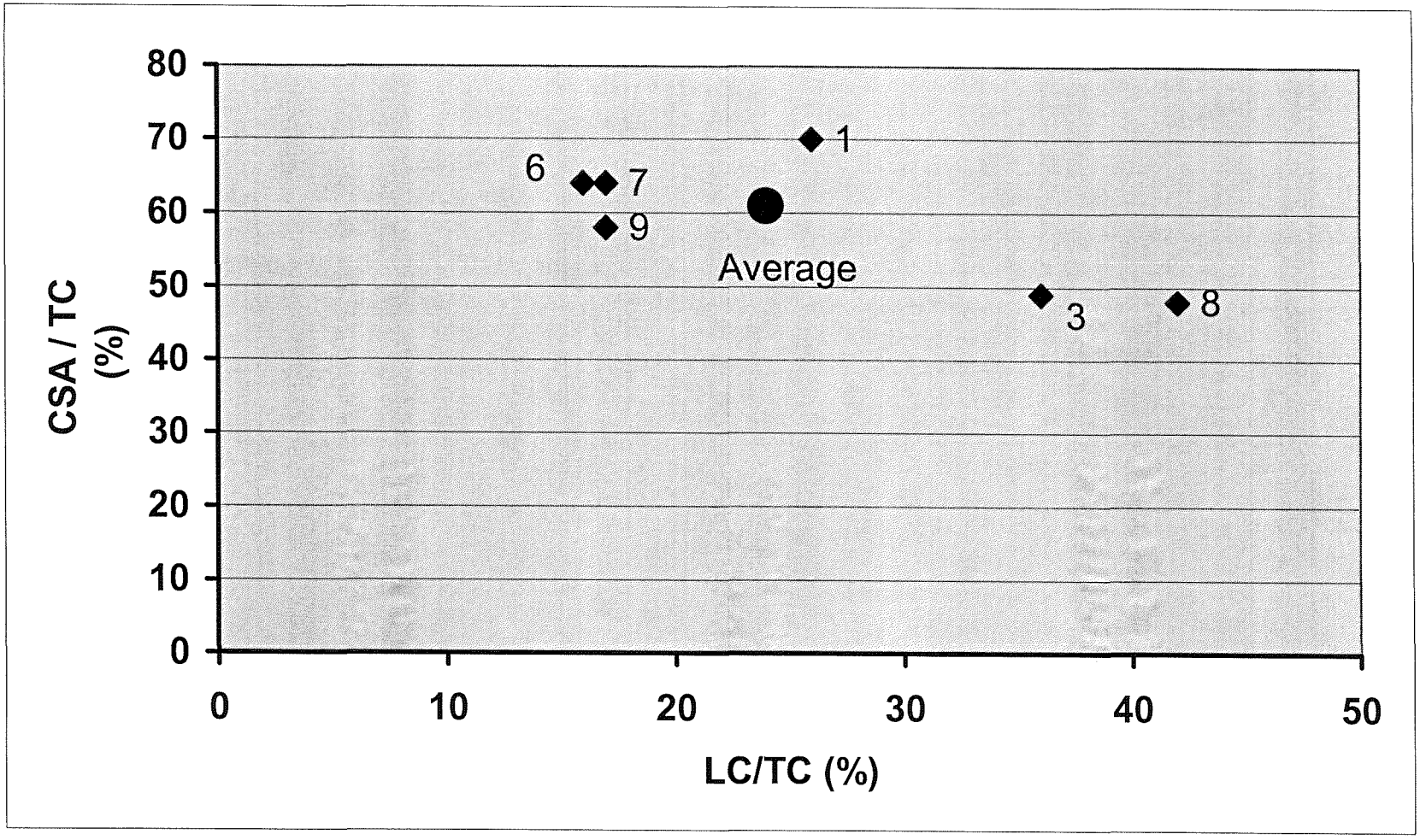


FIG.19 COST STRUCTURES IN THE HEATING SYSTEM
(1999)

Azienda	CSA/CT (%)	AMM/CT (%)
1		
2	91	2
3		
4		
5		
6		
7	78	15
8	68	15
9	69	14
MEDIA	**75**	**13**

FIG.19 COST STRUCTURES IN THE HEATING SYSTEM
(1999)

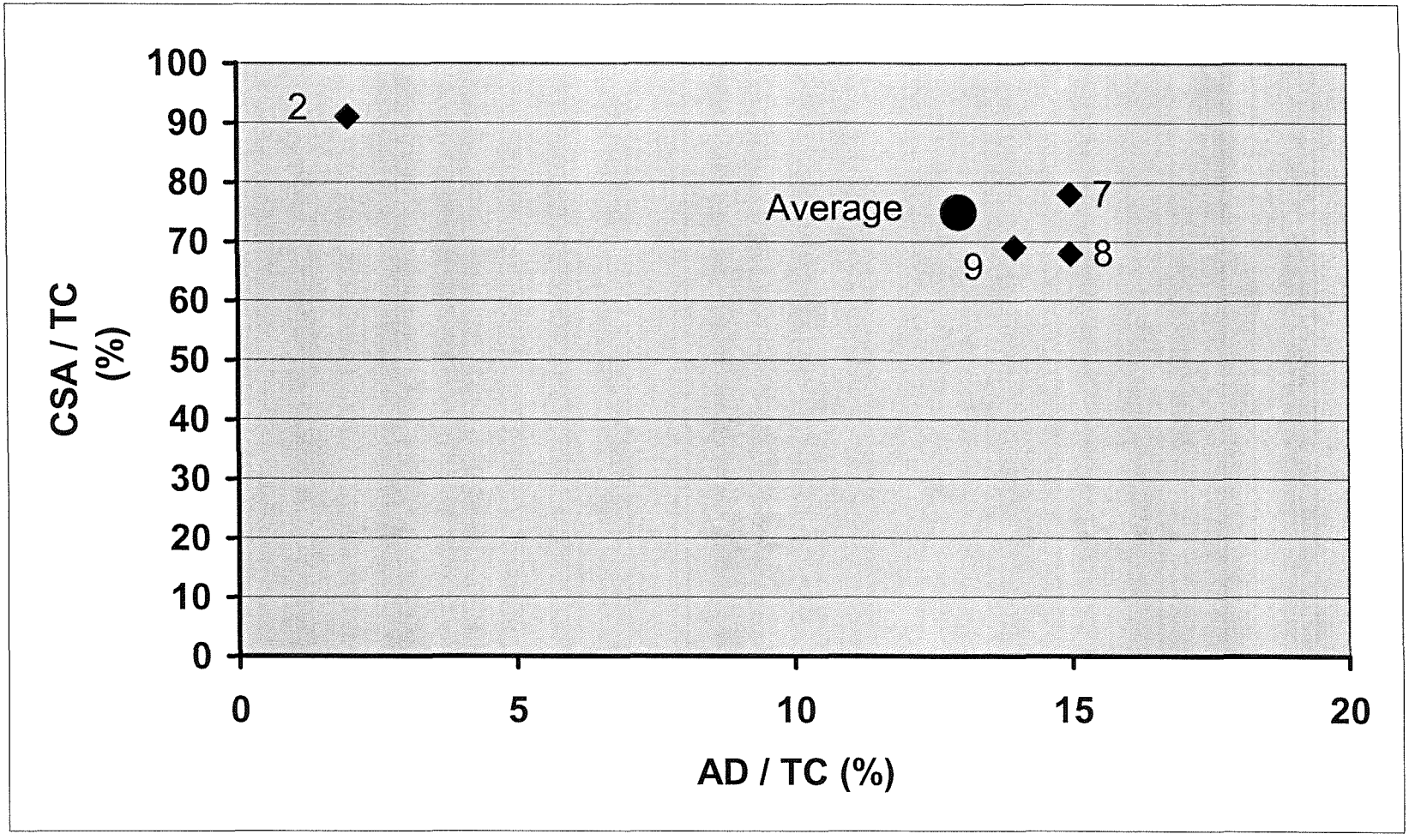


FIG.20 COST STRUCTURES IN THE GAS SECTOR (1999)

FIRM	RM/TC (%)	AD/TC (%)
1	81	9
2	86	5
3	81	7
4		
5		
6	83	7
7	83	6
8	73	12
9	81	9
Average	**81**	**8**

FIG.20 COST STRUCTURES IN THE GAS SECTOR (1999)