IMPLICATIONS OF REGULATION POLICY INCENTIVES FOR STRATEGIC CONTROL: AN INTEGRATIVE MODEL

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ABSTRACT**: This paper proposes an internal management perspective of the company, as a complement to longstanding principal-agency theory, for understanding the interchange between regulator and company. It draws from a longitudinal research project on understanding the implications of regulation policy incentives for strategic control in the management of UK monopoly network utilities and the management implications of regulatory policy making. This paper reports on how two utility companies have managed regulatory objectives alongside organizational ones in electricity distribution and gas transportation and suggests a new integrative model of strategic control for understanding utility management. It concludes if regulation policies are to be effective then regulators should understand the internal management of the companies if performance targets are to be attained.

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1 Introduction

One of the important mechanisms companies use to adjust their internal processes to the influences of economic regulation is strategic control. This paper takes a management perspective to provide an insight into how managers might handle multi-purpose objectives, through approaches such as the balanced scorecard and levers of control. By so doing the aim is to look beyond a principal-agency view to consider how the internal process of adjustment to regulation incentives may influence performance and the effectiveness of regulation policy aims. This paper draws on findings from a research project, which has explored the strategic management of regulated companies and the implications of regulation policy incentives for strategic control. The project involved tracing through real time the changes made in the management of two companies’ adaptation to recently introduced regulatory incentives in the electricity and gas transportation sectors. One outcome of this work was a new integrative model for strategic control. We offer the model as a framework to assist a regulator’s understanding of how management processes are likely to adapt to policy incentives.

A policy aim of economic regulation is to constrain a potential exploitation of supplier market power over customer interests, especially if this power is likely to result in increasing prices and a deteriorating quality of service standards. The seminal work of Jensen and Meckling (1976) provides a principal-agency approach for understanding the interchange between the owner(s) and employee(s) of a company. In the context of the economic regulation of monopoly network utilities, principal-agency theory models the interchange between regulator and company. Where the agent (regulated company) interests are different from those of the principal (regulator), market behaviour is influenced by the way the agent and principal attempt to optimize their often conflicting interests. So, for example, a regulated company might cut back on longer-term investment in customer service to maximize a short-term drive to increase dividends to financial stakeholders.

Understanding how regulation works as a conditioning influence upon market behaviour, and how this impacts upon the strategic control of regulated companies, is under-developed (Viney and Mourouti 2004). Much of agency theory work sees regulation as a constraint in the way it may limit the scope for strategic choice, innovation and entrepreneurial behaviour (Doh 2000, Johnson et al. 2000, Zahra et al. 2000). In addition, the problem of providing
incentives to agents is probably more intricate than is represented in many of the existing principal-agency models (Holmstrom and Milgrom 1991). This is particularly so for contexts where the nature of managerial change in regulated sectors is dynamic. These may be sectors subject to market liberalization programmes and where a different set of stakeholders, changing and evolving government policies and increasing deregulation influence micro-practice (Wilson 2004). In these sectors, an important government purpose has been to improve and enhance service performance of companies that are still in transition from a public ownership (or task) based working culture, to ones that are market driven, through regulatory incentives designed to encourage innovation and efficiency (Joldersma and Winter 2002).

We have evidence from managers that the influence of incentives is complicated in the way it works on the internal management of regulated companies. This is particularly so in how managers address and resolve diverse objectives. Thus, we believe that an understanding of management processes is important not just to establish a deeper insight into how regulatory objectives translate inside the regulated companies, but it is also likely to inform a regulator about how policy priorities may be used to enhance the overall strategic effectiveness of the companies concerned. We begin our paper with the rationale of economic regulation, particularly of monopoly network utilities, and explain the relevance of strategic control. This is followed by an explanation of the methodological and analytical approaches undertaken in the research project. We then use the findings of the research to discuss some of the issues that emerged and introduce a new model for strategic control.

2 Economic regulation

How to regulate companies, which have a dominant market power, to promote productive and allocative efficiency has been a central issue for industrial policy (Armstrong et al. 1994). Despite the opening up of energy supply markets in 1998 to competition, electricity distribution and gas transportation still remain network monopolies. These are areas of natural monopoly where for cost reasons it remains efficient for one company to provide the network. For these companies, there is an incentive to use monopoly power to exploit consumers. The solution offered by regulation is to provide incentives that encourage the agent to minimize agency diseconomies
and to improve on quality. The unique RPI–X price-capping form of economic regulation, designed by Littlechild (1983) and introduced initially for telecommunications, but later followed in the water, electricity and gas sectors, limits real price increases in line with inflation, calculated on the retail price index (RPI), less the regulatory imposed constraint (X). The value of RPI–X is the size of the price cap. The value of X is representative of the regulator’s perceived scope of management inefficiency and degree of justifiable constraint imposed on prices. The operation of the cap permits the regulated company to retain any profits it makes through additional efficiencies until the next price review. This therefore acts as an incentive for the company to outperform the regulatory targets. Assuming these profits are reinvested into the network, a better service may be delivered to customers during the price control period through efficiency savings in the form of improved long term durability of the network, or improved standards of customer service. However, a company may pursue alternative interests to reinvestment. The regulator maintains adequate customer service standards by setting and monitoring a range of minimum standards, but reports of customer dissatisfaction and shortfalls evident at periodic regulatory review have led to the imposition of more composite ways for incentivizing company performance (Chau 2002). These included setting penalties for companies on each standard they fail to meet (for a critical review, see Waddams Price et al. 2002), and the introduction of incentive schemes to assure the maintenance of standards (Bowdery 1994, Rovizzi and Thompson 1992).

A management perspective is useful in that it can portray how the internal processes of management adjust and deal with regulatory impact (Veljanovski 1991). However, regulation literature, especially in terms of understanding the management of customer-focused processes, is limited (Springdal 2002). For example, a prevalent view is that improvements in customer quality are likely to involve extra costs; this is contrary to much thinking about developments in business process management, where it is a generally accepted maxim that improved quality reduces costs (Witcher 1995). To understand this it is important to understand issues of strategic control within the companies (Wolf 1977, Parker 2001). Related issues are the nature of the relationship between the longer-term objectives of regulation and the needs of shorter-term performance of regulated companies (Brignall and Ballantine 1996), and the relationship between the management of resource deployment and competitive advantage (Melville 1994). There is also the question of how appropriate and how accurate are existing performance measures for organizational
management (Waddams Price et al. 2002). These issues and questions have been recognized. A general review by Parker (2002) in this journal identified five concerns for economic regulation: the economics of market failure, state failure, issues concerning prices and profits, regulatory efficiency, and the impact upon the business. To some degree, a management perspective is concerned with all these, but it is especially relevant to the last, where perhaps a management view can usefully extend beyond traditional agency theory perspectives (Parker 1995, Reger et al. 1992).

3 Management perspectives on strategic control

The management perspective dates back to early studies of scientific management at the beginning of the twentieth century. By mid-century, management writers were questioning the nature of organizational objectives and performance targets. This centred on the question of how to link the achievement of top management goals with performance objectives at an operational level. A major difficulty is how to pursue longer-term organizational objectives through short-term actions. Those activities that yield positive results quickly, especially those that concern the short-term financial health of the organization, are naturally given prominence at an operational level over those where the payoff is longer-term and perhaps uncertain. Early management writers argued that organizations and firms work to a balance of (non-optimal) objectives.

[T]he search for the one right objective is certain to do harm and to misdirect. To emphasize only profit, for instance, misdirects managers to the point where they may endanger the survival of the business. To obtain profit today they tend to undermine the future. They may push the most easily saleable product lines and slight those that are the market of tomorrow. They tend to short-change research, promotion and the other postponable investments. Above all, they shy away from any capital expenditure that may increase the invested-capital base against which profits are measured; and the result is dangerous obsolescence of equipment. In other words, they are directed into the worst practices of management... Objectives are needed in every area where performance and results directly and vitally affect the survival and prosperity of the business. (Drucker 1955: 59)
Similar thoughts were expressed by Ansoff (1965), which reflected similar thinking in economics that included Coase (1937), Cyert and March (1963), and Loasby (1976). General Electric had developed a set of performance measures for its departments in the 1950s, and these had included measures of short-term profitability, market share and productivity, as well as longer-term concerns: product leadership, personnel development, employee attitudes, public responsibility (Otley 1999). More recently, over the last two decades, national business excellence frameworks, such as Baldrige and the European Excellence Model, have focused attention upon best practice criteria that make a clear distinction between enabling processes and measures of business results – a distinction that is embedded in Japanese strategic management (Witcher 2003). The balanced scorecard approach has been developed from these ideas and is now widely used by companies to manage strategic objectives in terms of enablers and business results or output measures (Kaplan and Norton 1996). Enabling processes involve objectives used to monitor longer-term factors such as the development of staff competencies, and technology infrastructure. Outcome objectives indicate employee satisfaction, retention and productivity; by their nature, these objectives are lagged indicators of performance and are influenced by the former enablers. The relational links between the two are difficult to determine, however, and there is no generally accepted management approach for reconciling the two sets of objectives.

It is an assumption of agency theory thinking that organizational purpose includes a mix of divergent objectives, which are rooted in the diversity of an organization’s stakeholders. This is recognized in general management, but the focus is upon how to manage this balance of enabler and outcome objectives. As conditions change, individual strategic and performance objectives will require and receive unequal attention and effort from senior management in different ways at different times. This will include the management of regulatory related objectives. Some objectives will be ‘more equal’ than others depending upon how critical they are at any particular time. This question of how to manage objectives in a balanced and harmonious way is the subject of strategic control. The work of Simons (1995) on strategic control is the most developed in this field.

Simons (1995) puts forward a theory that managers control strategy using four basic approaches that he calls levers. These work simultaneously, but have different roles. Senior managers use information for various purposes: to signal the domain in which subordinates should search for opportunities, to communicate plans and
goals, to monitor the achievement of plans and goals, and to keep informed and inform others of emerging developments. These, Simons maintains, become parts of a strategic control system when they are used to maintain or alter patterns in organizational activities. Control must accommodate intended strategies as well as strategies that emerge from local experimentation and independent employee initiatives. The four levers are (1) beliefs systems, used to inspire and direct the search for new opportunities; (2) boundary systems, used to set limits on opportunity-seeking behaviour; (3) diagnostic control systems, used to motivate, monitor, and reward achievement of specified goals; and (4) interactive control systems, used to stimulate organizational learning and the emergence of new ideas and strategies (Simons 1995: 4–7).

A beliefs system is an explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic values, purpose, and direction of the organizations. These are the core values. Simons argues that these things motivate individuals to search for new ways to create value. Boundary systems, on the other hand, are rules and sanctions that restrict search. The most basic are those that impose codes of business conduct. This might include codes of behaviour promulgated by a regulator, as well as political and public opinion. Simons argues that formal systems establish two types of boundaries: business conduct and strategic boundaries. Both are determined through the analysis of the risks associated with specific business strategies. Simons (1990) had originally omitted beliefs systems. His change of mind probably reflects contemporary discussion that places a stress on leadership and the importance to it of vision and values (Kotter 1996).

Diagnostic control systems are the formal information systems that managers use to monitor organizational outcomes and correct deviations from pre-set standards of performance. This approach incorporates the setting of goals, monitoring progress on them, and when necessary intervening to bring progress back on course. Simons argues that diagnostic control is designed to trigger the adjustment of the targets embedded in plans and programmes; it involves only single rather than double-looped learning. This is a narrow interpretation of diagnostic systems. In fact, Simons used the Kaplan and Norton (1992) version of the balanced scorecard as an example. This is at odds with the views of Kaplan and Norton in their later work (1996; 2001), where they maintain that double-looped learning is an essential part of strategic review (although not for operational reviews). In a widely cited paper about the balanced scorecard, Mooraj et al. (1999)
explicitly argue that the scorecard can be used for all four levers. Simons states that senior management should get involved with diagnostic control only on a management by exception basis, as diagnostic control should require constant monitoring and oversight only at an operational level.

Interactive control systems are formal information systems that managers use to involve themselves regularly and personally in the decision activities of subordinates. These interventions are search activities based on senior management’s perceptions of strategic uncertainties. The concern is with basic assumptions and the formation of emerging strategy, when attention must be focused and a dialogue forced through the organization. These provide agendas for debate and motivate information gathering outside the normal channels. Many kinds of interactive control system are used, but the key aspect is the personal involvement of senior managers in establishing new programmes and milestones, monthly reviews of progress and action plans. Project management is important and learning and experimentation are the primary reasons for this aspect of control.

The research used Simons’ (1995) model of strategic control levers as an investigative framework to catch and group surfacing issues of importance as they emerged during the research process. The framework served as prior theory to guide the course of the research process. In the end, it was possible to extend and develop Simons’ ideas to incorporate the balanced scorecard, as a combined or integrative model of strategic control for regulated companies in the electricity distribution and gas transportation sectors.

4 The research

The methodological approach for the research involved two longitudinal tracer case studies. Specific regulatory policy incentives in electricity distribution and gas transportation were identified as ‘tags’ to follow in two companies in real time as the incentives were internally adapted and managed as part of strategic control. The regulatory incentives are described in the next two sections. We then explain how tags and the tracer methodology were used.

4.1 Policy incentives: electricity distribution

When the electricity sector was privatized in 1989 fourteen regional monopolies were created to supply and distribute services
to customers. A set of quality standards was imposed that covered both these areas. These standards were called the Guaranteed and Overall Standards of Performance Scheme (GOSPs) and fell into two groups. Guaranteed standards would incur a fixed penalty payment for any breach, and overall standards of services carried negative implications for reputation, but no financial sanction, should a company not deliver them. The former group was established by sections 39 and 40 of the Electricity Act 1989 and are key areas of customer care. The latter concerns areas where a customer should be able to expect a minimum level of service (see OFFER 1992, for details of the original scheme, and Chau 2002, for a comprehensive account of its development). A review of the regulatory system led to the enactment of the Utilities Act 2000, which restated the powers of the economic regulator, as well as the role of utility regulation:

The principal objective of the Secretary of State and the Gas and Electricity Markets Authority...is to protect the interests of consumers in relation to electricity conveyed by distribution systems, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the generation, transmission, distribution or supply of electricity...[and as a secondary duty] the need to secure that licence holders are able to finance the activities which are the subject of [the] obligations...(Utilities Act 2000: Part II, s.3A(1) & (2b))

The Office of Gas and Electricity Markets (OFGEM), the economic regulator of energy in the UK, developed a more composite performance management framework. This provided greater emphasis on incentivizing organizational performance, rather than simply imposing penalties for poor performance. Utility regulation is not just about a need to control a regulated company’s actions, but is also required to ensure the company can carry out its activities effectively. So regulatory controls should not be too restrictive; while seeking to control potential abuses, it also seeks to maintain the efficiency of the business.

OFGEM’s new performance framework, the Information and Incentives Project (IIP), became fully operational in April 2002 (the proposals were given in OFGEM 2001a). This scheme operates in parallel with the old GOSPs system, although the monitoring of performance of supply companies has now passed to Energywatch. It provides incentives on the company by awarding good (or best) performance, and penalties for underachievement, that can amount to ±2 per cent of the annual revenue. The IIP is intended to improve the
way in which price controls are reviewed and implemented, as well as improve the quality of information collected from the distribution businesses, by defining the levels of service expected by OFGEM. There are four key performance criteria. These include the adequacy of information reporting, quality of supply as defined by customer interruptions (CI, supply interruptions that last longer than three minutes); customer minutes lost (CML, beginning with a customer’s telephone notification); and length of time waited before telephone response (OFGEM 2001a). The exact targets set for these measures are different for each company depending upon a calculation of its 2001/02 performance achievement (known as the base year). The aim of these performance criteria is to bring into the regulated company a clearer focus on the objectives it is obliged to achieve.

4.2 Policy incentives: gas transportation

The gas sector was privatized in 1986 when British Gas was the monopoly supplier of gas in the UK. In the mid-1990s, the supply and transportation businesses of the company were separated, and the supply market was opened up to competition, while transportation continued to be operated by one national company, now called National Grid Transco. Three main frameworks govern Transco’s performance of service standards. These are Condition 19 of the Gas Transporter Licence that applies to the prevention of gas escapes; the Network Code to make gas available for off-take from the system, and a set of voluntary standards inherited from British Gas. In 2002, OFGEM required Transco to adopt a new set of performance standards as part of the regulatory review that consolidated the existing voluntary standards. These were added to the incentives already inherent within the RPI–X mechanism. The price control review provides constraints by specifying capital expenditure (CAPEX), operating expenditure (OPEX) and replacement expenditure (REPEX) allowances for the company (OFGEM 2001b). OFGEM stresses that the focus of making these service standards compulsory as part of the price review is to ‘ensure that Transco has sufficient resources to provide an appropriate quality of service and establishes targets that will reward efficient management’ (OFGEM 2001b: 3). The implications of these gas transportation standards are different from those of IIP, because they do not provide financial incentives for specific performance targets. However, their compulsory aspects have consequences for the company’s reputation and pose significant implications for risk management. As Transco is predominantly involved in the delivery of gas services, any failure to perform is not
just a matter of forfeiting a payment per individual breach, but may also lead to press attention and the suing of the company for culpable homicide, as shown in the incident of the 1999 Larkhall explosion.

4.3 The tracer methodological approach

The tracer methodological approach was first applied in the Woodward studies to trace actions in real time to investigate the impact of technological adaptation on management control (Woodward and Eilon 1966). It has since been used in a variety of fields (Hornby and Symon 1994) and more recently to identify and trace Japanese style strategic management (Witcher and Butterworth 2001; Chau and Witcher 2004). The basic idea is to tag an organizational element, such as a new product or a strategic objective, and to follow what happens to it as it is managed across the organization. Hence, a ‘potential tag is anything which records evidence of the participation of various people at a point in the process’ (Hornby and Symon 1994: 171).

Tracer studies are epistemologically rigorous enough to support a wide spectrum of data collection means (Chau and Witcher 2003). In the regulatory research, a triangulation of respondent interviews and collection of company and published regulator reports during the same period was used. The research commenced at the same point at which the two regulatory policy incentives started (April 2002). The new incentives were used as tags to identify critical events and issues that related to regulatory phenomena, to follow changes through the planning/management cycle. In the instance of electricity, CI and CML targets derived from the IIP changes were taken as tags to follow through in a large distribution company (which, for reasons of confidentiality, we shall call DistriCo). In the example of gas, the company was inevitably Transco. Here some key emergency safety standards, which has been in existence from the beginning of Transco, had been made compulsory in the recent price review, and the impact of these that were traced. Thirty respondents were identified as the tags progressively made their journey through the companies’ planning and implementation cycles. The field research as a whole lasted over 18 months. Some respondents were interviewed several times. The identification of a respondent and the degree of that individual’s involvement depended upon the course of the tags and the analysis in each phase of the field research of the previous interview data. Three levels of management had been involved in the interviews.
4.4 Data analysis

Analysis used a simple alternative to the traditional computer-assisted qualitative data analysis software (CAQDAS) packages. This process followed the logic of data analysis stipulated by Huberman and Miles (1994) on data reduction, display and conclusion drawing (Chau and Witcher 2004). Data collection and analysis were conducted simultaneously at each stage in-between the phases of interviewing. The systematic analysis of the data formed the categories of utility regulation and strategic control systems to which the integrative model relates. The exact arrangement of these categories in the model emerged from the particulars of the respondent comments. The Simons framework operated as a first-order analytical tool to provide an overall grouping framework to categorize all the issues which surfaced from the research. This theory operated as a skeletal matrix which was ultimately fleshed out by the empirical data comprising the respondents’ comments. Regulatory reports and company documentation were also collected over the research period. These data were evaluated systematically immediately after they were collected, and prior to the next collection phase, to evaluate management interventions and to identify emergent issues of significance.

One benefit of the tracer methodology is its ability to overcome problems of data and informational overload. This is made possible by systematic analysis of the data over the research period in manageable portions so that emergent issues are more comprehensive and lucid. The management of the data involved firstly the development of a database into which all important comments of the transcriptions were inputted. Indeed, what was considered important was a matter of personal judgement, but the overall direction of the research was guided by the issues relevant to Simons’ framework and elements of the policy incentives, and not solely the opinion of the researcher. This involved the assignment of unique identities for each selected comment for later ease of referencing, and against each comment, a code was given to indicate the element of the Simons framework to which it related. The codes were constructed based on the ‘in vivo’ form of coding, so that sub-categories of the Simons framework to which a comment related would be assigned a code, with a decimal to distinguish it from its parent-child category. Hence, a coding tree of all categories comprising over 100 parent and child codes was constructed. This grew larger over time as the project blossomed, yielding management insights. Where important issues emerged that did not fall naturally within a particular code or within a control lever of the Simons framework, these issues were then considered as an extension.
to the original framework (Laughlin 2004). They were used as addendum commentary, rather than forced into one of the Simons control categories. Each quotation was broken down into a reasonable size based on the organizational phenomenon which it concerned, and considered as an entry into the database.

The quotations were analysed using a specific process designed to suit tracer studies comprising six stages (Chau and Witcher 2004). The first involved the use of the computer language known as simple query language (SQL), which is a generic data mining script for the querying of data, supported by most modern software interface packages. This step of SQL enabled the coded quotations to be reduced to two tables containing frequency counts for both DistriCo and Transco. The second stage involved the graphing of this table, what Huberman and Miles consider the need for data display. This identified the point of informational saturation (Glaser and Strauss 1967) and completion of the tracer study (this is a key indicator of reliability in the conduct of longitudinal qualitative research inquiry). The third stage involved the ranking of all the prevailing codes from each phase of the research which emerged. It was this stage that enabled the identification of the key issues relating to strategic control, of which the integrative model derived from the research comprises. The remaining three stages concerned the attributes of the data, such as how the focus of the project moved from data collection to analysis (stage four), the sufficiency of the tags used to guide the research (stage five), and fleshing out the skeletal framework by identifying quotations as supportive evidence (stage six) used later to justify the model.

The table of analysis (see Appendix) tabulates the ten most prevalent issues expressed by respondents during the interviews. The table indicates, in descending order, that the five most popular codes predominantly concern those which relate to the balanced scorecard. These are followed by issues of beliefs systems and regulation as a main risk within boundary systems as issues which support the popularity of the balanced scorecard. We infer that the balanced scorecard approach to managing objectives is a useful one, within the overall control system domain. This is recognized as falling within the constraint of economic regulation. We therefore use this primary information to build and posit a generic framework for managing monopoly energy networks. The integrative model of strategic control is therefore comprised of the balanced scorecard and the Simons framework, and operates within specific dimensions of utility regulation. The analysis provided the identification of categories relating to
the integrative model. In explaining this, we begin by presenting evidence on the usefulness of the Simons framework in the context of utility regulation, and then describe the integrative model.

5 Findings and discussion

5.1 Strategic control levers and dimensions of utility regulation

The beliefs systems in the two companies, documented in the form of purpose statements such as vision, mission and value statements, were used to serve the customer’s interest. The companies argued that this helped them behave towards customers as if they were trading in a freer competitive market. However, while these should motivate individuals to search for new ways to achieve value, the research found that many of the respondents found the work of the company and the nature of their own work too constrained by regulatory beliefs. This example gives a view of organizational purpose in relation to the aims of the regulator that was typical of many of the respondents’ comments:

In the absence of the regulator, we would raise our prices, cut our costs . . . and behave like monopolists . . . we’d achieve high profits for our shareholders – that’s always going to be our ultimate driver . . . but the regulator will always prevent us from doing so, but we’ll always find some way. (A Regulatory Analyst, DistriCo)

The role of the regulator in this sense works more as a boundary influence that sets limits on monopolistic behaviour and profit-maximizing, rather than works through ‘beliefs’. According to Simons (1995) boundary systems are a negative force on the company because it limits strategies. In effect, the boundary system becomes a collection of risks (negative factors) facing the company. When asked in the research, all respondents showed a clear awareness of the risks facing the company and its operationalization of strategies. Comments were on the lines of:

There are all sorts of risks . . . OFGEM who are saying you do it at minimum costs. We have a risk management process which is an ongoing list of risks . . . New things come along and we’re always updating that. (A Regional Network Director, Transco)
Such comments indicate a recognition of the constraint regulation poses on the company and on their work in the achievement of their overall objectives, of which regulatory ones are a part. The exact way in which regulation poses a threat on the company may change, just as in the imposition of new policy changes of IIP in 2002. New ‘risks’ are recognized as a result, and so the list of risks is updated continually to reflect such changes.

Diagnostic control systems require objectives to be broken down and be cascaded to those in the company directly concerned. All of the respondents who were asked referred to a form of performance framework – some means that define clearly objectives and targets, and measures existing performance against those targets. The evidence given in the appendix supports a strong case for the usefulness of a scorecard approach to performance management. For regulated utilities, the task is bringing together the regulatory quality objectives and targets with organizational ones so that they are incorporated into daily work and management. It is advantageous where the specific regulatory objectives coincide with the organizational ones. However where these are conflicting (a principal-agency effect), the difficulty lies in the integration of these objectives into routine work without incurring conflict. Respondent comments stress the role which performance measures play in daily work:

We have a matrix of objectives which involves a whole bunch of things, including IIP. These include interruptions and customer network. We give these very high priority, and issues such as profitability . . . (A Regulatory Analyst, DistriCo)

There’s no point just carrying [around] performance measures . . . We developed them over time. We think of a measure, and then think of a number to put onto it, but if it doesn’t give us benefit, there’s no point in that. We need to get a benefit out of it because that tells us what we’re actually achieving, what we’re actually doing . . . and actually aligns us to where we will be. (A Representative, DistriCo)

These comments also contain a degree of scepticism about the effects of regulation policy. The second comment above suggests that the regulatory objectives may not assist in aligning the company to achieving its true organizational goals, and hence is a possible constraint. This accords with the view that regulation policy is a constraint, and acts as a boundary system for strategic control.

The interactive control system for a regulated company is little different from that of any other commercial company. Some procedure
or process is still required for the alignment of staff competencies with top level objectives. In Transco, this takes place by regular middle and senior level workshops and strategy days to ensure that managers are clear about the direction of the company. In DistriCo, this form of learning is extended to all employees to understand the details of the new IIP policy incentives and for general company acceptance of them. These procedures are in accordance with Simons’ (1995) suggestion of a form of interactive control that involves dialogue and learning, so that senior management becomes aware of limitations in staff competencies. A DistriCo employee explains how in one department this interactive control procedure was achieved:

Unless you’re involved in regulation, you might not know what the IIP is all about, and this is the presentation we had to do. We did it in the form of a game where we replicated the Monopoly Board and gave each street an IIP standard... It’s not the sexiest subject of all, so you need to get a bit more involved. (A Regulatory Analyst, DistriCo)

Involvement is the key word. Interactive control systems require involvement from all parts of the organization. Involvement is greater for the control system where the imposition of the regulatory policy is most different. The higher the degree of involvement, the better the alignment of staff competencies to objectives. Hence, this aspect of control works in harmony with all the other control levers.

5.2 An integrative model of strategic control

The integrative model is an illustration of the process of regulatory control. It recognizes two key stakeholders, the energy regulator and the company it regulates. The regulatory impact on the company represents the inputs of the process. Shareholders are not directly identified in the model, although the outputs defined in the model are indicative of the interests of the shareholders, as better performance of regulatory targets, organizational efficiency, and long-term durability of the network, should result in higher shareholder value. The outputs from the company are the tangible deliverables to customers, in terms of the achievement of service quality performance targets and the longer-term durability of the network. This process is indicated in the model (Figure 1) by the dimensions of utility regulation (left and top), the organizational control systems (the elements inside the dotted box) and the outputs (right and bottom). One key contribution to complementing the traditional principal-agency
understanding of the regulator-company relationship is the internal management perspective of the company. The model attempts to display the internal strategic control system mechanisms. This is useful to regulators who are interested in the final tangible outputs (performance targets and efficiency of asset management), because they can adjust their level of control in the periodic reviews based on their understanding of the constraint caused by each regulatory imposition.

Figure 1 – An integrative model of strategic control in UK regulated utilities
In the model, utility regulation is defined in two dimensions. These are the impact of regulation and the content of regulation, two dimensions which provide a matrix into which the management frameworks used by the company are uniquely positioned. The impact of regulation dimension is broken down into two categories, the existence of regulation (the general role which regulation plays) and the presence of the economic regulator (we refer to OFGEM, as opposed to any particular type of institution or Chief Executive within OFGEM). This breakdown is taken from the empirical data of the research in which the companies recognize a marked difference between the two and in the use of strategic choices. The other dimension, the contents of utility regulation, is defined by interpretation of the legislation – the Utilities Act 2000.

From the Act, which defines the objectives of the regulator, as discussed earlier in section 2 of the present paper, the category of ‘monopoly control’ in the figure is defined by the phrase ‘wherever appropriate by promoting competition between persons engaged, or in commercial activities connected with’ (Pt.II-s.3A(1)), because it governs the general activities of the regulated company. The category of ‘quality/supply control’ of the figure is defined ‘to protect the interests of consumers in relation to [the supply of energy]’ of the Act (ibid.), because it concerns the core product and service of the company which the Act regulates. The category of ‘management control’ in the figure represents the statutory duty imposed by s.3A(2)(b) of the Utilities Act 2000, which stipulates that OFGEM must carry out its functions with regard to ‘the need to secure that licence holders are able to finance the activities’. This category therefore concerns OFGEM carrying out its secondary duty, which itself essentially concerns the detailed management implications of the company. The two dimensions of impact and content form the two-by-three matrix with which to define strategic control of the organization.

A particular feature of the model is that the horizontal categories along the top, defining the two columns, depict a narrowing down of the focus from the general existence of economic regulation to the specific presence of a particular economic regulator. For example, the focus on the impact of the economic regulator being present is more specific (narrow) than the general existence of regulation and regulatory policy. Similarly, the vertical categories on the side, defining the row dimensions, depict a narrowing down of focus on the actual control, which the content of utility regulation has on the internal management of the organization. For example, the focus on quality/supply control is narrower than the overall control of
monopoly behaviour, and the focus on management control of that specific company, is narrower than that of quality/supply control. These two are derived from the empirical data.

Policy incentives from both these dimensions impact the operations of the balanced scorecard and provide a framework into which Simons’ model of strategic control levers operates. The interaction of the integrative framework is depicted in the figure by the use of different types of arrows. The solid arrows indicate clear and obvious exchange of interaction, and the flow of information by the direction in which the arrows point. For example, beliefs systems set organizational core values and these must be fed into the diagnostic control system for establishing achievable measures (denoted by the solid arrow pointing downward); however, the achievements of these are occasionally reviewed and then fed back to adjust the organizational priorities, denoted by the dotted arrow pointing back up to the beliefs systems from the diagnostic control systems box. In the Simons (1995) model, business strategy determines which control lever to exert depending upon the situation. This is depicted by the use of an arrow pointing from business strategy to the control lever. In our model, these arrows point both ways, because due to the interactive nature of regulatory impact, strategy is both a driver and a consequence of the control system. The links between each individual management control system are also denoted by dotted arrows. The ways in which they are linked are represented by the type of arrow, and indicate how they work interactively and simultaneously for better management of regulatory impact, than if any one of them operated in isolation.

5.3 Linking utility regulation with strategic control levers

Section 5.1 above has explored the ways in which regulatory policy incentives concern elements of Simons’ (1995) strategic control levers. This section looks more closely at the interaction between the categories which make up the dimensions of utility regulation and the matrix classification of the Simons model. Here, we also examine whether application of the model should be different for regulated utilities, and if so, how.

Simons used a two-by-two matrix to position what he referred to as positive (yang) control levers on the left (beliefs system and interactive control systems), and the two negative (yin) ones on the right (boundary systems and diagnostic control levers). Our adaptation of this model positions diagnostic control systems on the positive side of
the model, since our findings indicated that the autonomy of diagnostic control systems is in fact a positive force on the regulated companies. Thus, a two-by-two matrix structure of control systems in a two-by-three matrix structure of utility regulation is formed. However, the four control levers only fulfil four of these six positions (we do not suggest additions), leaving two vacant and not applicable in the context of utility regulation. This is because the research found that these two concerned categories of utility regulation which were too narrow to have any recognizable impact.

The model makes the assumption that as the impact of regulation becomes more focused from the general existence of regulation to the threat of the presence of the economic regulator, the more negative it becomes in terms of strategic control for the organization (moving from the yang to the yin forces). This remains an assumption, because the dimension of the impact of regulation has only two scales and is more an absolute than a continuous scale of degrees of focus. There are three categories on the vertical scale which are aligned with the two of Simons. While with this the content of regulation acts better as a scaled dimension, because there are three categories, the categories of the Simons model are not scaled. They are aligned in the way shown in Figure 1, but are clearer if presented as a table of these interactions (see Figure 2).

Figure 2 indicates by double-pointed arrows the essential interlinks between the two dimensions of utility regulation and strategic control. The individual categories which interact directly with regulation and strategic control, according to Figure 1, are grouped in juxtaposition because they explain the features of each unique strategic position of the control levers in the model. These are discussed below.

In beliefs systems, it is monopoly control that restricts the overall organizational activities and embeds the core values into the

<table>
<thead>
<tr>
<th>CONTROL SYSTEMS</th>
<th>CONTENT OF REGULATION</th>
<th>STRATEGIC STATUS</th>
<th>IMPACT OF REGULATION</th>
<th>FORCES OF STRATEGY</th>
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<td>STRATEGIC DOMAIN</td>
<td>EXISTENCE OF REGULATION</td>
<td>STRATEGIC EXPANSION (+ve)</td>
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<td>PRESENCE OF REGULATOR</td>
<td>LIMITS STRATEGIC FOCUS (-ve)</td>
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<td>IMPLEMENTATION OF STRATEGY</td>
<td>EXISTENCE OF REGULATION</td>
<td>STRATEGIC EXPANSION (+ve)</td>
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<tr>
<td>INTERACTIVE CONTROL SYSTEMS</td>
<td>MANAGEMENT CONTROL</td>
<td>IMPLEMENTATION OF STRATEGY</td>
<td>EXISTENCE OF REGULATION</td>
<td>STRATEGIC EXPANSION (+ve)</td>
</tr>
</tbody>
</table>

Figure 2 – Categorization of strategic control and utility regulation

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organization, as this frames the strategic domain in which it operates. It is the general existence of regulation which frames the restrictive monopoly control. An illustration comes from Transco:

> It is our business to pipe gas, and safety is not only paramount but our competence…We are a natural monopoly and some of the services and service standards flow from that fact. Our future isn’t completely determined by the regulator, but we still can’t colour our gas purple to attract more customers. (A Head of Regulation, Transco)

In this example, the aspect of safety is an integral component of the company’s core competence, and a key component of its beliefs system. The achievement of this competence is however limited because it is a regulated company with activities which are limited and constrained. The beliefs system is positioned, in both the Simons (1995) and the present integrative model, as a positive force on the company, despite the restriction. This is because the existence of regulation contributes to the company’s focus of safety as a core competence (although regulation is not the only reason why safety is paramount!).

Boundary systems, on the other hand, are a direct restriction on the organization’s strategic focus and attention. Because regulation restricts the kind of activities within the industry it is categorized as a negative force. In utility regulation, depicted by our model, this is the only specific (and obvious) control system positioned in the negative force side of the categorization. Further, this is the only control system which is deeply influenced by the presence of the regulator per se. This is supported by the empirical data which suggested that the regulator is a major risk and one ‘to be avoided’ (borrowing an expression from Simons) where necessary. Two-thirds of the respondents held similarly expressed views. For example, one put forward this observation:

> Every year since 1986, there has been a price reduction. If I had my own business and every year I see reduction in prices and no signs of increase, will I still be in the market? In a word of answer: no! In the regulated environment, it is difficult to enter other commercial activities. It is a single contract with the customer. Every year, prices are dropping and service standards are getting harder – would you still be here? No. So, is it time to free up the marketplace and bring in commercialization with control? Yes. If left to another decade, would it be too late? Absolutely. So, don’t we need a radical beating with regulation? Yes. What are the consequences of not doing so? A dying gas industry. (A Regional Director, Transco)
In this case, the ‘regulated environment’ referred to by the respondent is a restriction on the company’s strategic focus (negative force) because of the limited range of activities regulation allows. These foregone activities would otherwise be possible in any other commercial (unregulated) environment. Although the boundary system is a negative force on the company because of its restriction, the other three control levers are however, in the present integrative model, positive forces. We infer therefore that regulation adds some positive value to the company and the interests of the customers to whom it provides its services.

Diagnostic control systems for regulated utilities are grouped primarily in the positive expansion and opportunism category, contrary to Simons’ original classification. The impact of regulation is primarily due to general RPI–X price control by the five-year periodic reviews, or by the specific policy incentives explained above. In the former case, this is caused by the existence of regulation and not by the mere presence of the regulator per se. In the latter case, they relate to the content of utility regulation, primarily that of quality. In this, specific performance output levels are imposed on the company and must be affected within the organizational control system. This can be illustrated by Transco’s explanation of the way in which the overriding RPI–X controls and specific policy incentives work together, but eventually for the benefit for the company as they are there to ensure the competence of the organization in the long term.

As much as OFGEM can make us care about the quality of service because we’re a monopoly… we’re strategically a very straightforward company. We’re an asset base; we’ll allow a certain return on the asset base; we’ve got a current set of operating costs; we can enhance our return on the asset base by living within the operating costs that have been allowed by the regulator. In utilities, they’re right to impact our behaviour by sticking a penalty on [standards] and losing revenue. It’s right, just right, and really is just reality. We respond to penalty payments. We need to get penalty payments to a right level where we don’t spend too much money (by delivering higher levels of service). (A Head of Regulation, Transco)

The ‘levels of service’ discussed is the quality/supply control and the imposition of these by the regulator; these require strategic expansion within the company, as indicated in the figure. Hence, this requires the diagnostic control system to implement a strategy that enables organization-wide management to deliver these targets, on the assumption that these targets truly reflect a company’s competence
and core values. This is therefore also classed under the implement-
ation of strategy category.

Finally, interactive control systems are also grouped as a positive force, which is because management intervention may take up energy that might be costly in terms of time and resources being allocated for it. Specific management interaction with organization-wide personnel is not the direct consequence of the existence of the regulator per se. However, interactive control systems also serve an external role of constantly scanning the external environment for possible impacts (Lorange et al. 1986). In this case, where the regulator is considered a major risk, the company may anticipate too much change in regulatory standards, and this can be considered a possible negative impact on the organization’s control system. A senior manager illustrated this:

Compliance…is one of the biggest issues we’re facing at the moment, particularly in the winter periods where there are a lot of gas escapes, and still having to hit the OFGEM targets (which won’t change because of that). We’re having to look at bringing resources in and different forms of working patterns. It’s all costing us money. Things like that we’re always having to look out for, because the regulator standards aren’t going to change, but it does get harder for us to manage. (A Regional Network Director, Transco)

The Utilities Act 2000 specifies that the Authority must ensure, as a secondary duty, that the company can finance its activities and so requires some detailed understanding of the organization’s activities. This secondary duty therefore allows some externally imposed costs in the determination of the price-cap. Of course, to do this, it involves inevitably a management control (or overview) of the organization with respect to how it implements its strategy.

5.4 Balanced scorecard approach and policy incentives

The balanced scorecard perspectives of Kaplan and Norton (1992) include finance, customer, internal business processes, and learning and growth, as depicted in Figure 1. The research found that the balanced scorecard was used for measuring performance and aligning company activity with overall company vision. This section explains the usefulness of the balanced scorecard and relates it to the Simons four levers in the context of utility regulation. The idea behind achieving a balanced health of the organization seems paramount. The balanced scorecard, as an instrumental process of strategic control in the integrative model, is also explained.
With the overall vision in mind – as influenced by regulation (rather like the beliefs system of strategic control levers) – each of the four perspectives monitors daily activities against departmental objectives, which themselves are aligned to the overall company vision (and strategy). The monitoring process takes the form of keeping a scorecard record of clear objectives, measures to take, targets and initiatives necessary to move the company forward. This approach, if the overriding vision and purposes can be cascaded effectively across all company members, provides autonomy and minimum senior oversight of daily activities. The use of this approach requires predominantly that the regulatory targets be broken down and entered onto the corresponding departments’ scorecards, ready for integration into routine daily work and management.

The research found that DistriCo had adopted the Kaplan and Norton (1992) approach in its entirety. However, this did not represent all the functions of the business and the accommodation of organizational and regulatory objectives seems to us to be questionable. All respondents showed awareness of the importance of some form of performance framework. All in DistriCo showed awareness of the balanced scorecard. However, only two-thirds of the respondents showed detailed knowledge about the balanced scorecard during the stages of its development and implementation, although they all recognized beneficial advantages from the adoption of its use. The following comment from senior management provides an example of the levels of enthusiasm in the company.

[I]t all comes back to the Balanced Scorecard. [T]here will be a...team looking at chunks of work, and it will be easier to provide the teams than it is to go in and understand what they’re doing and drill down in their processes as well as the things above and below in other areas...We can start seeing the benefits because that information will be more available for us to look at and to question and to use...The scorecard is a very good...and powerful tool, and if we were to move to any other process, probably most of the fundamentals of a scorecard would still be there. (A Senior Manager, DistriCo)

In Transco, this is true too. Respondents talked about the advantages of a scorecard approach for managing performance. The Performance Contract approach used in Transco follows the fundamentals of the Kaplan and Norton balanced scorecard, although it involves safety as a perspective. A regional director attempts to explain it:

We work from a balanced scorecard approach...which covers the objectives of how we run our business. [It comprises]...four
areas: safety, internally and externally, about the safety of our contractors and to protect the public; service, which is our ability to meet the regulatory standards, agreed with the regulator directly; the financial targets, which link back to the price control review; and manpower, making sure we’re training and developing people with the right skills. We call it the Performance Contract. (A Regional Network Director, Transco)

In this approach, the regulatory safety requirements are broken down into workable targets and incorporated into middle and upper management performance incentives as part of annual bonuses. As emergency standards are key to the company, these are incorporated directly into the managers’ Performance Contract as an incentives system. Here, performance of employee objectives, targets and initiatives is measured and monitored by senior managers to ensure they are aligned with the organizational strategy. The ability of the company to exercise longer-term strategic options is dependent upon how well the scorecard works in practice, slowly moving the company forward, achieving organizational objectives alongside regulatory ones and managing the workforce.

For the integrative model, the Kaplan and Norton (1992) four perspectives of the balanced scorecard feed into the categories of the content of utility regulation dimension (Figure 1) adequately for Transco if applied fully. Take the financial perspective, for example, as the category of management control is taken from the Utilities Act 2000 ‘to finance its activities’, the financial perspective therefore relates directly to management control. This is confirmed by the repeated comments of Transco employees regarding expenditure constraints and the allowances to the company. Only the respondents related directly to regulation explicitly mentioned these constraints. An example of constraints in relation to quality standards is given:

If you want a certain level of service standards, it’s gonna cost ya X…there’s a lot of considerations, but it’s broadly a money question. The standards could be deployed in terms of…general stakeholder engagement with a constituency of people who get service from us, with a view of trading of improving service standards with something else. (A Head of Regulation, Transco)

Here, the respondent identifies the cost implication of increasing levels of service standards. This indicates how the financial perspective influences control over the company’s activities.

The customer perspective relates directly to the quality/supply control category, as all the new policy incentives are primarily about
ensuring quality of customer service standards, as achievement of these is connected directly to the cost of delivering them on the company. A senior representative talks about the difficulty of maintaining this trade-off, but stresses this clear relationship between the two and the impact:

Our objectives are to ensure that we maintain all standards of service safely whilst being within our budgetary forecast...We have a moral obligation and a reputation issue to make sure [they] are absolutely clean, and that is absolutely sacrosanct to us. This leads to customer satisfaction...but it is driven by money, and part of that money must be allowed to be sufficient enough to shareholders. (A Regional Director, Transco)

In this comment, the cost constraint (financial perspective) and regulatory requirement (customer focus) are outlined. It provides an example of the difficulty in actually achieving balance in the organization.

The internal processes perspective relates directly to all categories of utility regulation. Most respondents of the two companies understood this to mean both technological and management processes. This stresses the important role management plays in the company.

Our processes are very efficient because they’ve been developed over time. You need to review your end-to-end business processes to make sure they are. It’s more about how you deliver an activity as well as the underlying system that handles all the data. You need to improve and support these processes. If you change a process, you need to change the [technological] system as well. (A Regional Director, Transco)

The above comment illustrates the interconnectedness of the role that internal processes play in managing strategic control. It connects the role of review with the monitoring of performance data as well as regulatory targets.

Similarly, the learning and growth perspective relates to all categories of regulation as the company learns ultimately from a review of all organizational activities. All respondents agreed with the importance of learning at both the individual and organizational levels to enable achievement of the company vision. This is illustrated by the respondent in the following quotation in which learning concerns a number of areas, making the link between, and achieving the balance on, learning and processes:
We have a lot of processes involved in learning, feedback and improvement, and sharing and reviewing. We do quite a lot of that really. What we do is develop a performance culture in the organization which aims at setting clear expectations. We can recognize when we’re doing well, but also address performance issues when they don’t come up to our expectations. Learning is about culture; it’s about style; it’s about skills; it’s about managing performance. You have to have processes to ensure that if you go off-track, you get back on track in a timely manner. So you have a management reporting framework which ensures you’re tracking performance…most importantly, you’re learning from it at each stage of review…in order to sustain performance and long term improvement. (A Regional Director, Transco)

Perhaps the most important part of the quotation is the link to long term performance and long term improvement; achieving the long term vision is the aim of the balanced scorecard. This scorecard perspective relates to monopoly control because it is the monopoly status which sets the domain (or beliefs) of the company. This is suggested in the comment on ‘culture in the organization which aims at setting clear expectations’. The quality/supply control aspects, which are specific regulatory policy targets, are covered by the quotation in the need to keep on track with performance, ‘processes to ensure that if you go off-track you get back on track in a timely manner’. Finally, the management control category of the model, such as issues of staffing patterns, motivation, culture and welfare, etc, is also covered because these involve the detailed understanding of personnel competencies, which is suggested by reference to ‘learning is about culture; it’s about style; it’s about skills; it’s about managing performance’.

Similarly, the impact of regulation dimension inputs directly into the balanced scorecard – depicted by a solid arrow in Figure 1. This can take place, for example, where the ‘presence of the regulator’ is considered a major risk, by limiting the scope of the organizational activities possible for maximizing incomes. Or, with the ‘existence of the regulation’ category, the adjustment of regulatory targets may be affected by the performance of the companies in the present regulatory review period (Veljanovski 1991).

The balanced scorecard approach has synergistic benefits of working together with the Simons’ framework, both as a diagnostic control tool (Simons 1995) and with all four control levers (Mooraj et al. 1999). The research finds this to hold true in managing utility regulation. The boundary system of control levers restricts the organizational vision which determines the performance targets
that appear on the scorecard. Using the scorecard to communicate strategy helps to facilitate the spread of core values and acts to enhance a beliefs system. In this way, a regulatory policy target is not only understood (beliefs system) but made clear and communicated organization-wide. The interactive control system of Simons involves a degree of learning and review; in DistriCo, the IIP involved the need to disseminate in workshops the particulars of the incentives and how they might affect various people working on those specific targets.

6 Conclusion

In summary, the main finding for a regulator is perhaps that policy incentives should embrace concerns that extend beyond output measures to take more account of enabling influences in strategic control. It may be that, to some extent, regulation is too premised on a diagnostic view of organizational control: the idea that control ‘provides the basis for decisions on actions to correct deviations from planned objectives’ (Goold and Quinn 1990: 43). The Simons (1995) notion of four levers in fact supports the idea that in practice strategic control is typically ‘the process by which managers influence other members of the organization to implement the organization’s strategies’ (Anthony and Govindarajan 2001: 6). This is echoed in the work of Kaplan and Norton (1996; 2001). The integrative model of strategic control that builds on the ideas of Simons, and incorporates the balanced scorecard, maps out for utility regulation the areas that should be considered when designing policy incentives. This new model of strategic control is a working representation of the strategic and performance management frameworks that the companies are using. It provides regulators with a picture of internal management processes, which we see as an additional insight to the principal-agency paradigm.

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**Implications des incitants de la politique de régulation pour un contrôle stratégique: un modèle intégrateur**

L’article propose une perspective de gestion interne de l’entreprise qui complète la théorie du principal et de l’agence afin de comprendre la relation entre régulateur et entreprise. Il s’appuie sur un projet de recherche longitudinal portant sur l’analyse, d’une part, des implications des incitants de la politique de régulation sur le contrôle stratégique dans la gestion des réseaux de services d’intérêt général en monopole et, d’autre part, sur les implications en matière de gestion de la politique de régulation. L’article relate comment deux entreprises de services d’intérêt général dans le domaine de la distribution d’électricité et du transport du gaz ont géré les objectifs de régulation ainsi que des objectifs organisationnels. L’article suggère un nouveau modèle intégrateur de contrôle stratégique pour comprendre la gestion des...
réseaux. Il conclut que si les politiques de régulation doivent être efficaces et si des objectifs de performance doivent être atteints, les régulateurs doivent comprendre la gestion interne des entreprises.

**Implicaciones de los incentivos de la política de regulación para un control estratégico: un modelo de integración**

El artículo propone una perspectiva de gestión interna de la empresa, que completa la teoría del principal y de la agencia para comprender la relación entre regulador y empresa. Se apoya en un proyecto de investigación longitudinal sobre el análisis de las implicaciones de los incentivos de la política de regulación en el control estratégico de la gestión de monopolios en las redes de servicios públicos. El artículo muestra como dos empresas de servicios públicos en el campo de la distribución de electricidad y del transporte de gas han administrado los objetivos de regulación, así como los organizativos. El artículo propone un nuevo modelo integrador del control estratégico para comprender la gestión de los servicios públicos. Concluye que si las políticas de regulación deben ser eficientes, los reguladores deberían comprender la gestión interna de las empresas con el fin de que sean atendidos los objetivos en términos de resultados.

**Implikationen von Anreizen der Regulierungspolitik für strategische Kontrolle: ein integratives Modell**

The tables provide a summary of the issues which emerged during the data collection process for both DistriCo and Transco. Below each column (phase of interviewing) are totals of the ten highest frequency

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### Appendix: Emergence of key strategic control issues

<table>
<thead>
<tr>
<th>Longitudinal Phases (DistriCo)</th>
<th>1</th>
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<th>5</th>
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A2 = Core Values; A4 = Regulation Objective; A4.1 = Impact/Effect of Regulation Policy; A4.3 = Regulatory Objective/Core Competence; A4.4 = Technicallity of Regulation Policy; A5 = Monopoly Control aspect; A6.1.2 = Synergies of Company Changes; A6.2 = Change in Organization Structure; B2 = Risk of Regulation; B2.1 = Existence of Regulator; B2.2 = Nature of Industry; C2.2 = Effectiveness of Balanced Scorecard; C2.4 = Mechanisms/operation of Balanced Scorecard; C7 = Review; C8.1 = Data Systems.
counts (although only the first five constituted the most significant observations), separated into the four categories of the strategic control levers (only). Where the coded categories have frequency counts of 1, these are not included in the totals. Where, for example, in the first phase of DistriCo, beliefs systems have appeared twice (codes beginning with A) and have a total frequency of 4 (in parentheses). Diagnostic control systems have appeared once, with the frequency of 2 also in parentheses. The total of the column is listed as 13, although should mathematically be 6 \((4 + 0 + 2 + 0 = 6)\). This is because the subsequent 1s listed in the remaining ranking are not of importance, and are not included in the totals, hence the totals only indicate the total appearances of those coded categories of high importance where sufficient and usable abstracted information are to be explored.