

Extending New Institutional Theory: Regulation and Activity-Based Costing in Portuguese Telecommunications*

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ABSTRACT

This paper investigates why a Portuguese telecommunications firm adopted activity-based costing (ABC). Theoretically it draws from New Institutional Sociology. An intensive, holistic case study revealed that ABC was implemented to improve competitiveness and efficiency. However, it was also an isomorphic response to pressures from a chain of institutions, especially its parent company, management consultants, national and European Union regulatory agencies, financial markets, and consumer associations. This private, profit-seeking firm faced institutional and economic pressures simultaneously, consistent with developments in new institutional theory. However, the nature of efficiency, its economic expression, and the impact of regulatory pressures upon departments varied according to their tasks and domains. Inter-professional rivalries brought conflict over ABC. The commercial departments, who dealt with pricing and regulatory issues, used ABC, whereas the production department argued it was inaccurate and inappropriate for operational decisions. Production managers and workers resisted and manipulated ABC. The research underscores how agency, power, and interests are crucial for understanding institutional change.

Keywords: Institutional Theory, Activity-Based Costing, Portuguese Telecommunications, Regulation and Competitiveness, Management Accounting Change, Agency and Power.

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1. INTRODUCTION

This paper investigates why a Portuguese telecommunications company – Marconi¹ - adopted an activity-based costing system (ABC). Its theoretical lenses come from New Institutional Sociology (NIS).

Reorganisation of the Portuguese and European telecommunications industry began in the early 1990's with the prospect of full liberalisation at the end of 1990's. Marconi needed to be more efficient because of growing competition, especially in its main market, international telecommunications. Marconi had to continually cut prices and costs, which prompted managerial demands for better financial information. They claimed their management accounting system (MAS) was a relic of a defunct monopoly regime.

Alongside this, external bodies ranging from the Portuguese telecommunications regulator (ICP)², the European Union (EU), Marconi's parent company - Portugal Telecom (PT), the New York Stock Exchange (NYSE), and consumer groups wanted Marconi to **demonstrate** its efficiency. EU directives and ICP's legislation required telecommunication firms to publish detailed costs to reassure constituencies (consumer associations, stock exchanges, telecommunications operators, and the general public) that prices and interconnection rates were established transparently and reliably, and hence the industry was competitive. If Marconi could demonstrate efficiency it would gain external legitimacy and the advantages accruing from this.

However, external pressures were not the only reason why Marconi adopted ABC: they also believed it would give managers a competitive edge in cost matters. Important

external constituencies, especially regulators, and Marconi's directors perceived ABC to be a key signal (and signaller) of efficiency, partly because consultants had persuaded them it was state-of-the-art costing. Had Marconi and PT not adopted ABC their concession/sub-concession contracts and their attractiveness to investors might have been imperilled. Thus ABC adoption was a consequence of market and institutional pressures.

The management accounting choice literature tends to lie in either the market or institutional theory camps.³ They can be like ships passing in the night: each ascribes change to different factors. Market-based theories argue that firms select their MAS according to a rational economic cost-benefit calculus. Thus ABC is used if it is technically and economically the optimal way of measuring costs. In contrast, NIS adherents claim many organisations mimic practices of similar successful organisations to gain external legitimacy. For example, defence companies adopt ABC to publicly display their rationality to legitimise prices in government contracts (Scapens, 1991; Ahmed and Scapens, 2000; Piper and Walley, 1991). Accounting scholars using institutional theories⁴ challenge economics-inclined colleagues' beliefs that organisations are bounded, relatively autonomous, and economically rational. Basically NIS asserts that organisational structures and procedures, such as ABC, often are adopted because important external institutions prefer them. Institutional networks are not merely control and co-ordinating mechanisms for economic transactions: they socially construct rules and beliefs, exert social pressures for conformity, and are founts of legitimacy and hence rewards.

Early NIS research resolved the conundrum between institutional and market forces by restricting its claims to governmental and non-for profit organisations (Powell, 1991; Carmona *et al.*, 1998; Scott, 1995, 2001). Organisations were dichotomised as facing either institutional or technical (efficiency) demands (Scott and Meyer, 1983, 91; Scott 1991, 95, 2001; Powell, 1991). It was assumed that private profit-seeking organisations faced

technical and efficiency pressures because their goals are clear and measurable. In contrast, public, governmental or non-for profit organisations have ambiguous goals and unclear means-ends relationships. Thus they seek legitimacy by conforming to institutional rules and myths. However, subsequent work has challenged this dichotomy, claiming many organisations, public or private, for-profit or non-for profit, must respond to both efficiency and institutional demands to survive (D' Aunno *et al.*, 2000; Orrù *et al.*, 1991; Powell, 1991; Dacin, 1997; Singh *et al.*, 1991; Scott, 1991, 95, 2001; Lee and Pennings, 2002). The implications of this for accounting NIS research in private companies have yet to be fully worked out.

However, both institutional and economic explanations may be overly dependent upon external factors (Brint and Karabel, 1991; DiMaggio, 1991; Dacin *et al.*, 2002; Lee and Pennings, 2002; Greenwood *et al.*, 2002; Casile and Davis-Blake, 2002). Internal organisational dynamics need to be factored into NIS explanations (Scott, 2001; Dacin *et al.*, 2002; Fligstein, 1985, 91, 93; Oliver, 1991, 92). This is pertinent to ABC as previous research indicates behavioural issues are crucial to effective adoption (authors, 2003a, 2003b, 2004).

This paper seeks to cast some light on the above issues, using a case study of why and how a private firm in a regulated industry implemented ABC. Internal organisational factors, especially change processes and resistance, are the focus of a companion paper (authors, 2004). This paper examines the ABC adoption with respect to NIS theory concentrating primarily, but not exclusively, on the role of external forces. Key questions were:

1. How and why was ABC adopted - to enhance organisational efficiency or external legitimacy or both?

2. Can NIS theory satisfactorily theorise accounting choice in private, profit-seeking organisations? Were intra-organisational factors significant?

The paper is structured thus. First, it discusses NIS theory and its pitfalls. Then it briefly describes the history and context of Marconi, and outlines the research methods. It then traces environmental pressures upon Marconi to adopt ABC, its usage, and the resistance it engendered. An iteration of the empirical results with NIS theory follows, with suggestions for reformulating NIS in future accounting research in for-profit organisations.

2. NIS AND ABC

From the late 1980's ABC has been disseminated as a 'revolutionary' accounting tool that produces more accurate product costs and helps managers understand cost causation (Jones and Dugdale, 2002). Its initial promoters were Kaplan and Cooper, Harvard Business School, and Computer-Aided Manufacturing, International (CAM – I)⁵ but others soon became allies in its diffusion (Jones and Dugdale, 2002). Despite criticisms from practitioners and academia, ABC has been peddled assiduously and many firms have implemented it (see authors, 2004, for a more thorough analysis of ABC). The criticisms are threefold: technical economic problems; behavioural issues, especially during implementation; and its normative basis.

Claims that ABC provides more accurate product costs are contested. Some argue that it merely refines conventional costing techniques (Armstrong, 1998, 2002; Noreen, 1991) and estimation and approximation problems remain (Innes and Mitchell, 1996; Innes and Norris, 1997). Relevant cost information for decisions may only be produced under highly restrictive conditions, including linear cost functions, no fixed costs within cost pools, and no joint processes or common costs. Such conditions are unlikely to occur in

practice (Noreen, 1991. See also, Bromwich and Hong, 1999; Datar and Gupta, 1994; Noreen and Soderstrom, 1994).

ABC problems extend beyond the technical to behavioural issues (Innes and Mitchell, 1991, 93, 98; Cobb *et al.*, 1992). ABC implementation can be costly, disruptive, and threatening to employees (Hopper, 1994). Personnel can struggle with the meaning of activities and drivers, which leads to problems in recording and interpreting cost data. Sometimes data is manipulated rendering the system ineffective (*ibid*). This has drawn attention to the importance of managing change during ABC implementation (Hankinson and Lloyd, 1993; Eiler and Ball, 1993; Cooper, 1990). However, much of this literature is managerialist and neglects fundamental issues of power, interests, and resistance, especially when ABC is associated with downsizing (Armstrong, 1998, 2002; Lukka and Granlund, 2002).

Given its inherent problems, academics are fascinated by how and why ABC became widely diffused (Jones and Dugdale, 2002; Granlund and Lukka, 1998). Consultants, business schools and business media have been decisive players in disseminating ABC and transforming it into a 'global abstract system' (Jones and Dugdale, 2002. See also Abrahamson, 1991, 96). However, intensive studies of ABC diffusion and implementation within firms remain sparse (Lukka and Granlund, 2002; Scapens, 1991; Hopper, 1994). The research sought to remedy this by studying why and how Marconi implemented ABC. This required a theoretical framework. The main options appeared to lie in economic approaches or NIS. The researchers plumped for the latter.

Economists tend to view organisations as sites for economic transacting (Scott, 1995, 2001; Baxter and Chua, 2003). Their approach is realist and deterministic. MAS choice involves selecting the option that is best value, accurately represents financial events, and aids rational decision-making and contracting. However, this fails to capture

the complexity of organisations and human behaviour (Jones and Dugdale, 2002; Hopper and Powell, 1985; Modell, 2001, 2002a, 2002b; Scapens, 1991).

In contrast, NIS researchers emphasise cultural, normative and cognitive factors, claiming external institutional pressures shape organisational structures and practices (Scott, 1992, 95, 2001; Baxter and Chua, 2003). Organisations that do not conform, either ceremonially or actually, will lose legitimacy and be denied resources (Carruthers, 1995; DiMaggio and Powell, 1983, 91a, 91b). Moreover, people come to perceive institutionalised beliefs and rules as reality and thence take-them-for-granted (Meyer and Rowan, 1977, 91; Scott, 1987, 2001). Institutionalised prescriptions may be myths, enforced by laws, public opinion, education, and constituents' views but organisations that conform are socially defined as successful, and thence are more likely to survive (Scott, 1987).

Thus, organisations become isomorphic with institutional environments (DiMaggio and Powell, 1983, 91b). Isomorphism is a “constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions” (DiMaggio and Powell, 1991: 66). NIS scholars do not deny the possibility of *competitive isomorphism* (e.g. Hannan and Freeman, 1977) but they concentrate on *institutional isomorphisms*, namely coercive, mimetic and normative (DiMaggio and Powell, 1983, 91b). *Coercive isomorphism* stems from general expectations in the organisation's domain. There are two forms - authority or coercive power (Scott 1987, 91). Changes imposed by authority meet less resistance (Tolbert and Zucker, 1983). Uncertainty and imitation drive *mimetic isomorphism*. When organisational technologies, goals, and environmental expectations are uncertain, organisations tend to copy successful companies (Galaskiewicz and Wasserman, 1989; Haveman, 1993; Fligstein, 1985, 91; Covaleski and Dirsmith, 1988). Thus firms become receptive to fashionable business techniques – such as ABC - to

protect their activities from being questioned (Carruthers, 1995; Granlund and Lukka, 1998; Abrahamson, 1991, 96). *Normative isomorphism* recognises how professions diffuse shared orientations and organisational practices. Legitimacy gained from formal education and professional networks that span organisations reinforce this.

NIS theorists claim formal and informal organisation structures exist in uneasy tension. Meyer and Rowan's seminal paper (1977) argues they are often de-coupled. Organisations may adopt certain formal structures and procedures to reciprocate institutional pressures and reproduce widely held myths but these may prove irrelevant to everyday action (Meyer and Rowan, 1977, 91; Carruthers, 1995; Scott, 1995, 2001). Thus formal structures and systems may be adopted but operated as window-dressing to impress external constituencies. They are often ceremonially or ritualistically maintained as symbolic totems detached (de-coupled) from meaningful action within organisations.

NIS has attracted considerable criticism. For example, Perrow (1991) claims it is full of contradictions. The criticisms fall into three broad areas: its treatment of economic issues in both public and private organisations; inter-organisational factors, especially regarding power and conflict; and its neglect of process and change (Scott, 2001).

NIS originally neglected efficiency and economic issues (Carruthers, 1995; Orrù *et al.*, 1991; Singh *et al.*, 1991; Zucker, 1987; Scott, 1991, 98, 2001; Dacin, 1997; Fennel and Alexander, 1987; Carmona *et al.*, 1998). Early NIS investigations focused on public organisations such as schools, universities, hospitals and voluntary associations, assuming their environments were particularly institutionalised and they needed to earn legitimacy rather than demonstrate efficiency (Meyer and Rowan, 1977, 91). Private, profit-seeking organisations were seen as different (Scott, 2001; Powell, 1991). Private firms were deemed subject to efficiency rather than institutional pressures, and to use technical means to achieve competitiveness rather than ceremonially conforming to institutionalised myths.

However, as Scott (2001: 210) argued, private businesses are “far from being culture-free ... [and they] exemplify some of the most firmly held beliefs and ... some of the strongest norms at play in our secularised, rationalized, instrumental modern culture”. Private firms too can be subject to coercive, mimetic and normative isomorphism, for example regarding practices of governance. Moreover, technical means of achieving efficiency are not given but are socially constructed. Thus businesses may mimetically copy practices of apparently successful firms, often following normative advice from outside experts. Finally, it is often difficult to differentiate between efficiency and legitimacy in the public or private sector for legitimacy may rest on perceptions of efficiency, as league tables of schools, universities, and hospitals bear testament. Institutional and efficiency pressures can exist in any site (Scott, 2001; Powell, 1991; Lee and Pennings, 2002): it is pointless to dichotomise between technical and institutional, and efficiency and legitimacy (Orrù *et al.*, 1991; Scott, 2001; Powell 1991; Singh *et al.*, 1991; Lee and Pennings, 2002). Thus it is difficult to claim that NIS is irrelevant to private organisations (Powell, 1991; Carmona *et al.*, 1998; Casile and Davis-Blake, 2002).

NIS theory has also been criticised for its neglect of intra-organisational factors (Dacin *et al.*, 2002; Scott, 2001; DiMaggio, 1988; Perrow, 1986; Collier, 2001; Greenwood and Hinings, 1996; Greenwood *et al.*, 2002). The organisation tends to be treated as a ‘black box’ conforming to institutional pressures and myths (Zucker, 1977, 91). This has problems. First, if myths are taken-for-granted, common sense rules governing behaviour then why do organisational actors not internalise them, i.e. why does de-coupling occur? It is presumed that personnel who ritually or ceremonially execute activities for external window dressing see their activities in this light. This assumes a considerable cynicism and willingness to abandon professional claims amongst organisational actors. What is ‘real’, symbolic, and important may vary according to the interests and perceptions of parties in

the organisation (Oliver, 1991, 92; Dacin *et al.*, 2002). One person's perception of an activity as a technical imperative may be another's myth. Organisations are not invariably unitary bodies marked by consensus: members may behave instrumentally rather than follow myths, which gives rise to resistance, power struggles, internal conflicts, and contradictions (Euske and Riccaboni, 1999; Modell, forthcoming; Collier, 2001; Hardy and Clegg, 1999). Zucker (1977, 91) argues that NIS theory should pay more attention to its micro-level foundations.

Lastly, NIS has been accused of being deterministic and static (Dacin *et al.*, 2002, Scott, 2001). Researchers have distinguished between institutionalisation as an **outcome** and a **process** (Covaleski *et al.*, 1993; Tolbert and Zucker, 1999). The former sees institutions discharging various isomorphic pressures upon organisations that conform appropriately. This is a form of functional anthropology akin to contingency theory, with little semblance to NIS's roots in institutional sociology (Selznick, 1949; Gouldner, 1954a, 1954b). The latter traced the metamorphosis of organisational goals, forms, rules, and behaviour in relation to political struggles and interests inside and outside organisations. That is, they saw institutionalisation as a process, which Covaleski *et al.* (1993: 66) note "is profoundly political and reflects the relative power of the organized interests and actors".

NIS has been oriented towards institutionalisation as an outcome, particularly in its early days (Tolbert and Zucker, 1999; Covaleski *et al.*, 1993; Carmona *et al.*, 1998; Zucker, 1977, 91; Scott, 2001). This approach may explain how institutional processes produce stability, homogeneity, and uniformity but it ignores change, power and agency (Scott, 2001; Dacin *et al.*, 2002; DiMaggio, 1988). More attention needs paying to how "institutions are created, transformed, and extinguished and the way in which institutional processes interact to affect institutional change" (Dacin *et al.*, 2002: 45). This requires

greater scrutiny of actors' behaviour and how beliefs and rules change (Oliver, 1991, 92; Collier, 2001; Euske and Riccaboni, 1999; Fligstein, 1985, 91, 93): organisational conformity to environmental demands may be only one possible response to isomorphic pressures (Oliver, 1991). NIS has recently addressed these issues (see Greenwood *et al.*, 2002; Casile and Davis-Blake, 2002; Lee and Pennings, 2002; Thornton, 2002; Lounsbury, 2002; Kraatz and Moore, 2002) but these developments are “only directions and tendencies at this point” (Scott, 2001: 211). More theoretical and longitudinal empirical studies addressing issues of efficiency, organisational dynamics, and processes are needed. This case study of a Portuguese telecommunications company's adoption of ABC is a contribution to this endeavour.

3. MARCONI

Marconi, one of the most profitable companies in Portugal, has provided long distance telecommunications for nearly 80 years. Until the late 1990's it operated a monopoly granted by the Portuguese government. However, the Portuguese government reorganised its telecommunication sector in the 1990's following a EU programme to fully liberalise European telecommunications by 1st January 2000. This necessitated preparing the market for new entrants and restructuring public operators.

The Portuguese Government created PT in 1994 when reorganising the telecommunications industry. They merged public operators: Telecom Portugal (created in 1992 following the division of CTT (the Portuguese Post Office) between mail and national telecommunications); Telefones de Lisboa e Porto (provided local and regional fixed telephone services to Lisbon and Oporto); and Teledifusora de Portugal (managed the

network and TV broadcasting signals). Previously the telecommunications sector consisted of 'old' and inefficient medium-sized operators operating a single service as a monopoly.

The political aim of Marconi's integration into PT was to create an internationally competitive Portuguese telecommunications group. In 1995 the first privatisation phase of PT opened it up to private investors internationally. Next year PT was reconstituted as Portugal Telecom Group - a holding company with a state concession for public telecommunications. In 1995 Marconi was integrated in PT and gained a sub-concession contract for international telecommunication services. In 1999 a major reorganisation within Portugal Telecom Group established a new company - 'PT Comunicações', which became responsible for telecommunication infrastructures and universal services under the state concession. Marconi became accountable to PT Comunicações⁶ but remained operationally autonomous.

Marconi's accountability to its parent, the emergence of vigorous new competitors, and an active regulator prompted major organisational changes. Management consultants were hired and new projects launched including: revised strategic plans; a career evaluation system; strategic benchmarks; programmes increasing staff awareness of competition threats; an Executive Information System; SAP; and an ABC system. ABC was the most significant in terms of resources and top management commitment. Marconi's accountants and the consultants began implementing ABC in 1997. In March 1998 the first ABC results were obtained and evaluated. In 2000 ABC was fully operational and provided periodic financial data to Marconi's managers and PT.

Following Marconi's integration into PT, Marconi adopted a functional organisational structure⁷ consisting of two commercial departments (Consumer Markets, and Carrier Services and Network Planning), a production department (Telecommunications Infrastructure), three support departments (Board Office, Planning

and Control, and Legal Office), and three logistic departments (Finance and Administration, Personnel and Development, and Information Systems). Until the 1990's Marconi was production-oriented for telecommunication prices were fixed in agreements with the Portuguese government. Marconi's main priorities then were providing high quality telecommunications services at reasonable prices undeterred by competition. The company enjoyed public prestige due to the expertise of production engineers, then the most powerful managers. The introduction of competition in the 1990's spawned the commercial departments who gradually usurped power from production engineers.

4. RESEARCH METHODS

The intensive case study was conducted from January 2000 to January 2001. It followed the steps suggested by Scapens (1990), Ryan *et al.* (1992, 2002) and Yin (1994, 2003): developing a research design; preparing to collect data; collecting evidence; assessing evidence; identifying and explaining patterns; theory development; and report writing. The main research questions were: 'Why did Marconi adopt ABC?' 'Does NIS theoretically explain this?' 'How was the ABC adoption received in the two main functions (commercial and production) of Marconi?' and 'Can NIS theory explicate the resistance that ABC engendered?' A case study approach was adopted as it is apt for 'why' and 'how' questions (Yin, 1994, 2003). It enabled the researchers to make sense of events, iterate theory with empirics, and generate ideas for future research (Patton, 1987).

The pilot study was conducted from January to April 2000, and the main study from May 2000 to January 2001. Subsequently the Director of Telecommunications Infrastructure was interviewed to confirm how production engineers operated ABC. 53 interviews (20 in the pilot plus 33 in the main study) were conducted spanning 73 hours

(34.5 in the pilot plus 38.5 in the main study). During the pilot study, semi-structured interviews with managers and employees from different departments of Marconi, and a manager from ICP were held. All were recorded and transcribed, except for the first two that discussed access with Marconi managers. Written documentation gathered included newspaper articles, Marconi's financial reports, external market analyses, Marconi's and PT's annual reports and brochures, reports of ICP, national and EU telecommunications legislation, and European Commission recommendations. Some direct observation of managers' was conducted to complement other methods.

In the main study the research issues were clearer so more specific data was collected. In-depth semi-structured interviews were held with managers and employees from Marconi's main departments, its operational centre for satellites (in Sintra), its submarine cables centre (in Sesimbra), and commutation (in Linda-a-Velha). Detailed documentation on ABC was collected, such as Marconi's dictionary of activities, studies from the European Commission, ABC outputs, consultants' notes, employees' allocation of time to activities, and financial and non-financial reports. Significant actors outside Marconi were interviewed: two accounting consultants hired by ICP, ICP's director (who recommended ABC), ICP's MAS co-ordinator, consultants who implemented ABC in Marconi, two managers in PT, and three managers from two of Marconi's competitors. All were recorded and transcribed, except for two Marconi employees who refused to be tape-recorded.

Multiple data sources helped construct a chain of evidence. Feedback on initial findings from key informants helped check the validity of constructs, whether data gathered was representative, and conclusions and explanations were plausible (Yin, 1994, 2003). Pattern-matching and explanation-building techniques helped improve internal validity (Marshall and Rossman, 1999). Patterns were identified and explained after

interviews were transcribed. Common themes were clustered and categories formed whilst their context was fresh. Evidence contrary to findings was identified and cross-checked by collecting additional data from other informants and discussing findings with them (Miles and Huberman, 1994).

5. COST ACCOUNTING CHANGE IN MARCONI

Following the reorganisation and liberalisation of Portuguese telecommunications, Marconi's managers wanted an improved MAS, partly to demonstrate that Marconi was modernising and improving efficiency. There were external concerns that Marconi/PT's prices for telecommunication services and interconnections (for operators using PT/Marconi's network) may not be based on accurate and reasonable costs. Marconi's managers believed ABC would legitimise their pricing to market players and regulators (ICP/EU), and thence capital markets, and public opinion (especially consumer associations). Marconi's MAS changed due to a combination of competitive, coercive, normative, and mimetic pressures, as illustrated in Exhibit 1.

[INSERT EXHIBIT 1 NEAR HERE]

5.1. The Regulator's Demand for Cost Information

Portuguese telecommunications became closely regulated following market liberalisation. ICP passed numerous laws, mainly originating from the European Union, to establish full and fair competition amongst operators, regardless of size or market power.

Preambles to these laws emphasise the need for competitive markets after full deregulation in January 2000.⁸

Legislation recommended which cost accounting systems telecommunication firms should adopt. ICP/EU needed to establish whether dominant operators' prices were cost-oriented and to establish whether effective competition prevailed. Operators with large market shares and public concessions were particular targets - Marconi scored on both counts. PT had state concessions for fixed telecommunication services and universal telecommunications. Marconi, being a sub-concessionaire of PT, fell under the regulator's remit. Periodically they had to provide costs to PT for consolidation into their cost returns to ICP. As PT had more than a 25% market share in fixed telephone services, leased circuits and interconnections, it was deemed to have market control and thus requiring close monitoring by ICP, which brought additional demands upon PT and Marconi for cost information. How this worked in Marconi is explored below.

5.1.1. The Concession Contract between PT and the Portuguese State

The concession with the Portuguese State required PT, and thus Marconi, to have a MAS giving comprehensive information on direct/indirect costs and costs of services⁹ so ICP could verify whether prices were cost-oriented. The inherent subjectivity of ascertaining costs could enable concessionaires to manipulate costs to their advantage. To mitigate this a decree¹⁰ stipulated that PT should maintain uniform and non-discriminatory prices based on analytical costing. Pricing conventions for services under concessions¹¹ were stipulated in agreements between the Directorate General for Trade and Competition, ICP, and PT. PT's annual report (2000: 40) to the NYSE¹² reveals the regulatory pressures and the consequences of PT not maintaining an acceptable MAS:

“The pricing convention imposes ... obligations on us. These include maintaining a cost accounting system, submitting periodic reports to the ICP and adhering to specified indicators of quality of service. If we do not comply ... the ICP may reduce the otherwise permissible percentage price increases by up to 1%. The pricing convention requires us to maintain a separate cost accounting system for fixed telephone services, disaggregated for each of our four price bands and each fixed charge, including installation charges and line rental fees.”

PT and Marconi needed a MAS to justify prices to the satisfaction of external bodies, otherwise their profits and share price could quickly be damaged.

In January 2000 PT and Marconi lost their monopoly for public fixed telephone services, so these prices were no longer regulated. However, because PT/Marconi retained dominant market positions, the regulator still required comprehensive cost data to ascertain whether their prices were fixed on a ‘equal’, ‘transparent’, ‘non-discriminatory’, and ‘cost-oriented’ basis (Decree Law N°. 474/99, 8 November, article 34, nos. 1 and 4).

The regulator also insisted that PT and Marconi maintain an effective MAS because they supplied universal telecommunication services under a concession contract with the Portuguese state. Decree-Law N°. 40/95, 15 February, article 8a stated that concessionaires must provide universal services nationally without discrimination to any individual.¹³ PT and Marconi received subsidies for this but any losses had to be verified by ICP prior to recompensation by the Portuguese government.¹⁴ This was more likely if they supplied cost data that regulators perceived as reliable.

5.1.2. Operators with Significant Market Power

In 1997 the Portuguese government passed Law 91/97, or ‘Basic Law of Telecommunications’ enacting the European Commission’s framework for fully liberalising telecommunications within the EU.¹⁵ Operators of public telecommunications networks such as PT (and therefore Marconi) had to permit ‘non-discriminatory use’ of

their networks by other operators and service providers [Decree-Law N°. 381-A/97, December 30th (article 26)]. From 1st January 2000, operators other than PT could provide networks and services if registered and licensed by the regulator. ‘Old’ operators were obliged, if required, to connect new operators on payment of an interconnection rate. Decree-Law N°. 415/98, 31st December (article 3) established that the ‘principle of interconnection freedom’ should prevail, i.e. network operators and service providers could freely negotiate interconnection prices. However, operators with a dominant market share had to set prices according to rules established by ICP and the EU [Decree-Law N°. 415/98, of 31st December (article 7)], which established ‘equality’, ‘transparency’, ‘non-discrimination’ and ‘cost orientation’ principles [Decree-Law 474/99, November 8th (article 34)].¹⁶

As PT had dominant market power in fixed telephone services, leased circuits, fixed telephone networks, and national interconnections¹⁷ they had to comply with the regulator’s cost accounting impositions.¹⁸ Dominant operators had to set interconnection prices transparently and publicly based upon a detailed ‘analytical’ costing system, endorsed by ICP, that identifies full costs of activities and services. When requested, dominant operators must give consumer associations, other operators, and the general public details of their MAS, including its cost allocation methods.¹⁹ Lastly, PT/Marconi had to present ‘interconnection reference proposals’ to ICP when setting interconnection rates. The law²⁰ required ICP to analyse whether PT’s and Marconi’s MAS was ‘valid and appropriate’ for pricing annually. ICP frequently hired consultants to do this.

In summary, PT and Marconi needed a ‘sophisticated’ MAS consistent with regulatory requirements imposed by ICP and the EU to prevent them questioning their cost data for pricing decisions, and to legitimise interconnection prices to the public and other operators. In addition, a generally accepted ‘modern’, ‘accurate’, and ‘reliable’ MAS

would help justify prices for fixed telephone services, networks, and leased circuits. Failure to do so would breach regulations, which could bring sanctions and fines, and possibly lost concessions and harsher regulatory regimes, especially if fuelled by adverse public and commercial opinion. Marconi and PT needed a MAS with external legitimacy to gain organisational legitimacy.

5.2. Managerial Pressures

However, Marconi was also subject to managerial pressures to improve its MAS. Despite full competition not occurring until 2000 Marconi's managers realised they must cut costs much earlier. They knew Marconi would lose its monopoly, face tough competition, and be unable to sustain high prices. In 1992 Marconi's financial director implemented a new MAS to give managers more accurate and detailed costs. Despite being based on activities it was unlike the ABC system that Marconi adopted in 1997 as, *inter alia*, activities did not span departmental boundaries. No external consultants helped design the 1992 MAS.

After the 1992 MAS implementation, Marconi's activities and cost control strategies were reorganised. Marconi's CEO's preamble to the 1992 annual report stated:

“To overcome the challenges presented by the different markets, in 1992 the company continued with an aggressive policy to stimulate traffic by reducing rates, creating special price conditions for its clients and promoting different services and facilities. ... Business restructuring continued. Desinvestment [sic] was carried out in certain areas. Activities were rationalised and cost controls and cost reductions were introduced.”

Marconi rationalised its activities and established a policy of reducing telecommunications prices. Table 1 shows price falls to the US, the EU, other European countries and Brazil from 1990 to 1994.

[INSERT TABLE 1 NEAR HERE]

However, managers became dissatisfied with the '1992' MAS alleging its unsuitability for eliminating waste and understanding how costs were generated, mainly because it collected costs by activities of each department but ignored activities that cut across departments. Also managers complained that feeding and accessing information was difficult, it overburdened them with information demands, and information was often late. After initial enthusiasm, disillusionment set in. An engineer from the Telecommunications Infrastructures commented:

"In 1992 ... people were expecting the new system would be easier to understand and to use. ... After the first phase of enthusiasm ... there was disappointment. People believed that they had too much work feeding the system compared with the outputs they received from it. ... As people started to become overburdened with the work and they realised the results of the system were difficult to understand and to use, they started to question the relevance of it."

The new MAS failed to satisfy Marconi's managers though they believed it produced better cost data than previously and had helped them reduce prices in a climate of accelerating price falls - see Table 2.

[INSERT TABLE 2 NEAR HERE]

Marconi's integration into PT in 1995 and the prospect of full competition by 2000 spurred Marconi to decrease its operational costs - particularly for personnel. Marconi's staff cuts began in the early 1990's but were not severe until 1995.²¹ Marconi's top managers believed better information on the cost of activities and personnel was crucial to determine where to cut staff and subcontract work done in-house. A market analyst from the Consumer Markets Department observed it was:

"... very important to enhance the firm's flexibility and responsiveness to the new business environment. ... Marconi's staff reduction was very important to decrease our operational costs. ... I think people accepted these changes, perhaps because

with so many new operators in the market it was easy to find new work. ... The implementation of [the 1997 MAS] was important to support the rationalisation of Marconi's activities and staff. Based on the cost information coming from ABC we could compare the costs we were incurring with the costs of outsourcing activities. ... On the data generated by ABC we decided to outsource the call centre and certain other services, such as security for example."

Marconi changed its MAS to help managers address economic pressures following deregulation - not just to meet regulatory pressures.²²

Although managers initially saw ABC as an important management tool to improve efficiency, most agreed that Marconi would not have adopted ABC in 1997 without regulatory pressure. ABC had considerable support from PT's and Marconi's Boards from its inception.

A planning manager from Marconi stated:

"ABC implementation is directly linked to the information requests of the telecommunications regulator. ... But I am sure that sooner or later we would have adopted ABC, especially if we had known that other companies were using it successfully."

However, others alleged that Marconi adopted ABC primarily to meet managers' demands.

A consultant who helped implement ABC commented:

"Marconi was going through a phase of internal organisation and restructuring, which led to Marconi's drive to collect data about activity costs and the tasks involved in each of its activities and processes. ... This information was very relevant for them ... That PT had implemented ABC ... motivated Marconi to adopt ABC. It was a stimulus. ... Besides that, there were laws obliging PT and Marconi to adopt an analytical cost system. ... but I believe that above all the company was looking for a means to improve its efficiency."

A market analyst from Consumer Markets said:

"ABC was adopted because it was considered relevant to give more and better cost information to Marconi's managers. ... The most proactive interests in adopting a new cost accounting system were those of top directors and commercial managers. This was because data was needed to support investment decisions in cable submarines and to support other commercial decisions. ... These reasons were the most decisive ones. ... However, PT and ICP were also very important factors in ... choosing the cost accounting model format. ... I would weigh the importance of the internal informational needs when compared to the external pressures of PT and ICP as 60:40% respectively."

In conclusion, replacing Marconi's MAS by ABC resulted from cost accounting demands from the regulator converging with information demands of managers. All sought efficiency gains. It is difficult to ascertain which demands were the most important because interviewees' views often diverged. However, other factors contributed to Marconi changing its MAS.

5.3. PT's Privatisation

The privatisation of PT also brought pressure for Marconi to improve its MAS.

PT's Regulatory Issues Director claimed that:

"We wouldn't have [changed the MAS] just because of competition...because of regulatory pressure we did this earlier. ... Also, the process of coming into the stock market, combined with PT's privatisation, was very important. ... Because the American stock market is very demanding, we needed to provide very detailed costing data. ...There is the combination of three things here: a legal obligation, ... coming into the stock market, and the introduction of competition with managers asking for better informational systems to help them to manage. ...Now, I can't weigh the importance of these things. ... It's too subjective...It depends on people's personal points of view, as well as what they do in the company."

PT was privatised in five phases from 1995 to 2000. The goal was to secure a global strategic partner holding some of PT's share capital, who would improve telecommunications research and development in Portugal, acquire other strategic partners in certain business areas, and generally help PT become internationally competitive. In addition there was a desire to spread PT's capital amongst private investors. PT's privatisation (described by a PT manager as a 'public exposure') forced Marconi and PT to project a public image of success and dynamism, particularly to financial markets and shareholders. ABC was believed to be important in this respect. It would enable Marconi and PT to publicise their 'modernisation' drives and hopefully impress financial markets.

In order to disperse PT's capital internationally its shares were listed on the Lisbon–Oporto (BVLPO) and New York (NYSE) stock markets. The NYSE is particularly demanding about information firms should supply to investors. To be quoted PT had to periodically provide detailed financial data by business, products, and service, *inter alia*.²³ Every three months PT had to prepare press releases and every six months provide NYSE with audited accounts. Without a 'valid' and 'accurate' MAS the NYSE might question the reliability of PT/Marconi's cost reports. Financial markets were not the main drivers of MAS change in Marconi but they were significant.

5.4. The Consultants

Consultants played an important role in Marconi adopting ABC. Marconi and PT to implement ABC hired Arthur Andersen, one of the largest and most influential consultancy companies in the world, with considerable experience of implementing ABC in the telecommunications industry throughout the USA and Europe. After implementing ABC in PT (apparently the first company in Portugal to do so), ABC implementations followed in Portuguese manufacturing firms, banks, and insurance companies. Most Portuguese companies using ABC used Arthur Andersen.²⁴ Also, and significantly, they had considerable influence on costing issues with the EU. A costing consultant to ICP maintained:

“Recommendations and directives drawn up by the EU for the telecommunications sector are often based on studies conducted by specialised consulting firms...There are various consultants collaborating with the EU in costing issues...Arthur Andersen, for example, is one. ... I think that they were the firm behind the development of the EU recommendation suggesting the adoption of ABC and LRIC [Long Run Incremental Costs] by incumbents.”

Arthur Andersen influenced two important recommendations from the European Commission: “Interconnection in a Liberalised Telecommunications Market: Part 1 –

Interconnection Pricing” (8 January 1998)²⁵ and “Interconnection in a Liberalised Telecommunications Market: Part 2 – Accounting Separation and Cost Accounting” (8 April 1998).²⁶ Both stemmed from a EU Directive²⁷ instructing the European Commission to recommend principles for cost accounting systems and accounting separation²⁸ so national regulators could determine if interconnection rates of dominant operators are cost-oriented.

The Directorate General XIII of the European Commission commissioned a study from Arthur Andersen on accounting separation and interconnection pricing. Their subsequent paper - ‘Interconnection in a Liberalised Telecommunications Market’ claimed, “Arthur Andersen proposes a pragmatic approach on accounting separation and current cost accounting information. The proposed framework focuses on the allocation of costs, revenues and capital employed for the purposes of preparing appropriate separate accounts.” (Directorate General XIII, 1997: 4). The Arthur Andersen study recommended that operators should allocate costs according to causation and use cost allocation methods such as ABC when preparing separate accounts. According to Arthur Andersen (1997: 9):

“Accounting separation should be based on the principle of causation: that is, costs (including operating and capital costs) and revenues should be allocated to those services or products that cause those costs or revenues to arise. This requires the implementation of cost allocation methodologies, such as Activity Based Costing. In practice, this requires that operators: review each item of cost, capital employed and revenue; establish the driver that caused each item to arise; and use the driver to allocate each item to individual businesses.”

The consultant’s report influenced the two Commission Recommendations establishing ‘best current practice’ for interconnection charges. European Commission recommendations in ‘Part 1 – Interconnection Pricing’ stated that operators’ MAS’s should use ‘current costs and activity-based accounts’:

“[M]ost incumbent operators have accounting systems based on fully distributed historic costs which were developed in monopoly environments. However, ... the use of historic costs for calculating interconnection charges is not consistent with a competitive market, and will tend to lead to an over-statement of the

interconnection costs. In response to the new competitive environment, operators need to develop new accounting systems to provide the information which is needed both for internal management purposes and for external regulatory purposes. **The commission is therefore recommending that NRAs [national regulatory authorities for telecommunications] should set deadlines for implementation by incumbent operators of new cost accounting systems based on current costs and activity-based accounts.** National regulatory authorities will want to be assured that costs which appear to be common are distributed to the fullest extent possible, taking into account the relevant direct and indirect cost drivers. Activity based accounts which use current costs provide a ‘top-down’ check through reconciliation with interconnection costs calculated according to ‘bottom-up’ forward looking long run average incremental costs.”[emphasis added]

The Commission recommended EU member states to set deadlines for operators with dominant shares of public telephone networks and leased lines markets to implement ABC.

The use of ABC was reinforced in the European Commission Recommendation -

Part 2 – Accounting Separation and Cost Accounting:

“It is recommended that the allocation of costs, capital employed and revenue be done in accordance with the principle of cost causation (such as activity-based costing: “ABC”). The costing system of the notified operators need to be sufficiently detailed to permit – as far as possible the allocation of costs to unbundled network components, in particular to determine the cost of unbundled interconnection services. **A well defined cost-allocation system will enable at least 90% of the costs to be allocated on the basis of direct or indirect cost-causation.** It is recommended that unattributable costs (the cost which can only be attributed on an arbitrary basis) be clearly identified in a specific account and be the subject of a specific treatment by the NRA (that is, they should be distributed according to the rules determined by each Member State, in accordance with the Community’s competition rules and in compliance with the principles of transparency and proportionality. **It is recommended that the NRA undertakes a public consultation with market players on the adoption of sound allocation methods and on the specific treatment to be given to unattributable [sic] costs.”** [emphasis added]

Arthur Andersen advised the European Commission to stipulate national regulators to recommend ABC because, if properly implemented, it would allocate a large proportion of costs (‘at least 90%’) to cost objects. This is important in an industry where common and joint costs are high. ABC was ‘sold’ as a ‘rigorous cost allocation’ method that would resolve this problem and thus help national regulators justify interconnection charges.

Using ABC was supported by other consultants’ reports to the Directorate General XIII of European Commission. For example, “Costing and Financing Universal Service

Obligations in a Competitive Telecommunications Environment in the European Union”

by Bad Honnef (October 1997: 39), stated:

“The costing system traditionally used in telecommunications is Fully Distributed Costing (FDC). ...[T]he approach is increasingly under criticism with regard to its adequacy for managerial as well as regulatory purposes. Because of its analytical approach to the cost causation processes, Activity Based Costing (ABC) is the most suitable approach to the determination of LRIC [Long Run Incremental Cost]. **ABC systems are increasingly applied in the economy. USO [Universal Service Obligations] providers should be required to install such analytical costing.**” [emphasis added]

The report alleges that ‘reliable’ MASs are important for managerial reasons and regulatory issues:

“When it is said that price setting should be cost-based, the meaning of this is that prices should reflect the value of the resources used up in the production of the product in question. Between this requirement and the assurance that the requirement is adhered to lies cost accounting. In competitive industries where there is no need for cost regulation, cost accounting is strictly an internal affair. ... This is different when a company is regulated. ... Accounting practices become very much a regulatory concern as the validity of the cost figures needed in a regulatory determination largely depends on the way cost accounting is carried out.” (p. 31)

The Bad Honnef report justifies ABC because of its widespread adoption by large European telecommunication firms (1997: 36):

“As ABC systems use a wider variety and greater number of allocation bases for assigning overhead costs to products and services, accountants attain greater precision in assigning costs according to causation and resource consumption. ... There are a number of companies in the telecommunications industry reporting that they already have installed or are in the process of installing ABC systems. Among them are Mercury (UK), Telia (Sweden) and Deutsche Telekom (Germany).”

Thus ABC was advocated to the EU by various consultants. Subsequent European Commission Recommendations diffused and legitimated ABC as the ‘right’ means for firms supplying cost data to regulators and other constituencies. The adoption of ABC by major European telecommunications firms, often upon the same consultants’ advice, led smaller operators, such as PT and Marconi, to mimic them.

Arthur Andersen played a pivotal role in diffusing ABC throughout the EU telecommunications industry. The directors of PT and Marconi hired them because of their influence and experience within telecommunications, particularly its regulation. PT's Regulatory Issues Director noted:

"It was Arthur Andersen that recommended us to adopt ABC. At the time we needed to change our costing system. Arthur Andersen was the Pope of these things in Europe. ...We contacted them because we knew that they were the big players in costing matters within telecoms."

Not surprisingly, Arthur Andersen recommended that PT, and subsequently Marconi, should adopt ABC to satisfy the regulator and simultaneously improve the company's efficiency and competitiveness. Mimetic influences from consultants, combined with coercive pressures from its parent, in the context of coercive regulation (itself expressed through mimetic behaviour) strongly influenced Marconi to change its MAS. Consultants fed mimetic processes by diffusing similar solutions for topical managerial problems akin to "a small world of management accounting practices" (Granlund and Lukka, 1998) and "McDonaldization" (Ritzer, 2000). Consultants' rhetoric identified alleged organisational performance gaps and then promoted beliefs that managers can narrow them by adopting consultants' wares (Abrahamson, 1996). Marconi and PT's consultants followed a similar path. Their influence upon PT and Marconi adopting ABC should not be underestimated.

6. ABC IN MARCONI

In July 1997 Marconi's consultants began implementing ABC throughout Marconi [details of the ABC design, its implementation, and its aftermath is in another paper (authors, 2004)]. The Board strongly supported ABC from its inception. It was implemented in nine months. It followed six steps: selection of teams; team training; definition of activities; definition of the conceptual model; collection of data; and

definition of the ABC software. All Marconi's departments were involved but from the outset the two commercial departments (Consumer Markets, and Carrier Services and Network Planning) were seen as the primary internal users of ABC information. The main feeder, however, was the production department (Telecommunications Infrastructure). Once implemented, ABC became subject to severe criticism, mostly from production engineers who claimed its data was irrelevant for operational decisions and they spent inordinate time feeding it.

This was predictable for the Board's brief to the consultants was to design Marconi's new MAS to satisfy the cost information demands of regulators and commercial managers. With the prospect of full liberalisation and Marconi's integration in PT, the commercial functions were now dominant. Without a strong commercial orientation Marconi could not compete with aggressive firms entering the market, often backed by strong global telecommunication operators such as Vodafone and France Telecom. The production function's influence declined. This switch in power relations led to conflict between production and commercial departments.

The cost needs of commercial managers were determined by the regulator who had to reassure new operators, the EU, consumer associations, and the public, that dominant operators followed rational cost allocation procedures and their rates were cost-oriented. However, commercial managers were also responsible for planning network traffic and negotiating with carriers. They needed information on the costs of routes, carriers, and systems to economically optimise telecommunications traffic. ABC was designed to do this - its cost objects were: products and services (especially fixed telephones, telematics, and leased capacity); systems (submarine cables, satellites, etc.); routes; carriers; and routes by services and carriers. Cost data needed by commercial managers for network planning and pricing was similar to that demanded by ICP.

However, this compatibility of interests did not extend to production. Their cost needs were very different. Product costs were not relevant to their tasks of determining and maintaining capacity and network resources for the traffic estimated by commercial managers in Carrier Services and Network Planning. Production engineers needed more specific cost data to economically inform their technical decisions, especially incremental costs of equipment. The Director of Telecommunications Infrastructure explained:

“Frequently we need to decide whether the capacity of equipment (for example, a switch) should be increased ... to guarantee ... a certain ... security margin ...or... to assure we will have enough capacity to face forthcoming demands. **I know the ABC system provides information on how much system X or system Y costs but this is not the sort of information we need to manage in the production department. ... We need to know the incremental cost of each unit of equipments’ capacity.** ... If we could get this information from ABC we could decide to keep the 10% of margin, though we might prefer to increase it to 20%. ... It’s very important for ... better decisions. ... Unfortunately, management accountants don’t understand our needs.” [emphasis added]

They also needed comparative costs of network systems, personnel costs, and replacing Mbps volume in switches. The production department’s Director argued that, “all the production engineers wanted was timely and specific costing data presented in a user-friendly format that would add an economic point of view to technical decisions”. But Marconi’s ABC system did not easily yield such data.

The production engineers became increasingly frustrated because they got effective non-financial data from engineering databases, especially SIGIR, which they fed and maintained. SIGIR was an important data source for ABC. Production engineers now had to periodically feed the ABC system with allocations of resource costs to transmission and switching systems, operational centres’ usage of modem and multiplex (switching systems), and allocations of production employees’ time to activities, *inter alia*. ABC could not provide meaningful data without these inputs. Thus the effective operation of Marconi’s MAS depended on collaboration between engineers from Telecommunications Infrastructure and management accountants. This did not occur.

Disclosure of labour time by activity was particularly problematical. The consultants created a PMO system ('Ponto de Mão-de-Obra'- in english 'labour time disclosure'). Every three months employees (only the Board was exempted) had to allocate their time spent on each activity in the Dictionary of Activities prepared by the consultants. Most departments had problems obtaining this information. Employees feared disclosing it believing it could affect them adversely. Such information was sensitive because Marconi was drastically reducing its staff. Thus employees delayed their allocations as late as possible and/or did not do it 'accurately'. Problems getting punctual and 'accurate' PMOs lay mainly in the production department. This was exacerbated by production managers' discontent with ABC. They did not care if PMOs were timely and correctly completed by workers and they too complained it was a waste of time. They alleged it left them insufficient time to do their other tasks and constantly noting times spent on activities further hindered them. They complained that PMO and ABC overloaded staff for no discernible benefit, and anyway the information was unreliable. The production Director stated:

"If ABC outputs are accurate or not is another issue. ... ABC depends on the inputs inserted. ... Probably [the production department] don't load the system as we should. ... We cannot take care with PMO as the management accountants would like. ... PMO doesn't make sense. ... It's an illusion to think that people are watching their activities and taking notes about the time they spend on each operation. ... We have told the management accountants that we cannot have a system like this. ... The system (in particular PMO) should be not so demanding. ... I've got a senior manager spending hours preparing data for insertion into ABC. I believe that for the commercial area [ABC] is of interest but for production it gives too much work and very little useful information."

The production engineers' dissatisfaction with ABC and the delayed PMOs meant management accountants frequently received inputs into ABC late. From its inception Marconi's ABC system did not generate cost data on time. However, the data satisfied PT and ICP for they had long lead times for cost data normally returned twice a year. Nevertheless, despite their complaints about its lateness, commercial managers were

reasonably satisfied with ABC data, claiming it gave them relevant cost data previously unobtainable. They were not perturbed with its inaccuracies, claiming no cost accounting system is perfect - all contain indirect and allocated costs, and anyway it tallied with their knowledge of competitors' costs and prices. The commercial managers were happy to use historic costs when negotiating with carriers, and planning tracks and systems usage for "the costs of carriers, tracks and systems do not change overnight" (a market manager). Commercial managers confidence in ABC was surprising since circa 20% of Marconi's total costs were common. Despite management accountants' efforts to identify causal relations between these costs and cost objects, common costs remained high. When questioned about this commercial managers maintained that prior to ABC common costs were even higher, and if the system was used in a "sensible way" (a market analyst from Consumer Markets Department) it was invaluable for supporting their decisions.

7. DISCUSSION

ABC adoption and NIS theory

We now wish to iterate the above events with NIS theory. Exhibit 1 summarises how ABC was adopted in Marconi using NIS constructs. The boxes represent important organisations and segments thereof. The arrows trace the pressure each places on another and the responses. The analysis starts with the role of consultants.

Arthur Andersen played a crucial role. The regulators believed they were skilled, experienced professionals and thus founts of normative advice on costing matters. Telecommunication firms hired Andersen for similar reasons. For example, Marconi hired Arthur Andersen to advise them on cost systems but, like other telecommunication firms, Marconi were aware that their advice should conform with regulators' coercive cost

impositions for Andersen advised the regulator. Thus Andersen helped diffuse ABC throughout the industry. This was oiled by mimetic behaviour amongst firms. For instance, Marconi hired Andersen and adopted ABC partly because larger European telecommunication firms had previously done so. This was not necessarily economically irrational. ABC appeared to facilitate managerial efficiency and satisfy regulators but its widespread use also rendered firms' costs comparable. As Marconi's commercial managers noted, this had advantages for planning and pricing, for example, complaints of monopoly abuse are less likely if providers base prices on the same MAS as customers.

However, this does not explain why all the consultants chose ABC or were perceived as founts of normative advice. The research did not study this directly. However, its inferences are consistent with studies examining why techniques, such as ABC, espoused by business school academics in coalition with consultants, gain prominence and constitute managerial knowledge (Armstrong, 1998, 2002; Jones and Dugdale, 2002; Granlund and Lukka, 1998). There was mimetic 'herding' amongst consultants - all appeared to recommend ABC. They appeared sincere in their beliefs in its efficacy. Moreover, it is difficult to disprove this because alternative systems, like ABC in Marconi, contain arbitrary allocations of joint and common costs.

However, why did regulators need normative advice about costs from consultants? The European Commission accepted Andersen's recommendations and coercively transmitted them to the national regulators, including ICP, who coercively imposed them upon PT. Here the nature of costs and prices in regulated markets needs comment. In unregulated competitive markets pricing and costing are normally detached. The market gives price signals and MASs give costs for managerial decisions. Prices are public but costs are private. However, in this regulated market there are dominant operators that control the market. The public interest requires prices to be regulated to check whether

they bear semblance to costs. However, this is problematic due to common and joint costs whose allocation to products and services is arbitrary and subjective (but not necessarily unreasonable). Costs are malleable and easily manipulated to a firm's advantage. The regulator's problem is that market competitiveness must be established but this relies upon contentious and unreliable cost data. However, if firms have state-of-the-art costing systems consistent with external normative advice, then the regulator is on safer ground. He can demonstrate promotion of efficient cost techniques, which helps establish that approved prices have sound cost foundations, which in turn gains legitimacy from external constituencies such as consumer associations, financial markets, and the body politic. In regulated markets costs determine prices and are symbols of competitiveness. Thus MASs create markets and are not merely antecedents of competition. Moreover, mimetic behaviour amongst firms through wholesale adoption of ABC may be functional for regulators and firms alike as it renders firms' costs more comparable. The regulators hired Andersen for normative advice believing this would promote efficiency and competitiveness, and legitimate their recommendations to external constituencies.

Thus PT came under considerable coercive regulatory pressure to introduce ABC. Also deregulation was bringing heightened competitive isomorphism, as falling prices indicate. The need for 'accurate' costs was compounded by privatisation and stock exchange listings, especially on the NYSE: financial markets placed further coercive pressures on PT for sound cost information. Although ABC was not required specifically, PT's belief that financial markets shared the general business confidence in ABC was reasonable. Once PT adopted ABC it was virtually inevitable, for consolidation and consistency reasons, that Marconi would have to do likewise. However, this coercive isomorphism was not initially contested in Marconi. There were normative and mimetic reasons for adopting ABC. Marconi's managers welcomed the consultants and ABC

believing this would give them improved cost data to increase efficiency, whilst also gaining legitimacy from regulators. To mimetically copy other leading European telecommunications had attractions for it rendered Marconi's costs comparable to competitors', which lessened uncertainty when pricing.

However, implementing ABC produced complex and inconsistent results. ABC was designed for the commercial departments' needs. They used ABC data for pricing, investment, and network planning decisions, despite its lateness and inaccuracies. Similar but aggregated ABC data went to the regulator. However, the production department, whose dominance had been superseded by the commercial departments, believed ABC was useless for operational decisions. They complained it was inaccurate and slow, which was well founded for they did their utmost to achieve this. This resistance stemmed from fear of job cuts, resentment of the commercial departments' ascendancy, and frustration with the time spent feeding data into ABC for no discernible advantage. Whether ABC could have served production is difficult to discern given their unwillingness to go beyond mere token participation in designing ABC.

NIS implications

How do the above results inform NIS theory? First, they support NIS claims that organisational practices like ABC are expressions of social environments inhabited by organisations (Covaleski *et al.*, 1996; Hopwood and Miller, 1994), and organisational forms isomorphise with environmental characteristics (DiMaggio and Powell, 1983, 91b). An analysis of ABC in European telecommunications cannot rely exclusively on market theories, for markets needed creating, adjudicating, and demonstrating: cost systems were essential to this.

Markets and their symbolic representation are socially created constructs. What constitutes 'good' costing may owe more to myth than technical quality and practical

results. ABC purported to be technical and rational but could not eradicate arbitrary cost allocations or joint and common costs. Paradoxically, NIS sometimes too easily presumes that the technical, such as costs and market signals, are self evident, inevitable, and objective.

Marconi obtained external legitimacy because constituencies believed its MAS was rational, sophisticated and truthful. Adopting ABC, promoted by business schools, consulting firms, and some academics enabled PT to allay criticisms of costs sent to the regulator. As Powell (1991: 187) claims, “even the most efficiency-minded organizations rely on socially constructed beliefs”. Marconi’s MAS was embedded in a range of institutional elements. Its choice relied on legitimised suppositions and socially accepted assumptions bound by values, beliefs, and social definitions of rationality and efficiency.

The empirical findings shed insight on theoretical debates surrounding NIS. Firstly, they demonstrate that NIS is relevant for analysing private, for-profit firms, especially in regulated markets where market signals of prices are problematical. One cannot dichotomise between NIS for public or non-for profit organisations and market theories for private ones (see Powell, 1991). Marconi faced competitive and institutional pressures, consistent with recent NIS theory (Carruthers, 1995; Orrù *et al.*, 1991; Singh *et al.*, 1991; Dacin, 1997; Scott, 1991, 95, 2001; D’Aunno *et al.*, 2000; Lee and Pennings, 2002; Hussain and Hoque, 2002). Moreover, as Carruthers (1995: 318) states, “institutional effects are visible even in technical environments” and “institutional arrangements operate at the core of technically dominated environments”. One cannot dichotomise between organisations facing technical (efficiency) and institutional demands (Powell, 1991; Fennell and Alexander, 1987; Scott, 1995, 2001), nor between rational behaviour using purportedly technical data for efficiency and isomorphic behaviour based on mimicry to gain legitimacy. In Marconi, consultants advocated ABC as a normative isomorphism,

regulators imposed it on firms coercively, and some managers accepted it, partly mimetically. But all did so in the name of efficiency. Increasingly, in public and private organisations, legitimacy depends on demonstrating efficiency and rationality. Legitimacy is not necessarily gained at the expense of efficiency, and *vice versa* as earlier NIS theorists claimed, i.e. they can be synonymous (see Meyer and Rowan, 1977, 91).

Secondly, the case illustrates the need for NIS analysis not to treat organisations as black boxes (Zucker, 1977, 91; DiMaggio, 1988). Institutional pressures alone could not explain the adoption and aftermath of ABC in Marconi: the analysis had to incorporate internal dynamics of conflict, power, and resistance associated with economic interests (Dacin *et al.*, 2002; Greenwood and Hinings, 1996; Greenwood *et al.*, 2002). Marconi was not a unitary organisation – management and workers, and managers were divided. Differentiated departments dealing with different domains and pursuing different agendas affected the usage and evaluation of ABC. Each function brings different expertise and representations of critical factors that fuel inter-professional rivalries (Armstrong, 1985). If the engineers from production accepted ABC, it would imply acceptance of the dominance of commercial functions. They knew that information systems frequently affect distributions of intra-organisational power (Markus and Pfeffer, 1983). Thus they allied with workers to manipulate and resist ABC, which became de-coupled from operations. They grudgingly and imperfectly executed their ABC duties ceremonially but it is difficult to claim they internalised ABC as a myth. They wished to avoid the repercussions of outright refusal, whilst rendering ABC technically ineffective, to defend economic interests. Early NIS theory in its rush to explain isomorphism ignores how organisational actors respond to institutional demands or how they interpret and process them. Actors' interests, agency, and power issues proved crucial for studying ABC in practice.

It is important not to ascribe resistance to ABC merely to mishandling of organisational change, though it can be pertinent. Nor should it be assumed that reasons for resistance lack foundation. The production engineers' complaints about ABC tally with reservations noted by other managers and academics regarding allocations, representing critical variables, and the presence of joint and common costs (Innes and Mitchell, 1991, 93, 96, 98; Innes and Norris, 1997; Cobb *et al.*, 1992). Also the engineers' scepticism of ABC was well grounded for they rendered ABC data late and possibly unreliable.

Reactions to ABC in Marconi cannot be seen in unitary terms. ABC became embedded in the work of the commercial departments. They believed ABC legitimated prices and, used in conjunction with market information about competitors, provided pertinent information. In their eyes, it promoted efficiency in Marconi, demonstrated this externally, and secured legitimacy. The Commercial Departments were relatively unconcerned with ABC's technical problems: their major preoccupation was legitimating prices and, given ABC's diffusion throughout the industry, it reduced uncertainty about competitors' cost estimations. Image was as important as reality.

Lastly, the case illustrates the importance of NIS studying organisational change as a discontinuous process involving complex isomorphic pressures and multiple interactions. Traditional NIS emphasises top-down processes: organisations are presumed to be single entities that passively adapt structures to environmental demands and mimicking similar organisations (DiMaggio and Powell, 1983, 91b; Powell, 1991; Scott, 2001). Early NIS theories treat organisational change as episodic and unusual, and emphasises stability (Powell, 1991; Genschel, 1997; Zucker, 1977, 88, 91). The ensuing preoccupation with static outcomes ignores internal actors' interests and multiple institutional systems that "intersect, overlap, compete for attention and adherents, and constrain some actors but enable others" (Scott, 2001: 188).

If NIS is to be effective it must explain how organisational forms become de-institutionalised and are replaced. Traditional NIS cannot satisfactorily explain how and why institutions weaken and disappear, and others emerge (Dacin *et al.*, 2002; Scott, 1995, 2001; Powell, 1991). As Scott (2001: 183) notes, “empirical studies of deinstitutionalization are relatively rare”. However, recent theoretical developments address this (Fligstein, 1991, 93; Casile and Davis-Blake, 2002; Brint and Karabel, 1991; Greenwood *et al.*, 2002; Lee and Pennings, 2002; Oliver, 1991, 92). Three features of this work were cognate to this study: seeing change as a complex, longitudinal process; the importance of external ‘shock’ to organisational crisis and discontinuity; and processes of de-institutionalisation within organisations.

Exhibit 1 reveals complex set of top-down and bottom up processes bearing on the adoption of ABC in Marconi. Marconi’s ABC choice was not a single isomorphism in response to unitary pressures, as previous accounting research would suggest. Competitive, normative, mimetic, and coercive pressures, all in the name of efficiency, interacted dynamically within a complex chain of institutional pressures over time.

Fligstein (1985: 91) notes ‘crises’, either internal or external, stimulate major transformations in systems of organisational power. This occurred in Marconi. The political imposition of liberal telecommunication markets was a major institutional discontinuity and shock to Marconi. (Why, how, and whether this was justified is beyond the remit of this research). This led Marconi’s senior managers to perceive a ‘crisis’. However, change is unlikely without actors’ sufficient power and knowledge to develop new strategies, rules, and practices. The reorganisation of Marconi and its integration into PT encouraged previously ‘powerful’ engineers to resign and introduced new managers, particularly senior ones, with interpretative frameworks and social definitions of behaviour oriented to market rather than production values. The Commercial Departments welcomed

this and subsequently ABC partly because it fostered values and rules consistent with their interests (Oliver, 1991). The Commercial managers took advantage of the new situation and pursued a 'compliance strategy'. The external political changes introducing liberal markets, enacted through institutional pressures legitimated a new set of powerful players, de-institutionalised production-based values, and replaced them with market-based ideals (Oliver, 1992).

8. CONCLUSIONS

This paper makes empirical and theoretical contributions. Empirically, it shows how consultants diffused and legitimised ABC as a symbol (and an apparently technical device) of efficiency amongst regulators and firms in the European telecommunications industry. Second, it traces how a transnational state, the EC, and regulators coerced widespread ABC adoption, aided and abetted in Marconi/PT by demands from financial markets following stock exchange listings. Third, it shows how cost systems establish competitive markets in monopoly, regulated industries. Fourth, it traces how ABC was used and evaluated differently within Marconi. Inter-professional rivalries and resistance affected the speed and accuracy of ABC data. Fifth, it raises questions about the technical ability of ABC to deliver what it promised regarding 'accurate' product costs (Noreen, 1991; Cobb *et al.*, 1992).

Theoretically the contributions are several. First, the case illustrates how, in regulated markets, cost systems construct and demonstrate efficiency and competitiveness (Scapens, 1991; Piper and Walley, 1991; Ahmed and Scapens, 2000). Second, it demonstrates how MAS choice is a product of social construction and institutional pressures (Hopwood and Miller, 1994). Technical solutions may owe more to myth than

rationality. Third, the case shows it is foolhardy to bracket out economic pressures in NIS analysis, or to assume that private, for-profit organisations are immune from institutional pressures (Orrù *et al.*, 1991; Powell, 1991; Scott, 1991, 95, 98). All organisations face institutional demands to some extent. Fourth, it demonstrates how NIS theory can analyse accounting choice (Modell, 2001, 2002a, 2002b; Carmona *et al.*, 1998). Neo-classical economic explanations had some validity, as all constituencies seeking reform of Marconi's MAS did so under the banner of market efficiency. Yet market-oriented theories cannot fully why ABC was chosen: it was only one of several MAS 'solutions' and may not provide suitable cost data, as Marconi's engineers discovered. Achieving legitimacy from external constituencies was crucial, even if this meant installing an unsuitable MAS.

A satisfactory analysis required extending NIS in directions suggested by its critics and reformers (Dacin *et al.*, 2002; Scott, 2001). Accounting choice needed studying as a complex, longitudinal process - not as an outcome. This required explaining transformation using top-down and bottom-up observations. The former involved noting the importance of external 'shock' for producing organisational crisis and discontinuity. The latter necessitated examining processes of de-institutionalisation within the organisation (Oliver, 1991, 92). Opening up the 'black box' revealed that organisational responses were neither unitary nor unproblematic (Fligstein, 1985, 91 Collier, 2001). The Commercial Departments owed their creation to the new situation and used it to further their power and interests, whereas the power of production and its values diminished. However, ensuing resistance by production engineers in alliance with workers weakened ABC technically, though the Commercial Departments disregarded this for ABC furthered their interests, appeared approximately correct, and satisfied external constituencies.

Lastly, avenues for further research were identified. It would be interesting to know whether the 'ABC phenomenon' occurred in other European utility industries that have

undergone market liberalisation and, if so, to what effect. Circumstantial evidence suggests that it is not unique to telecommunications. Also, more intensive and holistic case studies within European countries are needed to determine whether the results of this study can be generalised. Lastly, there is need for economic and engineering analyses to establish whether ABC or alternative means can establish sound prices for telecommunication services (see Bromwich and Hong, 2000). This issue was beyond the scope of this organisational investigation.

Table 1**Prices of International Telecommunications Services**

	Unit: Escudos (PTE)				
	1990	1991	1992	1993	1994
EU	183	176	162	142	135
Other European Countries	214	206	189	171	163
United States	428	386	242	223	198
Brazil	583	514	379	342	291

Note: Prices are peak rate prices per minute, set at 1995 constant prices, and exclude value added tax.

Source: Maxitel, "O Mercado das Telecomunicações: Portugal 1996", p. 119.

1 EUR = 200.482 PTE

Table 2**Prices of International Telecommunications Services**

	Unit: Escudos (PTE)				
	1996	1997	1998	1999	2000
EU (1)	124,2	107,3	80,0	69,8	53,5
Other European Countries (2)	165,3	152,6	144,1	129,8	121,7
United States	182,1	152,6	99,0	71,1	55,3
Brazil	262,1	227,4	177,0	129,8	123,3

(1) Including Switzerland in 1997, 1998, 1999, and 2000.

(2) Including countries in the former Soviet Union, Algeria and Tunisia for 1996. Excluding Norway and Iceland for 1997, 1998, 1999, and 2000.

Note: Prices are peak rate per minute, set at 2000 constant prices, and exclude value added taxes.

Source: PT Group (2001), Form 20-F, p. 61.

1 EUR = 200.482 PTE

ENDNOTES

¹ The full name is 'CPRM – Companhia Portuguesa Rádio Marconi' but for simplification it is called 'Marconi'.

² When this investigation began in 2000 the Portuguese telecommunications regulator was the 'ICP – Instituto de Comunicações de Portugal' (Portuguese Communications Institute). Its name changed in January 2002 (Law nº 309/2001) to Anacom – an abbreviation of 'Autoridade Nacional de Comunicações' (Communications National Authority).

³ This paper concentrates on NIS research: its relation to other institutional theories is beyond its scope.

⁴ Major studies include: Burns, 1997, 2000; Carpenter and Feroz, 2001; Carmona *et al.*, 1998; Dirsmith *et al.*, 1997; Perez and Robson, 1999; Dirsmith *et al.*, 2000; Euske and Riccaboni, 1999; Haveman, 1993; Hoque and Alam, 1999; Mezas, 1990; Hussain and Hoque, 2002; Modell 2001, 2002a, 2002b, 2003, forthcoming; Westphal *et al.*, 1997; Hoque and Hopper, 1994; Berry *et al.*, 1985.

⁵ CAM – I later was called 'Consortium for Advanced Manufacturing, International'.

⁶ For simplification Marconi's parent company is called PT (though from 1999 to 2002 it was PT Comunicações).

⁷ Marconi previously had a matrix structure that crossed its business areas (Long Distance, Broadcast, Mobile Communications, Business Communications, Public Telecommunications and Information Systems) with central departments (Corporate Communication, Planning and Development, Finance, International Affairs, Research and Development, Human Resources and Information Systems).

⁸ The regulatory impositions on telecommunications operators changed on July 2003, following new EU Directives (Directives 2002/21/EC, 2002/20/EC, 2002/19/EC, 2002/22/EC, 2002/58/EC). This paper does not analyse these because they occurred after the MAS changes studied here. Laws reported are quoted only when directly connected to MAS changes in Marconi and PT.

⁹ Decree-Law Nº. 40/95 of 15 February 1995, article 19, stated:

“1(a) Until 1995, the analytical accounting system should enable the direct and indirect cost computation of each provided services, as well as, for each one of them, the costs associated to each provision way;

b) Until 1998, the analytical accounting system should additionally enable the split between costs associated to services provision and those associated to infrastructures management and exploitation.

2 – It is incumbent upon ICP the approval of the methodology to be used in the implementation and usage of the system mentioned in the preceding number.

3 – When, under the terms of nr. 1 of Article 7, the concessionaire provides other services in a direct way, the latter should ensure the adequate account segregation of revenues and costs, as well as connected assets and liabilities.”

Decree-Law Nº. 40/95 was replaced by Decree-Law Nº. 31/2003 on 17 February 2003. This enabled the transfer of PT's rights and obligations to PT Comunicações, and the transfer of the network ownership from the public domain to PT. The cost obligations remained virtually unchanged, for example, Decree-Law Nº. 31/2003 of 17 February (article 18) stated:

“1 – The concessionaire shall keep a system of analytical accounts, appropriate to the tariff principles determined in this concession ...

2 – It is incumbent upon ICP to approve the methodology to be used in the implementation and use of the system mentioned in the preceding paragraph ...

¹⁰ Article 30 of Decree-Law Nº. 40/95 of 15 February stated:

“a) Cost orientation for the service provision, duly justified by an analytical accounting system;

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- b) Non-discrimination in its application, ensuring that to all users in equal circumstances are conferred an equal treatment;
 - c) Uniformity in the application of the tariff regime in force for the services object of concession.”

¹¹ Agreement no. 101-A/97 stipulated:

“1 – Scope of convention – this convention regulates and defines the general framework applicable to the telecommunications services provided exclusively by PT and the price regime in respect to the following telecommunications services provided exclusively by PT;

1.The fixed telephone service, in subscriber, public payphone, and supported by ISDN modes;

2.Interconnection (interoperation of services).

2 – Principles:

2.1. – The price system of the services covered by the convention shall conform to the principle of *cost orientation, non-discrimination and transparency*.

2.2. – Within the scope of the provision of the fixed telephone service, the application of the principle of *cost orientation shall be realised progressively, in such a manner as to allow a gradual rebalancing of the price tariff*, pursuant to the terms of no. 15.

2.3. – To ensure the furtherance of the principles referred to in the preceding numbers, PT shall undertake:

1. To maintain a *cost accounting system which shall enable the costs associated with each service and, within a specific service, the costs associated with each form of provision thereof to be defined ...*”
[emphasis added]

¹² PT is quoted on the NYSE and must prepare Form 20 - F giving investors information about its business.

¹³ Decree-Law N°. 31/2003 of 17th February kept the obligation of concessionaires providing universal telecommunications services within the scope defined in Decree-Law N°. 458/99 of 5th November.

¹⁴ Article 12 of Decree-Law N°. 458/99 of November 5 stipulated:

“1. The organisation(s) with universal service obligations must be compensated for any losses resulting from the provision of this service.

2. For the purposes of the terms of the previous point, the organisation(s) with universal service obligations are responsible for demonstrating losses and submitting them to approval by ICP. Such approval should be preceded by an audit carried out by ICP or by an independent body appointed by ICP.

3. ICP is responsible for publicising the results of the cost calculations and the audit specified by the present article, whenever so requested by interested parties.”

¹⁵ Law 91/97 was modified by Law N°. 29/2002 of 6 of December. The main provisions of Law 91/97 did not suffer significant alterations.

¹⁶ The issue of interconnection produced several accounting studies commissioned by the EU. This resulted in the European Commission issuing practical guidance to national regulators on cost accounting systems issues for operators with significant market power. The preface of one of these recommendations states (Commission Recommendation 98/195/EC): “...interconnection to the existing public switched telecommunications network is essential. Interconnection charges represent one of the biggest items of expenditure for new market entrants. Recognising the bottleneck nature of the incumbent’s fixed network and the lack of incentive to provide efficient interconnection, the European Parliament and Council Directive on Interconnection in Telecommunications imposes cost-oriented interconnect pricing, together with requirements for appropriate accounting separation.”

¹⁷ Notice of September 4, 2000 published 7th October.

¹⁸ Article 9 of Decree-Law N°. 415/98, 31 December states:

“1. The following shall constitute the specific obligations of the entities referred to in sub-sections a) and b) of section n° 1 of article 6 [entities with significant market strength within fixed telephone networks, fixed telephone services, and leased lines]:

- a. To respect the *principles of transparency and guidance for costs* when establishing interconnection prices;
- b. To *establish and publicise, in a detailed manner, the various components of the interconnection prices* covered;
- c. To elaborate interconnection reference proposals in terms of article 10;
- d. To have *separate accounting*, on the one hand, *for the interconnection activity*, and on the other hand, *for the other activities*. The former must include the interconnection services rendered to the entity itself and the services rendered to other entities;
- e. To *have an analytical accounting system for the interconnection activity* in terms of article 15;
- f. To *inform ICP*, for the purposes of article 15, *of the analytical accounting system adopted, by means of a highly detailed and documented report*;
- g. To *make available* to those requesting interconnection and to the consumer associations within the national ambit and generic interest or specific interest within the telecommunication services ambit, *the description of the analytical accounting system adopted, including the principal categories for cost grouping and the rules for cost imputation, upon request*.

2. For the purposes of that set out in sub-section a) of the previous section, *it shall fall upon the entity offering interconnection to show that the interconnection prices are calculated on real service costs, including a reasonable remuneration rate of the capital invested*.

3. ICP may ask the entity offering interconnection to justify the interconnection prices it practices, and when deemed suitable, *ICP may determine the adjustment of said prices to the costs, based on the analytical accounting information*.

4. For the purposes of that set out in sub-section d) of section n° 1, the *interconnection accountancy must identify all the costs and profits related to this activity, including the discrimination of the structural costs and those associated to the fixed assets. It must also identify in detail the bases for the calculations carried out and the affectation methods in obtaining that information.*” [emphasis added]

¹⁹ ‘Cost Accounting and Accounting Separation’ prepared by the Directorate General XIII of the European Commission (Brussels, 6 November 1997) stated:

“In accordance with article 7(5) of Directive 97/33/EC information about the cost allocation methodologies and criteria employed in order to prepare separate accounts must be made available on request to interested parties, including other market players. This should be at a level of detail that makes clear the relationship between costs and charges of network components and services. In particular the basis on which un-attributable costs have been allocated between different accounts should be provided. (...) NRAs [National Regulatory Authorities] should make the accounting records from notified operators available on request at a level of sufficient detail to ensure that there has been no undue discrimination between the provision of services internally and those provided externally” (p. 7).

²⁰ Decree-law 415/98, 31 December (article 15) stipulated the cost accounting systems operators should adopt:

“1. *It shall fall upon ICP to determine and publish the minimum elements which must be included in the analytical accounting system* referred to in sub-section e) of section n° 1 of article 9, namely:

- a. *The cost model, including the calculation base;*
- b. *The identification of all the individual cost components constituting, as a whole, the interconnection price, including the remuneration of the capital invested;*
- c. *The method of calculating the remuneration rate of the capital invested;*
- d. *The objects of cost;*
- e. *The principles of cost affectation, capital invested and profits relevant to the objects of cost, namely with regard to common and joint costs;*
- f. *The accounting conventions used in cost handling.*

2. ICP, or the independent entity appointed by ICP, shall be responsible for verifying that the analytical accounting systems adopted by the entities referred to in article 6 are in accordance with that set out in the previous section.

3. It shall fall upon ICP to publish annually a declaration attesting to the conformity of the analytical accounting systems adopted by the entities referred to in article 6.” [emphasis added]

²¹ In 1990 Marconi had 1482 employees, in 1995 1135, in 2000 363, and in 2002 less than 300.

²² Marconi’s and PT’s concern about fierce competition is illustrated in their annual New York Stock Exchange report (Form 20-F, Information for the NYSE – 2000, pp. 33-34):

“In the past, we had limited or no competition. ... [Now] our competitors can compete with us in all our service areas. In response ... we are pursuing a range of strategic initiatives ... to reposition, modernize, and prepare ourselves for the challenging new environment. ... New entrants to the fixed voice market include Telecel, Jazztel, Novis (the Sonae SGPS and France Telecom venture) and Maxitel. Until now, they have focused on providing national and international services over their networks without direct connection to their customers who must still connect to their services through our lines. We have faced competition from other service providers offering voice services to corporate networks and other closed groups of users since 1996. ... **This market is now highly competitive. ...** We also lose revenues from our international telephone services because large telecommunications users lease lines through which they connect to networks outside Portugal. We also face indirect competition in international fixed telephone services from calling cards, rerouting of calls by other international operators and calls made in countries with rates that are cheaper than in Portugal. **Together with falling international call prices worldwide, these factors impose pressure on us to reduce our fixed international telephone prices.**” [emphasis added]

²³ Section 12 of the American Securities Exchange Act of 1934 requires PT to annually submit a report (Form 20 – F) that includes: a detailed description of the business, its property, legal proceedings, market conditions, exchange controls, other limitations affecting security holders, taxation, selected financial data, management’s analysis of the financial situation and results; quantitative and qualitative disclosures of market risk; company directors’ and officers, their compensation, stock options and interests in certain transactions; and security defaults and changes.

²⁴ This statement is based on information obtained from practitioners during ABC seminars prepared for IIR – Institute for International Research in March, April, October, 2000; and April and May 2001.

²⁵ Commission Recommendation 98/195/EC [OJ N° L 73, 12 March 1998].

²⁶ Commission Recommendation 98/322/EC [OJ N° L 141, 13 May 1998].

²⁷ Interconnection Directive 97/37/EC [OJ N° L 199, 26 July 1997].

²⁸ Article 8 of this Directive states that telecommunications firms providing public fixed telephone networks and/or leased lines with significant market power must maintain separate accounts for interconnection services (internally and to other operators) and other activities. Article 7 stipulates that national regulators must ensure that these cost accounting systems follow principles of ‘transparency’ and ‘cost orientation’.

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