



# Structural separation versus vertical integration: Lessons for telecommunications from electricity reforms

Bronwyn Howell, Richard Meade, Seini O'Connor\*

New Zealand Institute for the Study of Competition and Regulation, Rutherford House, 23 Lambton Quay P.O. Box 600, Wellington 6140, New Zealand

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## ABSTRACT

Structural separation between network and retail functions is increasingly being mandated in the telecommunications sector to countervail the market power of incumbent operators. Experience of separation in the electricity sector offers insights for policy-makers considering telecommunications reforms. Despite apparent competitive benefits, the costs of contracting increase markedly when short-term focused electricity retail operations are separated from longer-term generation infrastructure investments (which require large up-front fixed and sunk cost components). The combination of mismatches in investment horizons, entry barriers, and risk preference and information asymmetries between generators and retailers leads to thin contract markets, increased hold-up risk, perverse wholesale risk management incentives, and bankruptcies. Direct parallels in the telecommunications sector indicate exposure to similar complications, intensifying many of the contractual risks arising from regulated access arrangements. Thus, as in electricity, competition between vertically integrated telecommunications providers would likely induce more efficient and sustainable investment and competition than would separation.

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## 1. Introduction

Structural separation between wholesale and retail functions is increasingly being mandated in telecommunications sectors around the world. However, thus far telecommunications sector experience with structural separation has been limited.<sup>1</sup>

Accordingly, this paper attempts to provide insights into the consequences of separation obligations for the telecommunications sector by drawing from industrial organisation theory (with a particular emphasis on optimal risk management) and experience in the electricity sector (which shares many features in common with telecommunications). Electricity sectors have long experience with structural separation, which has commonly arisen as a key element of sector liberalisation. Pre-liberalisation, integrated electricity operators were the “norm”. Reforms introduced separation and its necessary counterpart, wholesale–retail contracts. Now, where it has been permitted to, vertical integration is rapidly re-emerging in response to failings in such contracts. These failings have manifested themselves in poor wholesale price

\* Corresponding author. Fax: +64 44635566.

E-mail addresses: [bronwyn.howell@vuw.ac.nz](mailto:bronwyn.howell@vuw.ac.nz) (B. Howell), [richard.meade@cognitus.co.nz](mailto:richard.meade@cognitus.co.nz) (R. Meade), [seini.oconnor@vuw.ac.nz](mailto:seini.oconnor@vuw.ac.nz) (S. O'Connor).

<sup>1</sup> A notable example was the 1984 break up of AT&T into separate long-distance service and local exchange service operating companies in the United States (involving the creation of the so-called Baby Bells—Crandall & Sidak, 2002); but this involved a different type of separation from the wholesale–retail splits that governments have more recently proposed, and thus provides limited insights for more recent reforms requiring separation of all upstream network services from their downstream retail operations.

and quantity risk management, problems of adverse selection and strategic bargaining in the presence of asymmetric information and market power, forestalled investment (undermining supply insecurity), and company failures. Research into structural arrangements in the electricity sector increasingly suggests that vertical integration between wholesale and retail functions is the more natural and resilient industry structure (see Meade & O'Connor, 2009). Indeed, vertical integration supports investment, mitigates market power, and sustains competitive retail entry. Research also highlights the (potentially destructive) role of excessive retail-level competition in undermining contracting, investment, and durable retail competition (see Chao, Oren, & Wilson, 2005; Green, 2006; Finon & Perez, 2008).

In the context of the telecommunication sector's limited experience with structural separation, debate wages over where on the spectrum from "pure" structural separation to "pure" vertical integration (in between which lie various policy options to control potential adverse effects of either) government policy should fall. Indeed, even in the electricity sector, where experience provides more evidence on how theoretical options work in practice, debate over this issue continues. This ongoing debate highlights important questions about the optimal degree and durability of retail competition, optimal arrangements for managing risks and mitigating market power and asymmetric information, the importance of the trade-off between static and dynamic efficiency, and the relative efficacy of endogenous and regulated approaches to industry restructuring.

Although it is acknowledged that a spectrum of options are open to policy-makers focussed on optimal sector design, to sharpen the discussion in this paper, the focus is on comparing the two poles of that spectrum: structural separation and vertical integration. It is argued that, although each country case needs to be considered individually (given different underlying economic and technological characteristics) on the whole structural separation in telecommunications is likely to suffer from a number of the same key problems that complicate contracting in separated electricity sectors, as well as its own industry-specific problems. Furthermore, as in electricity, vertical (re-) integration in telecommunications is likely to be a preferable solution to separation for resolving problems arising from asymmetric information, and for sustaining retail competition. In addition, it is proposed that integration – for both electricity and telecommunications – is a preferable contracting solution to interventions such as regulating for contracts. Short-term static efficiency gains and some downstream dynamic efficiency gains with respect to innovation in downstream retail operations may be realised from separation, but at the expense of long-term investment, dynamic efficiency gains from innovation in and timely deployment of newer, more capable upstream network technologies, and with the additional risk of inducing unsustainable retail competition.<sup>2</sup> Hence, while the *aims* of separation are sound, integration may in fact better serve their achievement. Although on-the-ground evidence at this stage is limited, it is expected that ongoing sector experience will serve to confirm these predictions. In the meantime, policy-makers would well be advised to consider them as key points of concern when considering imposing structural reforms.

In the remainder of this paper, first of all the theoretical framework is outlined, based on economic theories of ownership and the boundary of the firm (Section 2). Then the aims and experience of structural separation and contracting in electricity are summarised, highlighting sectoral features that have complicated contracting. Next, how vertical integration has emerged in response to these complications is identified (Section 3). In Section 4, an examination is made of how lessons from electricity sector restructuring can be applied to the telecommunications sector. Finally, Section 5 discusses the possible implications for telecommunications policy.

## 2. Separation versus integration—the theory

Following Coase (1937) and Williamson (1985), transaction cost economics offers insight into why some economic activities are organised internally (within firms), and why others are organised externally (mediated by transactions in markets).<sup>3</sup> In brief, transaction costs economics presumes that firms will undertake economic activities through market transactions (either spot trading or longer-term contracting), unless the costs of such transactions are so high that it is preferable to undertake economic activities within the firm (i.e. internal organisation). The costs of market transactions that may push firms towards favouring internal organisation include:

- the costs of frequent, repeated transactions,
- the restriction of contractual incompleteness (contracts may not be able to fully describe the good that may be purchased, or how transacting parties should act in every potential circumstance),
- bounded rationality (contracting errors may be made because it is difficult to predict certain future states e.g. uncertain demand growth),

<sup>2</sup> That an alternative analysis of the static-dynamic efficiency trade-off could be made in line with Schumpeter's argument that innovation is a key benefit of new entry, and that such entry may thus promote greater dynamic efficiency through a process of "creative destruction" (e.g. Schumpeter, 1934) is acknowledged. However, in this paper the emphasis is on a new institutional economics approach to the question of efficiency in separated versus integrated systems, focussing in particular on the detrimental effects of monopolistic competition and (associated) overly high entry levels (e.g. see Carlton & Perloff, 2005).

<sup>3</sup> Because of space limitations, only a short summary of transaction cost economics is provided in this section—interested readers are referred to Meade and O'Connor (2009), Finon and Perez (2008), and Chao et al. (2005) for fuller explanations of how transaction costs may influence infrastructure sector structures.

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