Chapter 1

INTRODUCTION

William H. Melody

1.0 Overview

Until recently telecommunication (telecom)[1] has been provided in most countries as user-pay public services administered by the government – typically through Post, Telegraph and Telephone (PTT) ministries – or by government regulation of private monopoly operators. The conventional wisdom was that telecom was a natural monopoly and proposals by others to supply virtually any aspect of telecom services were rejected out of hand. But as telecom activities have become increasingly integrated into the operations of companies, government agencies and most other organisations, as well as the economic and social behaviour of individuals, there has been a growing recognition that the productivity of the entire economy depends upon an efficient telecom system. It must be responsive to a variety of changing demands and new technological opportunities.

The telecom system is rapidly becoming the electronic infrastructure for transmitting all kinds of information – voice, data, graphics, video, music. It already underpins broadcasting, computing, the press, banking and other industries. The postal service, government administration, manufacturing, natural resources and agriculture are not escaping its influence. Most countries have recognised that if their telecom sectors are to be in a position to seize the new technological and service opportunities, entrepreneurship, good management, frontier technical knowledge, a detailed understanding of consumer demand, wise public policy direction and effective regulation all are essential. Telecom networks and services provide the foundation for national "information society" programs as well as a rapidly growing global information economy.

The idea that telecom services are not just a necessary cost of doing business, but rather an enormously valuable economic resource, is just beginning to be widely recognised. The old view was that telecom development was a natural appendage to general economic development. Telecom was one of the societal benefits that economic development allowed. Now telecom is being recognised as an integral part of both economic and social development in both developed and developing countries. By itself

[1] The terms, telecommunication, telecommunications, telecom and telecoms tend to be used indiscriminately and interchangeably in the literature. Throughout the book we use only 'telecom' unless circumstances require another version, e.g., International Telecommunication Union; *Telecommunications Act of 1996*.

telecom cannot guarantee development. But without it, development in most other areas will be severely restricted, more costly and in some cases made impossible.

The World Trade Organization (WTO), International Telecommunication Union (ITU), European Union (EU), and other international organisations are reassessing the increasing importance of telecom to economic development. Business firms are learning how effective information and communication exchange can improve operating efficiency and expand the range and quality of products and services that can be provided. It can render decision-making more effective and extend markets to global dimensions. The communication and information sector already is a USD 650 billion p.a. global industry, the largest industry sector in the world accounting for more than two percent of world GDP, and representing nearly 20 percent of world trade. This sector has seen unprecedented growth in recent years and future growth rates are expected to be even higher.

Telecom reform is underway in all countries and at the regional and international levels. This reform is characterised by new laws and policies, and the establishment (or reorganisation) of telecom regulatory agencies to implement them in a new dynamic international market environment. The success of telecom reform will depend heavily upon the establishment and maintenance of effective regulation, which must encompass a wide range of expertise and be informed, forward looking and adaptive in helping to shape the information infrastructure that will provide the foundation for 21st century information societies.

At the present time there is much discussion about the most effective role telecom regulators can play, the specific powers regulators should be granted, the structure of regulation, the independence of regulators, participation in the regulatory process, the criteria for making regulatory decisions, and related matters. Despite new laws in the US, Germany, Denmark and many other countries, new directives from the EU and other regional organisations, and new agreements at the international level at such organisations as ITU and WTO, telecom regulatory issues are becoming more difficult and complex, not more clear.

This book addresses the telecom policy and regulatory reform process now in its formative stage. It draws on detailed knowledge of telecom industry development in different sectors of the world and regulatory experience in those relatively few countries that have applied telecom regulation. It examines the technological and economic trends, as well as policy and regulatory developments, to present and critique the principles, policies and practices associated with telecom reform. By presenting a comprehensive review and assessment of the telecom reform process, it provides a foundation for informed analysis and debate on the next steps in the unfolding drama of telecom reform and inform society development.

2.0 The International Framework for Telecom Policy Development

2.1 An Expanded Role for the Market

The provision of telecom services in all countries is supplied under conditions where the allocation of economic resources and the provision of services are determined by a mix of market forces and governmental policy and administrative decisions. In this sense, there is a commonality across all countries, whether the provision of telecom services is by a

government administrative agency, an independent government business enterprise or a private corporation subject to government regulation. In each case, decisions taken with respect to the technology, the allocation of resources and the type and distribution of services provided have reflected market forces, in part, and government policy direction, in part. The differences among countries have been in the priorities placed upon market objectives such as efficiency and customer service, and upon other political, social or bureaucratic objectives such as public employment or financial contributions to the government treasury.

In recent years there has been widespread recognition that an expanded role of the market in telecom can facilitate not only improved efficiency but also the achievement of other public policy objectives as well. The significant changes in the role of the market that are taking place in telecom internationally are not founded simply upon ideological shifts and a new found faith in the so-called free market. Nor are they a directly determined response to the dictates of new technologies. Rather, the inherited monopoly institutions (public or private) have had great difficulty adapting to changing economic, political and social conditions, of which changing technology is only a part. Monopolies operating in a protected, stable environment are not well-suited to adapt to a new and increasingly diversified and dynamic market place.

Although a significantly increased role for competitive market forces in telecom is expected in nearly all countries, competition is not generally seen as a substitute for industry specific policy development and regulation. After some initial enthusiasm in the US, UK, New Zealand, and by the World Bank and other places, about market competition being an acceptable substitute for government regulation, the experience of the past 15 years has convinced most observers that effective regulation must be an essential component of the new telecom structure if industry reform is to succeed.

More than a decade after the divestiture of AT&T the US long distance market has settled into a comfortable three firm oligopoly that has virtually eliminated price as an element of serious competition. Over a similar period the UK has lurched from one lopsided duopoly (BT and Mercury) to another (BT and CATV operators). To date only New Zealand has taken the extreme step of treating the telecom industry as ordinary commerce, thereby placing it under the commerce ministry and the general competition laws. The result has been "judicial regulation" by default as the initial basic issue of carrier interconnection has been contested through the courts for years without a clear result.

There has been little, if any, significant local competition develop anywhere. The cartel of public telecom operators (PTOs) supplying global international traffic is holding up well. A number of developing countries, the World Bank and others have learned that private monopolies are as effective as public ones at preventing the entry of new competitors. The first major developments in the newly liberalised markets are a series of horizontal and vertical mergers, strategic alliances and joint ventures by major players in telecom and related industries. These may do more to restrict competitive opportunities to any firms outside the information infrastructure big-players-club than promote vigorous competition within it. They will almost certainly raise the barriers to entry to new independent players. It now appears that what has been seen by some people as a period of transition from monopoly to workably competitive markets will be an ongoing transition for the indefinite future.

The more experienced view now maturing is that competition is not a substitute for regulation, but a tool of regulation that can facilitate achievement of both economic and social policy objectives. Opportunities for new market entry should be made available wherever possible, and the promotion of competitive opportunities should be one goal of regulation. But the competition that actually develops will be highly imperfect, and the established PTOs in most countries will have dominant monopoly power in their home markets for the indefinite future. Effective regulation will be necessary to ensure the doors of market entry are not closed by the largest players and social policy objectives are achieved. In addition, as the telecom system provides the electronic infrastructure for future information society development, effective telecom regulation could be an essential catalyst for implementing the information society policies being pronounced in many countries. The challenge is to design regulatory structures that will work effectively in the new dynamic telecom environment. In such an environment, regulation must be forward looking and proactive, not passive and reactionary as most regulation has been in the past.

2.2 Toward a Compatible Framework for National Policies

The global movement toward liberalised markets in telecom is reflected in the activities of international and regional organisations that are helping to shape a compatible framework for industry development and regulation. These organisations are encouraging national governments to make changes that will bring their telecom structures closer to a common regional and international framework. These organisations address issues ranging from technical standardisation and compatibility, (e.g., ITU, European Technical Standards Institute (ETSI)), to issues of comparative practices and performance (e.g. OECD, ITU), and to common basic policy platforms for national telecom development, e.g. EU, NAFTA. In more recent years, the GATS and WTO have highlighted telecom as an important sector for liberalisation in all member countries. Drafters of new national telecom laws and policies need to be cognisant of the international trends, and particularly of the speed of their movement toward liberalisation.

New national telecom legislation also will play a key role in establishing a policy framework for implementing related government policies. In a liberalised telecom industry both competition policy and consumer protection policy take on much greater significance. The development of a more competitive market place and the creation of an independent value-added services (VAS) sector require effective application of pro-competition policies and a strong capability to prevent monopoly practices by dominant public telecom operators (PTOs). In addition, the need for consumer protection in an industry in transition from monopoly is much greater than for industry in general as consumers no longer have the traditional protection of a paternalistic government monopoly nor the protection of effective competition. Proposed new national telecom legislation must be assessed in light of the probable need to strengthen both competition policy and consumer protection in the telecom industry. In particular, new legislation will need to clarify the respective roles of the telecom regulator and the government agencies traditionally responsible for competition policy and consumer protection.

If competition is to be a fundamental feature of a reformed telecom structure, each country needs to assess whether telecom policies can be implemented best under the

jurisdiction of the commerce ministry (responsible for competition policy), or whether telecom is an industry with sufficient additional public policy considerations to warrant a separate ministry covering communications. Under either government policy structure, a telecom regulatory agency can ensure that the special industry policies are implemented. The fundamental policy issue is whether telecom policy should be subsidiary to general competition policy or whether competition policy should be subsidiary to the broader objectives of telecom sector policies. Different countries may have different priorities.

In attempting to achieve effective telecom structural reform, perhaps the most fundamental underlying issue is effective separation of the basic functions of policymaking, regulation and operator management. It is now widely recognised that the inefficiency and unresponsiveness that have pervaded many national PTTs derive from a mixing of very diverse and often conflicting objectives in the same organisation. Whether the public telecom operations have been used to subsidise the post, the treasury, bureaucratic inefficiency, retired politicians, trade union featherbedding, the short-term needs of macroeconomic policy or some other objectives – the efficient development of the industry has been sacrificed to other interests. This experience has shown that there must be a clear separation between policymaking (which provides the direction and guidelines for long-term industry development), and operational management, (which must be able to plan and manage for effective long-term allocation and use of resources). The PTO must be independent from day-to-day political and government bureaucratic influence, but in turn fully accountable to the government and to the public for its performance in light of government policies.

How can government apply its PTO accountability criteria without compromising PTO independence? The increasingly adopted standard is to establish a regulatory agency that has a high degree of independence from both the PTO and government. This ensures the government stands at arm's length both to the operator(s) which provide services that implement government policies, and to the regulator which facilities the implementation of the government's telecom policies and applies the government's accountability standards in a dynamic market environment. Designing such as an institutional structure is a difficult task in any country.

3.0 Outline of the Book

The purpose and experience of government regulation of telecom and other public utility industries is reviewed as a reference point for designing the new telecom policy and regulatory structures. The telecom reform process has very similar objectives in all countries. Although the institutional models for attempting to implement these objectives can vary significantly across countries, they have much in common and most countries are seeking an acceptable form of international compatibility of policy and regulatory structures so as to facilitate their participation in the rapidly growing international networks.

William Melody draws on the experience and traditions of telecom and public utility regulation to identify the primary policy objectives and models of telecom regulation. Harry Trebing assesses the emerging market structures arising in the traditional public utility industries (including telecom) and considers options for regulatory reform in response to these new market structures. Pekka Tarjanne addresses the often neglected issue of the limits to national sovereignty in the new telecom

environment and raises important issues for the governance of international telecom as it becomes increasingly significant in the global economy.

The chapters in Section B examine technology trends, network developments and industry economics, and their implications for policy and regulation. William Melody documents the rise of interconnection, not only as essential to network development and a cornerstone of competition, but also as a regulatory issue of increasing importance in achieving most telecom policy objectives. Jens Arnbak addresses some important avenues of technological development now unfolding, particularly with reference to VLSI circuits, photonics and wireless technologies, and the issues they will raise. Robin Mansell focuses on the important techno-economic factors influencing the design of the new intelligent networks and the implications for different types of users and for policy development and regulation. Knud Erik Skouby reviews the changing industry structure and market characteristics and their implications for new services development, paying particular attention to the new carrier formations to provide one stop global shopping for the largest transnational corporations (TNCs). Morton Falch analyses the evolving cost and demand characteristics of the new network technologies and services.

In the enthusiasm over the new role of markets in telecom, it is sometimes forgotten that the establishment of telecom networks requires extensive use of essential public resources. The chapters in Section C examine the fundamentally important, but often overlooked policy and regulatory issues associated with managing essential public resources – rights of way, the radio spectrum and numbering. William Melody and Dorte Møller look at rights of way as a foundation for telecom infrastructure competition, noting that telecom competition policies have virtually never been coordinated with, or supported by rights of way policies that would facilitate effective market entry. Jens Arnbak outlines the more complex issues now arising for managing the radio spectrum in light of technological developments and the exploding demand for spectrum. Claire Milne shows how a seemingly mundane issue like a policy for numbering influences not only firm and industry efficiency, but also the range of services that can be offered and the very nature of competition that is possible.

We turn to the key issues of traditional telecom policy development and regulation in Section D, issues that have been and will continue to be vigorously debated because they have a crucial influence over the direction of industry development and the success of individual players. William Melody analyzes the different objectives and methods of price regulation, including the shift from the rate of return to the RPI-X price cap method that has occured in several countries, and the implications for efficiency, competition and consumer protection. Claire Milne examines quality of service issues and identifies key indicators that regulators can successfully apply to ensure effective service delivery in monopoly markets and submarkets. Richard Hawkins assesses the changing nature of technical regulation in a dynamic environment where the technologies, technical standards and protocols are continually changing. Nicholas Garnham reflects on the history of the universal service debate and its significance for future telecom sector development and finds it to be a less significant issue than most of the participants to the debate think it is.

The chapters in Section E examine essential tools for effective regulation – cost analysis, information, and statistical indicators. William Melody reviews the concepts and methods of network cost analysis that are central to the “cost-based” pricing principle

which is often naively seen as the ideal solution to telecom policy and regulatory debates on interconnection, competition and consumer protection. Fred Bigham summarises the considerable experience in applying cost analysis to Bell Canada at the Canadian regulatory agency (CRTC) over the past two decades and the lessons it offers for future regulation in Canada and elsewhere. Martin Cave takes a similar look at the more limited, but significant recent experience with cost analysis and cost modelling by OFTEL in the UK. William Wigglesworth draws on his considerable experience at OFTEL in an assessment of the importance of operational, financial and other performance information to effective regulation, noting how the simple publication of information, or even the gathering of information can facilitate the achievement of policy and regulatory objectives. Michael Minges outlines the important contributions statistics can provide in telecom regulation, noting the significance of international comparisons both for international policy discussions and for national regulation.

Most of the debate on telecom reform is directed to conditions that characterise the so-called economically developed countries. The primary issues relate to the technological upgrading of the existing national telecom systems and ensuring their extension toward universal service. But for many developing countries the problem is building national networks where, for all practical purposes, there have been only incomplete skeleton networks. Although many of the policy and regulatory issues they face are similar to those confronting developed countries, the circumstances often make the priorities for developing countries much different, and developing countries must address at the same time a number of issues that are unique to their circumstances. One need only scan the summary statistical data in Appendix 1 to appreciate the enormous gap in telecom development across the world. The great majority of the world's population still does not have access to a telephone. This book cannot adequately address the developing country issues. However it can draw some important lessons from the experience in attempting to establish telecom systems and services in underdeveloped regions in both developed and developing countries.

The chapters in Section F address some particular issues affecting developing countries. Roderick Sanatan and William Melody focus on the issues facing small developing countries in adapting to the global economy, noting the different priorities for development and the importance of informed participation in regional and international policy and regulation bodies that directly affect their development. Heather Hudson examines new opportunities for telecom development now made possible by converging technologies and changing economic and political circumstances. Aileen Pisciotta assesses global trends in privatisation and liberalisation, noting the diversity of approaches that have been taken in response to the specific circumstances in different countries. Ben Petrazzini considers the special problems of regulating telecom services in developing countries and different models of regulation that are evolving. Ken Stanley reviews trends in international revenue settlements and possible changes that might be on the horizon. As most developing countries are highly dependent financially upon hard currency revenue inflows from international revenue settlements, future changes in settlement methods and procedures could have significant implications for their domestic telecom system development.

The creation of intelligent networks, the growth of the Internet and the beginning of electronic trading introduces a range of new considerations that policymakers and

regulators will have to address. The chapters in Section G examine these developments and their potential for raising new policy issues and new requirements for consumer protection, and then assesses probable future trends in the US and the UK, the early starters in the telecom liberalisation movement. Rohan Samarajiva describes how the nature of communication relations changes as the capabilities of intelligent networks are applied to both corporate and personal communication, affecting not only privacy, security and the use of personal data, but also such important dimensions of communication relations as authentication, credibility and trust. Anders Henten focuses on the increasing trade in telecom-based services and the changing relations between the telecom sector reform movement and the liberalisation of trade initiatives now being pursued at the World Trade Organization (WTO). He notes the WTO has marked the telecom sector as a target for more rapid liberalisation than many countries are prepared to follow. Jeremy Mitchell assesses consumer needs and requirements for consumer protection in the more diversified telecom and information industry structures of the future and the possibility of fragmented regulation.

Perhaps the most significant change in national telecom legislation in many years was the US *Telecommunications Act of 1996* which attempts to liberalise all US telecom markets, including local telephone service, but retains a labyrinth of strengthed federal and state regulation. The new Act could have major implications for the sector both in the US and internationally. Walter Bolter examines the new legislation, and particularly the competition issues – interconnection, cost standards, and other matters affecting entry opportunities. Richard Collins and Christina Murroni consider future directions in telecom policy and regulation in the UK, especially if a labour government is returned to power in the near future. In a sense the new US Act begins its third wave of liberalisation reforms, following the FCC competition policies of the early 1970s and the AT&T divestiture in 1984. The first wave of UK reforms has pretty much run its course and the political parties and major players are preparing themselves for a second. These experiences may be instructive for countries now at earlier stages in their telecom reform process.

The book concludes with an analysis by the editor, building on the substantial material presented in the book, of the place of telecom regulation in the larger picture of national and global infrastructure and information society policies. He suggests a more proactive role for telecom regulation in implementing 21st century information society policies and programs must be seriously considered by policymakers in all countries if significant benefits are to be realised. The appendices provide summary statistical indicators of the status of telecom development throughout the world, information about the authors, and information about the Center for Tele-Information, the spawning ground for this book as well as for a program of research, teaching, conferences and seminars on the important telecom reform and information society issues of our time.