

https://dspace.org/

Shaping the telecoms network market structure in South Africa, 2000-2003: the role of policy and regulation

Naidoo, Kameshnee

2008-03-06T12:28:42Z
http://hdl.handle.net/10539/4565

Downloaded from a DSpace repository. https://dspace.org/

Shaping the telecoms network market structure in South Africa, 2000-2003: the role of policy and regulation

Kameshnee Naidoo

A thesis submitted to the Faculty of Commerce, Law and Management, University of Witwatersrand, in fulfilment of the requirements for the degree of Doctor of Philosophy

Supervisor: Professor W H Melody

June, 2006

Abstract

The South African government embarked on a liberalisation path of the telecoms sector in 1996 in order to establish a knowledge-based society and thus enhance all aspects of the economy to make South Africa globally competitive. Liberalisation of the telecoms sector was an integral part of its overall vision to improve the quality of life for all South Africans. Market-based reform was the central philosophy underpinning the growth strategy for South Africa. ICT was recognised as key to growth and development.

To date, international telecoms reform has focused on managing the transition from traditional monopoly markets to effective competition. The key steps in this process have been the commercialisation and ultimate sale of state-owned assets, licensing competitors, setting sector-specific regulation by independent national regulatory authorities to implement the market reform policies and ensure public interest objectives are met. As a result of rapidly changing technology, the unanticipated rapid and pervasive uptake of mobile services, the influence of international financial advisors and suppliers of telecoms equipment who all stand to gain, the reform process in developing countries has been controversial. Also, often after the first phase of market liberalisation, entrenched private sector incumbents make further reform in developing countries difficult. The focus of this study is on the second-phase of reform in South Africa after the initial market liberalisation.

The research analysed the changing configuration and structure of the South African telecoms network market during the transition from monopoly to competition (2000-2003) within the framework of competition rules to determine how government's "managed liberalisation" policy and regulatory decisions have shaped (and are shaping) the competitive dynamics of the South African market. The findings were utilised to analyse its implications for the development of South Africa's information society and provide a framework for policy-makers and regulators on effectively shaping telecoms network markets in transition.

This study contextualised the South African telecoms situation within the dynamics of an international market by examining the changing role of the market in telecoms policy formulation in both developed and developing countries. This research looks at the current debates on the information society and liberalising telecoms markets in order to assess the impact of policy and regulatory interventions in selected national markets deemed relevant to this investigation e.g., United States, United Kingdom, India, Nigeria, Morocco, Uganda and Sri-Lanka. Based on an information society paradigm, the study involved multiple methods incorporating primarily qualitative research to investigate the actual development on the ground of competition in South Africa since the start of the managed liberalisation process. Secondary statistical data was utilised to understand market development and dynamics. The analysis combined competition rules and regulatory principles based on international experience together with the South African experience with sector liberalisation derived from interviews, focus groups and data analysis of the market. The study uses market structure analysis, with specific reference to telecom network markets as the basic framework of analysis. This is further enhanced by analysing the broader dynamics of the business, communications, policy and regulatory environments and an analysis of the performance of infrastructure companies in the telecoms network market in South Africa.

The analysis explains how the managed liberalisation policy of the South African government has constrained growth, allowed incumbent operators to entrench themselves, generally failed to meet the needs of most consumers and limited South Africa's aspirations to join the global information society. Despite technically meeting the form of most international best practice standards on market reform, there has been a lack of commitment to the substance i.e. effective competition, inconsistent application of regulation, the absence of a clear strategic framework and failure to undertake detailed market analysis throughout the process. The result has been artificial barriers to investment and constrained growth in the telecoms sector. In particular, a pre-occupation with the narrow licensing of individual technologies and specifically defined service classifications has created an unnecessarily complicated implementation regime hindering market development. The lack of competition at the core infrastructure level

has constrained growth and innovation at the upper levels of the telecoms sector value chain, i.e. network services, that are dependent on access to the fixed line network.

The study provides recommendations to increase investment in the South African ICT sector which include: clarifying national policy objectives and reviewing the current licensing framework; implementing widespread market reform; instituting market and competition review processes; allowing for increased competition review processes and increasing independence and accountability of the regulator.

The research outlines strategies to counter the effects of a weak competitive environment, infrastructure and resource shortages and the lack of strong administrative structures in South Africa that are applicable to most developing countries. It suggests the following measures to drive competitive markets and enhance ICT growth: ensuring political commitment to market liberalisation and market-driven macro-economic policies; focusing on licensing major operators; instituting technology neutral licensing; reducing the need for regulatory decisions by accelerating competition and harnessing regional skills to strengthen regulatory effectiveness.

Finally, this study demonstrates that ICT market development and policy is rooted in and influenced by many factors and disciplines. Thus the research suggests an integrated and holistic approach for analysing network markets in transition.

Declaration

I declare that this thesis is my own, unaided work. It is submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other University.

_____

Kameshnee Naidoo

Johannesburg, June 2006

For my children, who served as inspiration…

Glossary of terms

ANC – African National Congress

BMI-T – BMI-Technology, South African telecommunications market research firm

BT – British Telecom

CAGR – Compound annual growth rate

CDMA – Code division multiple access

CEO – Chief executive officer

COA/CAM – Chart of Accounts and Cost Allocation Manual

Cosatu – Congress of South African trade unions

CPP – Calling party pays regime

CPS – Carrier pre-selection

CS – Carrier selection

EBITDA – Earnings before interest, taxation, depreciation, amortisation

FCC – Federal Communications Commission

GDP – Gross domestic product

GNI – Gross national income

GSM – Global system for mobile communications

Icasa – Independent communications association of South Africa

ICT – Information and communications technology

IMF- International monetary fund

IPO – Initial public offering

ISP – Internet service provision

ITU – International Telecommunications Union

LLU – Local loop unbundling

MCTS – Mobile service telecommunications service

MTN – Mobile telephone networks

NCC – Nigerian Communications Commission

Nepad – New partnership for Africa's development

OECD – Organisation for economic cooperation and development

PSTN – Public service telephone network

PSTS – Public service telecommunications service

PTO – Public telecom operator

SACP – South African Communist Party

SADC – Southern African development community

SLA – service level agreement

SNO – Second network operator

SOE – State-owned enterprises

TRAI – Telecom regulatory authority of India

UCC – Uganda Communications Commission

UK – United Kingdom

USA – United States of America

USAL's – Universal service area licence

VANs – Value-added network services

VoIP – Voice over Internet Protocol

VPN – Virtual private network

VSAT – Very small aperture terminal

WLL – Wireless local loop

WTO – World trade organization

Table of Contents

Abstract **2**

Acknowledgements **13**

1 Introduction and overview **16**

1.1 Context 16

1.2 Problem 19

1.3 Purpose of the research 20

1.4 Limitations 20

1.5 Significance of the study 21

1.6 Theories of the information society 22

1.7 Research question and sub-questions 25

1.8 Structure of the report 26

2 Methodology **29**

2.1 Research methods 29

2.2 Data-gathering methodology 32

2.3 Research design, sampling and data collection 34

2.4 Data analysis 37

2.5 Conclusion 38

3 Key issues in telecoms network markets **39**

3.1 Overview of market structure analysis 39

3.2 Key issues affecting telecoms network market structure 40

3.3 Telecoms network markets — Local industries with global influence 45

3.4 Conduct — Company dynamics in a newly competitive environment 55

3.5 Sector performance 59

3.6 Enhancing the structure-conduct-performance model 63

3.7 Conclusion 67

4 Changing role of the market in telecoms policy development **69**

4.1 Structural components of international reform 69

4.2 International benchmarks 71

4.3 Conclusion 90

5 The African business environment 92
5.1 Background 92
5.2 Mobile — An overview of some successes 95
5.3 The African telecoms environment 97
5.4 Telecoms and investment risk for the private sector 99
5.5 Conclusion 102
6 Changing role of the market in telecoms policy development. Developing markets case studies 104
6.1 Uganda 105
6.2 Botswana 108
6.3 Morocco – introducing a strong and effective regulator 109
6.4 Nigeria 111
6.5 India — embracing a commitment to market competition 114
6.6 Sri Lanka — The benefits of competition 119
6.7 Conclusion 122
7 Overview of South African policy and regulatory environment 125
7.1 History and overview 125
7.2 Managed liberalisation 127
7.3 Overview of key policy provisions and analysis of the policy 132
7.4 Way forward — Attempts to reform the sector 148
7.5 Key Issues with the reform process in South Africa 148
7.6 Conclusion 149
8 Characteristics of the South African marketplace 151
8.1 South African economic overview 151
8.2 The communications environment in South Africa 152
8.3 Market overview 152
8.4 Market analysis 153
8.5 Conclusion 186
9 Company dynamics 187
9.1 Financial performance — fixed line services 188
9.2 Financial performance — mobile services 191

9.3 Conclusion 194
10 Conclusion 195
11 Recommendations for creating an enabling environment to encourage ICT investment 206
11.1 Recommendations to increase investment in the South African ICT sector 206
11.2 Institute proper market and competition review processes periodically 207
11.3 Strengthen Icasa by allowing for increased independence and accountability ... 209
11.4 A framework for policy-makers and regulators in shaping telecoms network markets in transition 210
11.5 Reduce the need for regulatory decisions by accelerating competition 215
11.6 Contribution to knowledge and linking the theoretical basis 216
11.7 Areas for further research 217
12 References 219
13 Appendix 1 233
13.1 Semi-structured interview guidelines — Categories of questions 233
14 Appendix 2 234
14.1 Focus group discussion guide — medium and large business 234
15 Appendix 3 235
15.1 Focus group discussion guide — consumers 235
16 Appendix 4 236
16.1 Detailed company analysis 236

List of Figures

Figure 1 — Data-gathering approach 33
Figure 2 — Separation of regulatory and operational functions internationally 43
Figure 3 — Level of competition in basic services by region (2004) 43
Figure 4 — Level of competition in mobile services by region (2004) 44
Figure 5 — Telecoms cost characteristics 52
Figure 6 — Research approach 66
Figure 7 — Driving forces of reform in the telecoms sector 71
Figure 8 — UK telecoms industry turnover 76
Figure 9 — Key drivers of growth in UK economy 73
Figure 10 — Telecoms contribution to UK GDP 77
Figure 11 — Share of UK telecoms industry revenues 78
Figure 12 — Layered model of regulation 82
Figure 13 — World telephone subscribers, global fixed versus mobile connectivity 94
Figure 14 — Current state of and forecasts for mobile penetration on the continent 96
Figure 15 — Fixed and mobile subscribers 106
Figure 16 — Number of fixed lines and mobile subscribers in Botswana 108
Figure 17 — Number of fixed lines and mobile subscribers in Nigeria 112
Figure 18 — Indian Regulatory Reform 118
Figure 19 — Number of fixed-line subscribers in Sri Lanka 120
Figure 20 — Key financial indicators for South Africa 126
Figure 21 — Overview of the introduction of competition in South Africa 129
Figure 22 — Rating telecoms regulators 147
Figure 23 — Analysis of fixed traffic in South Africa 155
Figure 24 — Fixed and mobile connectivity in South Africa 171
Figure 25 — South African telecoms indicators against Sub-Saharan Africa 174
Figure 26 — Fixed connection charges 179
Figure 27 — Actual cost of Internet access over a ten-year period 182
Figure 28 — Analysis of Internet costs in South Africa 182
Figure 29 — South African landline termination rates 184

Figure 30 — South African mobile termination rates 184
Figure 31 — Fixed access lines Telkom versus British Telecom 189
Figure 32 — Revenue per fixed access line Telkom versus British Telecom 190
Figure 33 — International comparison of key operational data 190
Figure 34 — International comparison of fixed and mobile operators 191
Figure 35 — MTN mobile subscribers against initial business plan 192
Figure 36 — International comparison of mobile operators 192
Figure 37 — International comparison of mobile operators' operational data 193
Figure 38 — Recommended model of reform for markets in transition 217

List of Tables

Table 1 — Focus group sampling 36
Table 2 — Key indicators for benchmark countries 38
Table 3 — Differences between monopoly and competition 41
Table 4 — Differentiated customer demand characteristics 47
Table 5 — UK telecoms market players 75
Table 6 — Strengths and weaknesses of the UK policy and regulatory system 79
Table 7 — Telkom line rollout targets 128
Table 8 — Telkom penalties 128
Table 9 — Comparing structural components of international reform with SA 134
Table 10 — SA policy analysis against international best practice 135
Table 11 — Contribution to GDP by sector 152
Table 12 — Competitive status of the telecoms markets in South Africa 153
Table 13 — Large tier-one VANs players 158
Table 14 — Market summary 160
Table 15 — Mobile market competitiveness 161
Table 16 — Faults per 100 main lines 169
Table 17 — Main lines per 100 inhabitants 172
Table 18 — Telecoms revenue per capita (US$) 173
Table 19 — Telecoms investment per capita (US$) 174
Table 20 — Revenue/main line in operation (US$) 176
Table 21 — Annual telecommunication investment 175
Table 22 — Overview of telecoms service prices in South Africa 179
Table 23 — Mobile connection charges 180
Table 24 — Comparative international bandwidth costs 183
Table 25 — Telkom Group five year financial review (includes mobile stake) 188
Table 26 — Mobile operators financial review: South Africa 191
Table 27 — Financial analysis of third entrant mobile operators 194
Table 28 — International industry growth since liberalisation 205

Acknowledgements

I would like to acknowledge the contribution of my supervisor, Professor William Melody, whose experience and knowledge of the telecoms sector is remarkable, for his constant support and encouragement.

Thanks also to Dr Cecile Badenhorst for always being at the other end of the line, for providing much needed guidance and support and for the final check, and, most importantly, for a sympathetic ear.

My heartfelt gratitude to my family, especially my parents, without whose support this would not have been possible.

Finally, thanks to Avi and Shrian for your patience and understanding throughout the process.

1 Introduction and overview

1.1 Context

There is widespread international acceptance that information and communications technologies (ICTs) can act as a catalyst for economic growth, alleviation of poverty and enhanced business competitiveness. The information intensity of the global economy has increased vastly over the past few years, creating increased demand for improved communications, a wider range of services and cheaper communications services. In many emerging economies, ICT has been identified as a strategic industry and it has become one of the key drivers of socio-economic growth. The availability of telecoms infrastructure is regarded as an important indicator of economic development and is the third most important factor in the location decisions of multinational corporations, after political stability and a skilled workforce (*The Straits Times*, 1997b in Heracleous, 1999). Further, recent studies on the impact of telecoms on economic growth in developing countries have found that a 1% increase in mobile phone penetration increases overall economic growth by 6.75%. (Sridhar and Sridhar, 2004; Waverman, Meschi and Fuss, 2005)

As a result, governments have made conscious decisions to restructure the sector towards more competitive markets in order to attract private sector investment and entice new entrants into the market through gradually relaxing and reducing the rules and regulations governing the industry. Telecoms reform also has been driven by massive technological innovation, which has allowed for improved telecoms services at substantially lower costs. To attract private sector investment, a policy and regulatory environment that creates certainty, is predictable, encourages competition and can be regulated efficiently (where necessary) is required. However, to date, varying levels of market reform have been reached, particularly in developing markets. Governments have struggled to introduce competitive markets and, in some instances, especially in South Africa, further entrenched private sector monopolies.

1.1.1 Reform in South Africa

Since the first democratic elections in 1994, the newly elected ANC-led government has faced the dual challenges of repairing the imbalances created by apartheid and developing an economic policy that would reassure the financial markets to continue investing here. The Reconstruction and Development Programme (RDP) was designed to address issues of basic service provision to underdeveloped areas as part of the larger macro-economic reform programme. The RDP was later complemented by the Growth, Empowerment and Redistribution (GEAR) strategy, which called for a tightening of fiscal policy through a reduction of government spending combined with an increase in revenue. Addressing the legacy of inequality and inappropriate infrastructure provision has been key to government's reform strategy. Privatisation was to play a crucial role in achieving these objectives by:

- Generating revenue for the implementation of the RDP;
- Contributing towards the targeted reduction of the budget deficit;
- Enabling job creation and redistribution of wealth to disadvantaged communities; and
- Enabling efficiencies and increased sector investment in key industries through private sector involvement.

Since the publication of the initial RDP document, there have been a number of further elaborations of the government's key objectives in various policy statements, including GEAR and the National Framework Agreement in 1996. The policy documents consistently focus on restructuring the economy, expanding infrastructure provision, creating competitive markets and attracting foreign direct investment. Government has adopted a gradual approach to liberalisation in an effort to manage the various conflicting pressures around privatisation of the sector, maximising state benefits and addressing the legacy of inequality.

To further market-based reforms, the Department of Public Enterprises outlined its plan for the restructuring of state assets in 2000. In its plan, the restructuring of state assets was identified as important not only to maximise the contribution to state funds but also to improve the standard of living of the majority of the population and ensure sustainable

economic and social benefits. "Government's strategy focuses on restructuring that benefits all South Africans by expanding infrastructure services that are competitively priced and accessible, and provide an opportunity for economic participation." (Department of Public Enterprises framework document, 2000) Privatisation of state-owned enterprises and gradual market liberalisation is an important strategy underpinning the ANC's plans for macro-economic growth.

As part of these macro-economic changes, the ICT sector has been identified by the current South African government as particularly important to growth and development as early as the 1990's with Minister Jay Naidoo. President Thabo Mbeki further outlined the importance of the ICT sector in South Africa a decade later by establishing a National Presidential Commission on Information Society and Development, constituting representatives of South Africa, along with an International Presidential Task Force on Information Society and Development, comprising CEOs from major international corporations and experts active in the field of information and communication technology, "because of the critical importance of this sector" and "to assist the government as it works further to ensure that we do not fall further behind the rest of the world as a result of the digital divide." (Mbeki, 2001) Some of the key objectives outlined by Government in its macro-economic policy and telecoms policy include:

- Lowering resource input costs, including inflation targeting;
- Developing an internationally competitive infrastructure;
- Spearheading development on the continent; and
- Attracting foreign investment and job creation.

Furthermore, as part of the New Partnership for Africa's Development (Nepad), President Mbeki and other African leaders have identified the ICT sector as one of three key areas in which a co-ordinated effort will be initiated across Africa to stimulate greater investment from the private sector, both local and foreign. Nepad identifies infrastructure development as one of the steps in sustainable development. Poor ICT infrastructure, "combined with a weak policy and regulatory framework and limited human resources, has created inadequate access to affordable telephones, broadcasting, computers and the

Internet" and combined with high service costs has resulted in African countries being unable to capitalise on the benefits created by the ICT industry. (Nepad document, 2001:23) Key objectives have been to double teledensity to two lines per 100 people by 2005, with an adequate level of access for households, to lower costs and improve reliability of service, among others. The Nepad programme has largely been spearheaded by the South African government and forms a key strategic initiative for South Africa.

In addition to national and regional strategies to enhance ICT development, South Africa is a signatory to the WTO agreement on Basic Telecommunications Services and has committed to opening its telecoms markets by undertaking to do the following:

Before 2003	• Liberalise resale services
End 2003	• End monopoly supply and introduce a competitor in public switched, facilities-based services including voice, data transmission, telex, fax, private leased circuits and satellite-based services
	• Review feasibility of allowing additional suppliers of public switched services
In addition	• Duopoly supply of mobile cellular telephony
	• No limitations on the number of suppliers of paging, personal radio communication and trunked radio systems
	• Foreign investment in telecoms limited to 30%
	• Also to uphold the commitments in the Reference paper on regulatory principles

1.2 Problem

Telecoms reform is a complex process, encompassing a wide range of social, economic and political objectives, some of which are conflicting. In many countries, it has taken years for policy-makers and regulators to understand the dynamics driving the sector and to implement relevant reform processes.

To date, international telecoms reform has focused on managing the transition from traditional monopoly markets to effective competition. The key steps in this process have been the sale of state-owned assets, licensing competitors, setting sector-specific regulation to prevent incumbent abuses of monopoly power and installing independent national regulatory authorities. Most (or Many), countries have had varying degrees of success in implementing reform and, in some instances, there is less competition, fewer consumer choices and higher prices than prior to reform. As a result of rapidly changing technology, unanticipated uptake of mobile services, the influence of international financial advisors and suppliers who all stand to gain from the process, the reform process in developing countries has been controversial. Also, often after the first phase of market liberalisation, entrenched private sector incumbents make further reform in developing countries difficult.

1.3 Purpose of the research

Policy and regulation have a profound impact on the development of competition in the telecoms sector. This research seeks to analyse the changing configuration and structure of the South African telecoms network market during the transition from monopoly to competition (2000-2003) within the framework of competition rules to determine how government's "managed liberalisation" policy and regulatory decisions have shaped the competitive dynamics of the South African market. The findings were utilised to analyse its implications for the development of South Africa's information society and provide a framework for policy-makers and regulators on effectively shaping telecoms network markets in transition.

1.4 Limitations

This is a multi-disciplinary study that involves research in the academic literature and practical experience in the sector and, as such, the following limitations were experienced:

- The applicability of utilising benchmark indicators from other jurisdictions in order to establish trends, market development, policy, regulatory and firm strategy, etc, for the

unique South African situation. Broad examples of policy and regulatory strategy are highlighted with subsequent market impact to provide some background and context.

- Market, policy and regulatory development is ongoing, particularly the licensing of new operators. Many of the stakeholders, including government and other operators were reluctant to openly discuss issues certain issues around strategy, given the sensitivity and competitor advantage.
- Rapidly changing technology continues to significantly affect the industry dynamics.

Finally, the author is currently employed by a large operator in the telecoms industry and thus the objectivity of some of the responses may have been influenced (aka biased) by the respondents knowing who the interviewer worked for. In addition, although every effort has been taken by the author to remain objective, some of the inherent bias could have been introduced by the views of the author.

1.5 Significance of the study

The results of this research may be pertinent to authorities responsible for policy and regulation in the ICT sector, particularly in South Africa. Furthermore, many developing countries are in similar stages of market reform and the findings of this report could be of interest to policy-makers who are likely to face similar policy decisions as they seek to introduce competition in their own markets.

The research seeks to contribute to telecoms research by providing policy and regulatory recommendations for markets in transition. It also seeks to provide a basis for private sector investment in order to give a greater understanding to policy-makers and regulators for the markets which they seek to regulate. The results of this are intended to provide inputs into recommendations into policy and regulatory factors that can reshape the market amid the backdrop of changing political, technological, social and economic forces. The challenge for developing markets is to develop policy and regulation that support the underlying vision.

1.6 Theories of the information society

Information society discourse varies in its analysis of the social, economic and political significance of the information society, but, all commentators agree that the combination of information technology, telecoms and media will bring about fundamental changes in society – whether good or bad. Overly optimistic theorists link changes in technology to changes in lifestyle and improvements for society. Others see new technologies as hindering development, threatening cultural identity and imposing technological dependency on developing countries. Regardless of the points of view, information society issues are increasingly on national and international agendas as governments attempt to harness the advantages of technology. This section will attempt to provide a background to information society discourse which will form the basis for the research methodology undertaken in this study.

1.6.1 Premise of the information society

The roots of the information society idea are intertwined in a complex web. Some of the ideas are not new and are situated within the context of post-industrialist theories. When industrial society replaced agricultural society, the emphasis shifted from land to manufacturing. In post-industrial society the emphasis is shifting from manufacturing to service provision. In post-industrial theory, society is interdependent with technology and the economy is more dependent on government and the political process. There are identifiable differences within the information society that set it apart from manufacturing economies. Castells defines this as information to act on technology rather than knowledge to increase the power of technology (1999:49), while Lyon argues that "knowledge and information supplant labour and capital as the central variables of the economy." (1995:56)

The underlying premise for information society theories is that "modern productive systems no longer depend on labour, land and capital as their primary input; rather they require information" thus creating new production systems and new ways of working (Mackay, 2001:8). Information society debates are centred on a few major themes: primary among these is the changing economy, the changing nature of work and

changing patterns of inequality. Information as new knowledge applies primarily to the generation and processing of knowledge and information rather than application to a technology as in the industrial revolution. Processes of production, distribution and management across organisations are linked through a series of networks and flows. The information society is characterised by an increase in network technologies and an increase in service-related sectors.

Access to telecoms and computing is increasingly biasing access to economic activity. Information society theorists argue that there is a reordering of the social structure as power and status are distributed in new and different ways. Access to information and communication technologies reflects and reinforces social divisions, with a growing polarisation between access to information and "information have-nots". Real-time access to information at any time and any place implies that time and space are of less significance in shaping social organisation and interaction. Castells identifies a global economy as "an economy in which all processes work as a unit on real time throughout the planet; that is, an economy in which capital flows, labour markets, the production process, management, information and technology operate simultaneously at the world level." (1999:54)

The modern economy is dominated by corporations, particularly large transnational organisations that operate at both a local and a global level. These corporations often determine the local landscape and dominate global and local policy. Power increasingly rests with transnational corporations. Transnational corporations do not develop along territorial boundaries; instead, they invest where the labour, government policy and infrastructure are favourable and promise higher profits. "The movements of capital and labour across the globe are further facilitated by the transportation, telecommunication and tourism technologies that have made central and global strategic planning possible." (Tehranian and Tehranian, 1997:133) To be able to conduct business, investment decisions are influenced by a number of factors. Key among these is the availability of infrastructure. Tehranian and Tehranian further elaborate that "productivity and competitiveness rely less and less on primary resources and use more and more

knowledge and information – cheap, unskilled labour and raw materials cease to be strategic inputs in the new economy." (1997:133) Countries are dependent on foreign capital and increased investment. What this implicitly implies is that to be globally competitive, countries need the technological infrastructure underpinning the global economy to support this. Any country that does not have this infrastructure maybe effectively excluded from participating.

Overt claims of technological determinism are evident in information society theories — "the notion that technology shapes society, that technology is an independent factor, somehow outside society, and that technical change causes and is responsible for social change." (Mackay, Maples, Reynolds, 2001:29) Technological determinism assumes a passivity about technology by focusing on the effects of technology and society's challenge in adapting to the constant stream of new technologies. But, it fails to consider that society can also influence technology and the inherently political nature of technology. Castells attempts to address the problem of technological determinism by arguing that the network society "represents a new variant to capitalism", thus creating a new class system. (2000:71)

The new technologies which handle and process information simultaneously influence diverse but significant aspects of social, cultural and political reality. Information society theory is resonant with the theoretical immaturity of a new paradigm. It lacks the critical analysis and rigour of more developed social theories. But similarly, "in presenting his social epistemology Kuhn does not pretend to be offering a fully worked-out solution to the problem of the basis of our knowledge. He merely offers a beginning, a starting point for our thought." (Barnes, 1985) Information society theories offer a starting point for analysis and must strike a balance between overly optimistic futuristic predictions and critiques. Rather, it should be situated within the realities of political, economic and social dynamics. As Lyon notes, information society theories assume a vital role for serious social analysis in the policy-making process, "analysis which is not simply shut up within either optimistic or pessimistic scenarios." (1995:70)

These ideas on information society are particularly useful in multi-disciplinary studies involving political, social and economic elements that are inter-related and dependent in some instances on technology, society and government policy.

1.7 Research question and sub-questions

The previous section outlined the relevance and importance of the availability and affordability of ICT's to the growth and development of a country. For a developing country like South Africa that is primarily dependent on primary industries, a move towards ICT's is necessary to stimulate GDP growth, increase employment and attract investment thus ensuring a better quality of life. Thus, the research question and sub-questions were formulated with the objective of providing a framework within which to analyse the changing configuration and structure of the South African market during the transition from monopoly to competition (2000-2003) within the framework of competition rules, in order to provide a framework for policy-makers and regulators on effectively shaping telecoms network markets in transition.

Research Question:

How has policy and regulation shaped the structure of the market in South Africa during the transition from monopoly to competition?

Sub-question 1: To what extent does the managed liberalisation process demonstrate government's commitment to the creation of effective competition in telecoms services, driven by private-sector investment?

Sub-question 2: How has the policy of managed liberalisation affected consumers of telecoms services and thus development of the information society?

Sub-question 3: How has the policy of managed liberalisation and regulation affected firm performance and behaviour?

By attempting to understand market development and performance through the examination of the various facets of the market, the research question attempts to provide guidance for regulators and policy-makers in creating policy and regulation that will allow for healthy competition and sectoral growth that will be of benefit to consumers, the economy and society.

1.8 Structure of the report

This thesis is divided into twelve chapters. Chapter one outlined the context and purpose of the research and the research question. The study is based on an information society paradigm, and involves multiple methods which incorporate primarily qualitative research methods to investigate the development of competition in the South African market since the start of the "managed liberalisation" process. Secondary statistical data from recognised sources like the World Bank, IMF, Statistics SA, ITU, etc, was also utilised to understand the market development and dynamics. Chapter two outlines the methodology used in this study. Chapters one to three attempt to provide a theoretical basis within which to examine the South African market and contextualise it within the global marketplace in order to understand market developments here based on the experience of other markets.

Telecoms market development is intricately linked and influenced by global developments in telecoms, especially policy and regulation, demand dynamics and changing supplier dynamics. As such, this thesis attempts to contextualise the South African telecoms situation within the dynamics of an international market. This study uses market-structure analysis. It attempts to provide a characterisation of the South African telecoms network market structure by relating the market structure with the behaviour of the economic agents who operate in it and the performances these relationships generate (Clarke, 1985:10). It is important to recognise, however, that one-way causations running from structure to conduct to performance can be simplistic as a theoretical framework, particularly in a diverse and complex market such as South Africa, which exhibits characteristics of both First and Third World markets. Added to this is the complexity of network industries and the various dimensions within this

industry. Therefore, the study takes cognisance of the complexity of relationships between structure, conduct and performance and attempts to provide a holistic picture of the South African market by analysing the broader dynamics of the business, communications, policy and regulatory environments and a strategic-company analysis. Chapter four examines the changing role of the market in telecoms policy development in developed markets, attempts to detail the theory of monopolistic and competitive markets, specifically telecom network markets, in order to understand the economic dynamics driving sector reform.

The issues driving reform in developing countries are vastly different from the compelling issues that drive market reform in developed markets and thus, chapters five and six attempt to understand the changing role of the market in developing economies and the key issues driving sector reform.

The analysis of the South African market in chapters seven, eight, and nine attempts to provide an overview of the South African telecoms marketplace, including a broad macro-economic overview of the country, detailing the reform process and attempting to understand the market dynamics based on the research and the firm dynamics within the sector.

Chapter ten attempts to draw conclusions about the South African market based on the material analysed in preceding chapters and to make recommendations for further reform.

Chapter 12 utilises the findings and analyses from the previous chapters to make overall policy recommendations. This research looks at the current debates on the information society and liberalising telecoms markets in order to assess the impact of policy and regulatory interventions in key markets, e.g. the United States, the United Kingdom, India, Nigeria, Morocco, Sri-Lanka, Botswana and Uganda as well as an analysis of the performance of the South African market during its period of transition. A large body of research has been driven by developing-country experiences with market reform. This research departs from the literature in that the primary focus is on the impact of policy

and regulation for markets in transition. Existing literature has a primarily public-sector focus. This research also attempts to provide a characterisation of the development of the market and company behaviour from a private-sector perspective. Finally, this research attempts to utilise the findings from the overall market analysis to provide a framework for policy-makers and regulators on effectively shaping telecoms network markets in transition.

2 Methodology

Introduction

Multi-disciplinary studies that seek to understand a range of issues require a range of research data in order to gain a holistic perspective on the issues. This will include both quantitative and qualitative data analysis. In keeping with this, this research adopts multiple approaches that seek to examine a number of factors in order to provide a holistic framework of the key drivers and trends in the market. The chapter outlines the research design and some of the key theoretical debates.

2.1 Research methods

The purpose for this research is not to "triangulate" the interview and focus group data with the statistical data, (i.e. to verify one set of data against another) but it is to be used in a complementary manner (Bryman and Burgess, 1994:222). In a period of dynamic change, there are several limitations to quantitative data, e.g. trends are often difficult to capture as they are not static and data points have a short lifespan. The data analysis is important to understand the overall telecoms market development. The qualitative component will provide a depth of understanding to the different dynamics affecting effective competition in the market. More particularly, each brings its own strengths to the research process and contributes to enriching the analysis.

While data indicators like teledensity, line growth and revenues are useful to provide an indication of the development of the market, it does not fully represent the dynamics of the market, i.e. quality of service, vertical integration, customer service, new products, etc. It is also difficult to determine the behaviour and practices of the incumbent operator utilising quantitative data alone. In a market in transition that has only had a monopoly operator, customer experiences become increasingly important as they provide anecdotal evidence on the market conditions that would not otherwise be indicated in the quantitative data alone. As a result, the two methods complement each other and provide a holistic picture of market development. Bryman (1988:10) acknowledges that there is a

view that "quantitative and qualitative research are different ways of conducting research and that the choice between them should be made in terms of their appropriateness in answering particular research questions."

Qualitative research methods

The fundamental characteristic of qualitative research attempts to view events, actions, norms and values from the perspective of the people who are being studied. This approach also entails a capacity to penetrate and understand the frames of meaning within which the research is being undertaken. Qualitative research is assumed to generate concepts that are then able to form the building blocks of theory (Bryman and Burgess, 1994:219). There is still significant debate about the extent of the generalisability of the theory created as well as the degree to which theory is being generated, however. (Glaser and Strauss, 1967:220)

Qualitative research is situated within a holistic context, so that the meanings ascribed are set within a context of values, practices, underlying structures and multiple perceptions. As a result, the multi-dimensional aspect of the research must be considered to include the social, political and economic aspects that drive policy change and ultimately affect market structure.

Nevertheless, this is a multi-disciplinary study that involves both research in the academic literature and experience within the sector itself. Therefore, the methodology must involve multiple methods by which information is drawn from various sources using different methods. The research incorporates a range of methodologies, similar to the approach adopted by Krairit (2001).

Literature review: Using international experience with telecoms liberalisation, the researcher attempted to establish a frame of reference and against this evaluated the success or failure of key policy choices, e.g. market structure, market performance and ongoing sector regulation within the South African ICT sector. These included

examining both developed and developing countries to provide a benchmark for South Africa.

Discourse analysis: Through the analysis of communications arising from the public consultation processes surrounding the new telecom policy, the researcher sought to ascertain the positions of various industry stakeholders on critical political, competitive and economic issues, e.g. managed liberalisation.

The first two steps were completed as part of the detailed literature review. The findings from this research were then further analysed and validated in the context of the South African situation, as outlined below.

Semi-standardised interview: To triangulate and add rigour to the research process, key individuals and organisations, including small, medium and large telecoms users in the telecoms industry, were interviewed to incorporate the user experiences from a number of perspectives. The semi-standardised interview involved the implementation of a number of predetermined questions and/or special topics. While the questions were asked in a systematic order, the interviewer was given the freedom to digress, thus enabling her to investigate more fully the interviewees' perceptions about the issue being investigated. This method also gave the interviewer flexibility to adapt the "research instrument to the level of comprehension and articulacy of the respondent" and allowed subjects to volunteer information so that a fuller picture of the market dynamics could be gauged. (Fielding, 1993:136)

Telecoms is often considered to be a key strategic advantage by most businesses. As a result interviewees were reluctant to divulge commercially sensitive information in a structured manner. Exploring topics, ideas and engaging in conversation was more likely to reveal information without threatening the interviewee. Aspects that were delved into included understanding the importance of telecoms to businesses, their propensity to switch, pricing dynamics between service providers, the range of services purchased and

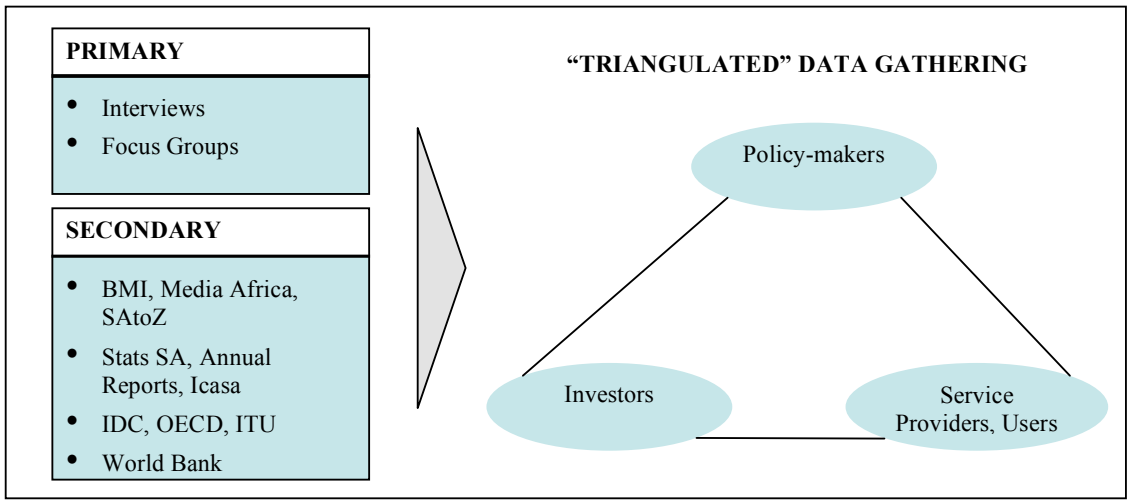
quality-of-service issues. In reporting the results of these interviews, the respondents' names, titles and organisation will not be disclosed because of confidentiality concerns.

The Focus Group Interview: As Everatt and Samuels (1995:25) explain, focus groups aim, through semi-structured discussions with selected groups, to discover how participants feel about the subject(s) being discussed. Berg (1995:69) points to the dynamism of properly administered focus groups and notes, "interactions among and between group members stimulate discussions in which one group member reacts to comments made by another". When testing new concepts or products it is difficult to gauge understanding and reaction on a one-on-one basis. As a result of this process of interaction among the interviewees, more ideas, issues, topics and sometimes — increased understanding are generated than through individual conversations. As with the semi-structured interviews, focus group sessions were used to probe the responses of respondents on their perceptions of telecoms services in South Africa.

2.2 Data-gathering methodology

The research approach combined data-gathering activities into qualitative methods which included interviews, policy analysis and focus groups with data analysis which examined industry data like market shares, connectivity, revenues, profitability and price in order to draw conclusions about the current levels of competition and the structure of the market. The figure below unpacks the triangulated data-gathering approach and includes primary and secondary sources such as policy-makers, investors, service providers and users. This method is utilised to ensure that a holistic picture of the South African market is analysed.

Figure 1 — Data-gathering approach



Adapted from Pyramid Research, 2001:IX

Throughout the data-gathering process, the analysis framework outlined in earlier chapters will be used to guide the relevant issues and supporting data.

Quantitative data collection consisted of a process of collecting already available secondary data that has been published by reliable sources. The use of secondary research sources was chosen as the sources below were believed to provide the most accurate data available. It would have been impossible to conduct primary data collection within this study, given the time and resource constraints, as well as the commercial sensitivity of the information. The key data sources for the quantitative aspect of the study were:

- SA technology market research reports from BMI Technologies, Media Africa, SAtoZ, Stats SA, Company Annual Reports, Nedlac, Analyst Reports;
- Policy and regulatory information from government gazettes, Icasa, media reports;
- Technology market research company reports, i.e. International Data Corporation, Pyramid Research (Economist Intelligence Unit), Media Africa, BMI Technologies, etc;
- International data indicators from the ITU, OECD, World Bank, IMF;
- Website market indicators from international regulators; and
- Proprietary research to which the researcher had access.

2.3 Research design, sampling and data collection

A sample of potential respondents for interviewing was selected on a non-probability, judgemental basis, informed by years of experience working in the field, and based on the researcher's knowledge of the various players actively involved in the telecoms sector in South Africa. The size of the sample was based on the need to ensure a cross-section of experts, current customers, key industry players and potential private-sector investors. The complexity of the research topic implies that the number of experts involved in this field in South Africa is small. The choice of sample size was driven largely by data availability and the time available for the study.

Semi-standardised interview sampling

In-depth face-to-face interviews were held with key individuals from leading companies in South Africa over a two-year period. Interviews were initially held with a sample of 10 individuals in July 2001, followed up by a sample of seven individuals in July 2002. Interview participants were selected on the basis that they were responsible for making key decisions in running large IT networks that were highly dependent on Telkom for service. Given the seniority of their positions and availability, it was not possible to get these individuals to attend focus group sessions. One-on-one sessions were also assumed to be able to provide more in-depth information. These individuals served a key IT function in senior management positions and were responsible for running IT networks and making key purchasing decisions on telecoms suppliers. They were selected because they were said to have a strategic view of the telecoms needs of their companies as well as the day-to-day operational requirements. They also interacted with key telecoms suppliers like Telkom, MTN, Vodacom and value-added networks services (VANs) players as customers and could thus comment on key telecoms issues affecting their business.

Two sets of interviews were held because of the delays in the licensing process of the second network operator (SNO). Initial interviews were held on the basis of the policy outline, in an attempt to understand the current market. Following the invitation to apply for a second network operator licence in 2002, subsequent interviews were held to assess

the changing dynamics of the market. A good spread of industry sectors was aimed for: financial services, retail, fast-moving consumer goods, leisure, healthcare, internet service provision and VANs sectors. These industries are all reliant on fast, efficient telecoms services and are thus regarded as large users of telecoms services. Interview respondents were fairly sophisticated in their understanding of the telecoms requirements of their businesses. This was surprising, given that South Africa has been a monopoly market and a closed environment for many years. Customers in these markets have been regarded as having fairly simple requirements, such as reliable access to basic voice services. The interviews were held in Johannesburg because the majority of the head offices of large corporates are situated in this city and also for convenience (time and cost constraints) because the researcher is based there. In addition, a number of informal meetings were held throughout the course of the research period with key individuals from the regulator and in the industry.

Appendix One contains the questionnaire guide used for the study. The questionnaire served as a discussion guide only and thus includes a broad array of topics that attempt to probe the issues outlined above. In all instances, the entire questionnaire was not used because of time, knowledge and confidentiality constraints, but rather provided a useful guide to the broad overview of relevant issues.

Focus group sampling

Eight core focus groups were set up in the three major metropolitan areas of South Africa: Johannesburg, Cape Town and Durban. These three cities were chosen because they are key areas of economic activity in South Africa and the majority of the core business users require high-quality services both within and between these cities. Groups were divided into three segments (large/medium businesses, small or home offices, and consumers, segmented into high-spend and medium-spend). This was done as these user groups have distinct issues and requirements for telecoms services. Similar to the individual interview sampling, focus group participants were also decision-makers in their respective company's. The responsibility for dealing with telecoms issues was part of their jobs. Thus, they also interacted with key telecoms suppliers on a regular basis

and were familiar with the issues facing their company. The table below provides an overview of the focus group sample:

Table 1 — Focus group sampling

Group	Location	Participants
1	Johannesburg	Large/medium businesses
2	Durban	Large/medium businesses
3	Cape Town	Large/medium businesses
Groups 1, 2 and 3 were large/medium businesses. Each group consisted of eight individuals from a mix of industry sectors including retail, engineering, leisure, finance and fast-moving consumer goods.		
4	Johannesburg	Small offices/home offices
5	Durban	Small offices/home offices
6	Cape Town	Small offices/home offices
Groups 4, 5 and 6 were SoHo/small businesses. Each group consisted of eight individuals and represented industry sectors including retail, shipping, consultants and professionals.		
7	Johannesburg	Consumer – high LSM[1] grouping
8	Johannesburg	Consumer – medium LSM grouping
Two consumer focus groups were held — one that consisted of high-income earners with the potential to spend more on telecoms services, the second consisting of medium-income earners. In both instances, members had to be decision-makers in the family and be able to purchase services.		

Appendix Two and Three contains detailed discussion guides for the business and consumer focus groups respectively. The following specific areas of study were delved into:

- Current telecoms services and usage of them;
- Benefits and frustrations experienced with current service providers, including pricing, service levels and products;
- Perceptions of Telkom — positives and negatives;
- View of competition and alternative providers;
- Introduction of new products and services e.g. fixed-mobile.

[1] Living standard measure – a demographic and psychographic classification of the South African population categorised according to household income and living standards ranging from 1-10. 1 is the poorest households with a largely rural base while 8 is the most affluent, largely urban population.

2.4 Data analysis

Data analysis was done in conjunction with the literature review. Key issues arising from the literature review were highlighted, e.g. key indicators of competition, policy and regulatory structures, market structure, technology choices, etc, and used as the benchmark against which to compare the South African market and to identify key areas of misalignment and discrepancy. Countries for the international literature review were chosen because they are generally regarded in the developing world, as leaders in telecoms growth and market liberalisation. In selecting developing countries, level of growth and innovative ideas served as indicators for their inclusion in the study. Key areas of discrepancy and misalignment were identified from international best practice and benchmarked against South African indicators. In some cases, these justified the reasons for departure from international experience in view of the unique South African condition. In others, they highlighted problem areas and potential future problems.

Data gathered from the interviews and focus groups was used to summarise the perspectives of the various stakeholders, particularly in attempting to characterise and understand the South African market. The data was documented using interview notes and tapes from transcripts from the focus groups, then analysed in terms of key competition indicators such as of price perception, service, network reliability, regulatory and impact on business. In the analysis, the researcher tried to prioritise and rank some of the key issues of concern raised as well as draw out common views and threads emerging from the various phases of analysis.

For the quantitative analysis, South Africa was benchmarked against a range of countries which are not only similar to South Africa in terms of population size, income dispersion, geographical dispersion of population but also considered to be leaders in telecoms services. In order to understand South Africa's telecoms performance, a range of countries were selected to benchmark against South Africa, with key telecoms indicators being connectivity, telecoms investment, revenue, price and quality of service. Peer-group countries in sub-Saharan Africa, other middle-income countries like Turkey and Morocco, and finally, developed countries like the United Kingdom and the United

States, were selected to provide a broad range of indicators. Data for these indicators was collected from key sources such as ITU, BMI and some proprietary data, then tabulated and analysed to identify trends. Finally, in order to understand company performance in South Africa, a range of internationally renowned telecoms companies' financial and operational indicators was benchmarked against the incumbents (fixed and mobile) in South Africa. The table below provides data on key indicators against which South Africa can be compared.

Table 2 — Key indicators for benchmark countries

Group	Country	Population	GDP per capita (US$)	Population density per sq km	Gini coefficient[2]
Sub-Saharan Africa	Namibia	2,011,000	7,300	2	70
	Botswana	1,795,000	9,200	2.5	63
	South Africa	45,214,000	11,100	37.1	59.3
Peer group	Brazil	180,655,008	8,100	20.9	58.5
	Morocco	29,900,000	4,200	67.5	39.5
	Turkey	72,320,000	7,400	85.11	40
	India	1,081,229,056	3,100	358	32.5
Best practice	Korea	48,082,160	19,200	485.3	31.6
	UK	59,428,000	29,600	244.7	36
	US	297,043,008	40,100	31.8	40.8

Source: Worldbank, Nationmaster.com. CIA world factbook

2.5 Conclusion

This chapter explained the manner in which the research was designed and conducted. Straight-forward market-structure analysis based on structure-conduct-performance reduces the issues far too simplistically and is thus unable to provide depth to the analysis. Therefore, a holistic approach that attempts to understand the broader social and political context, the business environment driving sector reform and the underlying market dynamics was taken to explore key policy and regulatory levers that shape markets in the transition from a monopoly to a competitive arena.

[2] A measure of inequality of income distribution. The higher the number the more unequal the income distribution of a country.

3 Key issues in telecoms network markets

Introduction

This section reviews basic industrial organisation theory within the context of telecoms network markets and its applicability to telecoms network markets. It examines the theoretical issues around market structure, company conduct and sector performance within the changing dynamics of telecoms network markets that are driving market reform and competition. It also examines the conditions conducive to effective competition in telecoms network markets. As such, this research uses industrial organisation as the basic framework of analysis to evaluate the evolution of the South African telecoms network market structure. The study also takes cognisance of the complexity of relationships between structure, conduct and performance and its inter-relations by including an analysis of the environment within which the market operates, influences and is influenced by. The theoretical model identified in this chapter will serve as the basis for analysing the structure and configuration of the South African market.

3.1 Overview of market structure analysis

Basic industrial organisation theory relates market structure to the behaviour of the economic agents that operate in a market and to the performance these relationships generate (Clarke, 1985:10). Market structure examines the number of competitors operating in a relevant market and the distribution of market shares, barriers to entry, product differentiation and substitutes, vertical integration and degree of risk. Conduct seeks to determine company behaviour under certain circumstances, including the respective role of price and non-price strategies, the level of co-operation established between players, strategies of differentiation and diversification. Finally, through the examination of performance which deals with the allocation of resources, attempts to understand competition in the market are made. (Jacquemin, 2000:5) It is important to recognise that one-way causations running from structure to conduct to performance can be simplistic as a theoretical framework. There is an ongoing debate centred mainly on the existence and direction of causality in the structure-conduct-performance model. It is

not the intention of this study to discuss the relevance of the structure-conduct-debate but rather to utilise elements of this framework to analyse the market structure and competitive environment in the South African telecoms network market. The structure-conduct-performance paradigm attracts increasing criticism. Some of these include: (a) market structure is not independently determined and is often affected by performance and conduct; (b) market performance is a multi-dimensional concept; and, (c) the underlying assumptions of information symmetries and companies keeping perfect information records leads to the conclusion that perfect competition is the ideal market structure. These observations have led to a rejection of the structure-conduct-performance approach in favour of newer, revised models.

3.2 Key issues affecting telecoms network market structure

3.2.1 From monopoly to competitive markets

The fundamental assumption underlying the market system approach is that society requires efficient performance from producers of goods and services that does not result in wastage of scarce resources, creates products that are responsive to consumer demand, has operations that are progressive and technologically innovative, and facilitates stable, full employment of resources and equitable distribution of income. Monopoly markets are characterised by a single manufacturer, with no substitutes for the product, which impedes the entry of other participants. A monopolistic market is often associated with excessively high product prices, reduced supply levels or other behaviour that reduces consumer welfare. On the other end of the spectrum, "in a competitive market, individual suppliers lack 'market power' and cannot dictate the market terms, but must respond to the rivalry of their competitors in order to stay in business." (Trebing, 1997:5)

Trebing defines effective competition in telecoms as a situation in which "there are at least five or six comparable rivals with no significant barriers to entry and no single firm exercises dominance. In addition, demand conditions are assumed to be essentially elastic across the board." (1997:27) Internationally, few telecoms network markets display these characteristics and are more likely to show oligopolistic tendencies rather than competitive ones. Still, telecoms network markets cannot be regarded as truly

contestable markets. For a market to be fully contestable, companies must be able to avoid large sunk costs. The new entrant must be able to make a one-way bet, winning if profits are good, but losing little should it decide to retreat (*The Economist*, 1998). The massive up-front infrastructure investment required to compete with an incumbent goes against this theory and implies that a proactive stance is required in creating incentives for new companies to invest and compete in the telecoms network arena, to prevent the incumbent from restricting output and raising prices.

Falch identifies the notion of perfect competition as characterising an unregulated market "where the forces of competition drive down prices to the level of production costs and both price and production develop in such a way that the societal welfare is optimised." (1997:101) Well-functioning markets are characterised by the ease of market entry and exit, absence of significant monopoly power, widespread availability of information, absence of market externalities, achievement of public interest objectives and sufficiently large numbers of independent suppliers.

Table 3 — Differences between monopoly and competition

Monopoly	**Competition**
• Economies of scale • Full control over technical network • Low interconnection costs • Ability to achieve public interest objectives • No unnecessary duplication of infrastructure	• Organisational efficiency • Downward price pressure • Product and service development • Enhances and encourages innovation • Enables customer choice • Alternative network infrastructure (options for redundancy)

Source: Falch, 1997:102

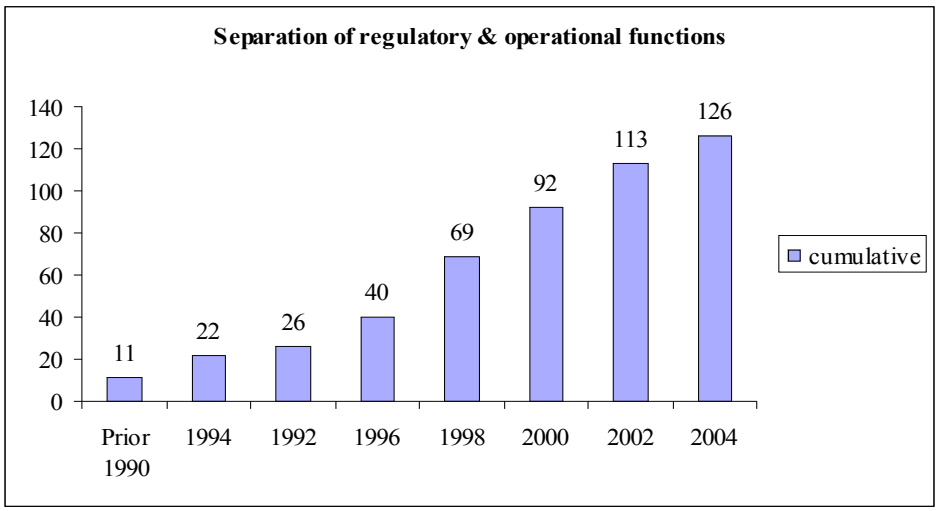
In a competitive market, there would be little or no reason for government intervention or regulation, as the market would regulate itself. While no markets are perfectly competitive, telecoms in particular is vulnerable to monopoly abuse of power, as it has developed in a monopoly environment, often protected by the state, with high barriers to entry. Historically, the telecoms sector has been treated as an exception to industry in general and in most countries supplied by a state monopoly. The changes in

technologies, services and markets have prompted governments to seek a competitive industry model for the future.

It should be noted that, in most major economies, even after years of liberalisation, effective competition (five or six competitors) has not emerged. These markets display the characteristics of oligopolistic markets, with three or four firms often controlling over 60% of the market with significant entry barriers prevailing, e.g. the UK and the USA. The sector remains under continuous regulatory intervention to ensure that the market is able to function fairly and competitively. Although the immediate cost benefits are clearer to conceptualise and quantify, the potential net benefit from liberalised markets is difficult to quantify for several reasons inter alia the concept of measurability is difficult to define as a benefit. Such benefits are often intangible and rest on broader economic and social goals, i.e. improved resource allocation, increased productivity, innovation and consumer choice. Internationally, there has been pressure towards more liberalised telecoms markets. Following global trends and international pressure, governments have moved away from monopoly providers towards more competitive markets. This took the form of licensing additional operators – both service- and infrastructure-based, splitting services that are non-essential for the telecoms operator, e.g. value-added network services and managed services and allowing open entry into certain sectors such as customer premises equipment.

International trends highlight the move towards privatisation and increased separation of regulatory from operating functions. The figures below highlight this trend.

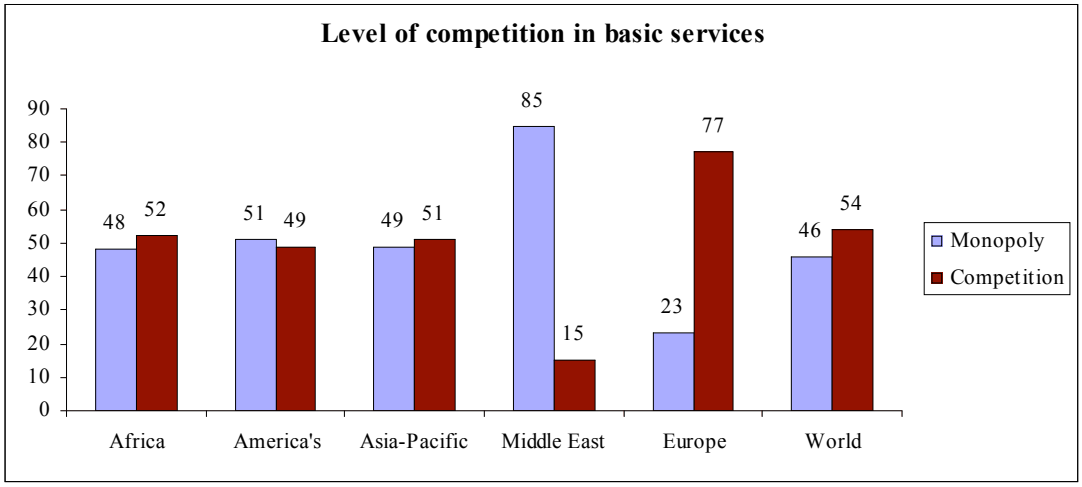
Figure 2 — Separation of regulatory and operational functions internationally



Source: ITU regulatory database, 2005

Sector activity has increased considerably since the early Nineties. To date, there are 126 separate regulatory bodies internationally. The increased sector activity has forced the move towards increased privatisation initiatives, including separation of regulatory and operational functions.

Figure 3 — Level of competition in basic services by region (2004)

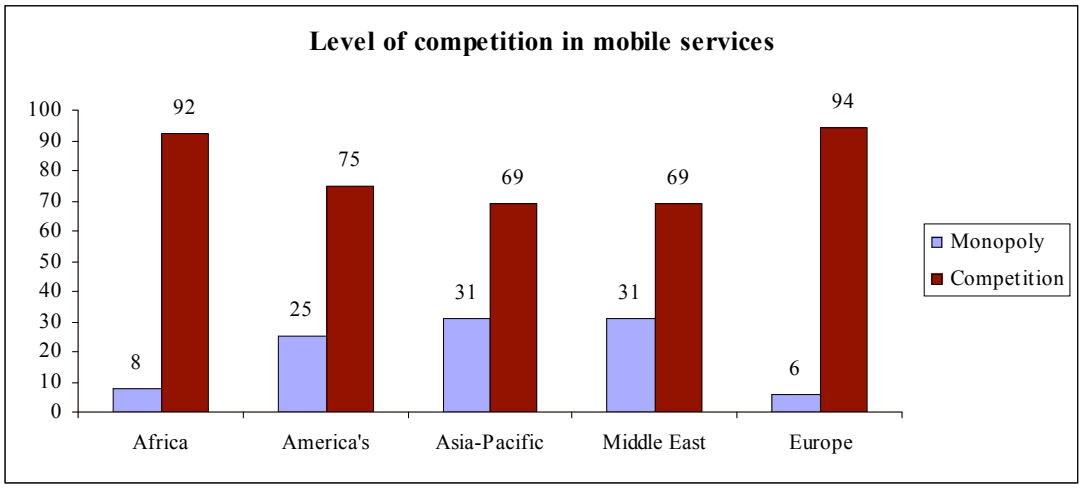


Source: ITU regulatory database, 2003/2004

Europe generally leads the way in more liberalised and competitive telecoms markets. By 2004, approximately 54% of countries internationally had opened up basic telecoms

services to competition. Further, competition to the European incumbents is the norm with 77% of basic services open to other operators. While Africa's figures on the level of competition is not largely different from the America's, the operational reality is vastly different and this is evident from the penetration levels and the number of services available.

Figure 4 — Level of competition in mobile services by region (2004)



Source: ITU regulatory database, 2003/2004

Africa compares particularly well to developed countries in introducing competition in mobile. Although competition in mobile is comparable, penetration in Africa is still remarkably low. The reasons for this is identified and discussed in subsequent chapters.

In an early white paper on competitiveness, the European Commission highlighted the importance of moving towards the information society as one of the key elements for achieving growth, competitiveness and employment (CEC, 1993C). The paper argued that competitive telecoms markets would provide incentives for growth, greater freedom of entry and impose significant limitations on the power of existing monopoly incumbents. "The flexibility achieved in an open market environment is therefore all the more essential in the context of the information society because companies must be allowed the freedom to try out alternative routes towards new applications and markets,

and test out a variety of different technologies. (Curwen, 1997:10). Since then the Commission has continued along the policy path of increased telecoms liberalisation as a foundation for information society development. The Lisbon Manifesto which sets an agenda for economic and social renewal for Europe identifies the ICT sector as important to this strategy. (EU, 2000)

3.3 Telecoms network markets — Local industries with global influence

The next sections detail the specific characteristics of the telecoms network markets, including the changing dynamics of the sector which challenge the traditional notions of static analysis of market structure. The rapidly changing demand characteristics of the telecoms network market fundamentally influence the market structure of the industry and challenge the notion of market structure as a static variable.

Telecoms are increasingly becoming an integral part of national and global infrastructures as they provide platforms for promoting growth in national economies. The information intensity of the global economy has increased vastly over the past few years, so the importance of telecoms has been emphasised by the increasingly globalised and competitive nature of the global economy. The future economy will be built on an efficient telecoms network that is accessible to everyone. Telecoms services are increasingly becoming critical to other economic activity. A study undertaken by the US Chamber of Commerce found that the current state of the telecoms industry has cost the US more than 380,000 jobs. The study found that the telecoms sector had not recovered along with the rest of the economy. This had a direct impact on jobs and would affect the country's ability to remain internationally competitive if not reversed. (Rutledge, Hazlett and Hewiit, 2004). The Internet and high-speed digital communications networks create a new environment for information production and have changed the relationship of the factors of production in the economy. Services-based activity reliant on efficient telecoms networks is increasingly becoming a key contributor to GDP, particularly in developed countries. In the information society, the positive social benefits associated with information flows imply a strategic importance in expanding service provision. For

this reason, information society initiatives have been instituted by governments internationally to take advantage of opportunities in the global economy.

Telecoms is a complex industry that involves complex technological choices and massive upfront investment in infrastructure, but it is also a necessary social good that requires policy intervention to ensure a balance between achieving social and political objectives while also developing a dynamic sector. Traditionally, because of economies of scale, telecoms has developed in a monopoly environment, often funded and protected by government. In the knowledge economy, there has been a global push to introduce market dynamics, which includes the privatisation of previously state-owned assets and liberalisation within the value chain. Policy and regulation have attempted to intervene in these markets by creating market structures to facilitate competition and introduce regulation to monitor the behaviour of the incumbent.

3.3.1 Evolving demand factors

While technological progress in telecoms equipment has reduced the importance of scale economies for most components of the network, technological progress has also created heterogeneous demand among customers, for example, mobility and large volumes of data transmission, with significant differences to fixed voice transmission. These differences in demand also create demand for differentiated services, often in areas in which the telecoms operator lacks expertise so is better left to specialised professionals. "Whereas a single network can offer all qualitative features to all customers, the practical reality is that many uses, especially for large businesses, are most efficiently provided by a separate network that is designed to satisfy specialised demands, but that is also connected to other networks to permit simpler forms of communication between them." (Noll, 1999:25) Apart from technological innovation, consumers are demanding greater flexibility in products, increased services and lower costs.

Prior to the 1940s, voice transmission was the central focus of telecoms and dominated customer demand. Innovations in technology have enabled the development of new facilities and services, thus creating differentiated demand. The distinctive characteristics

of each new technology have created new opportunities, even new markets for specialised service offerings. The advent of television created a new market for long-distance video transmission via high-capacity coaxial cable and microwave technology. Satellite transmission — commonly used in television, large private networks and value-added networks for specialised business services — is well suited for point-to-multipoint applications and international services. Microwave technology, which suits point-to-point services in rugged terrain or between two points, and is often used in large urban markets, has lowered barriers to entry in the inter-exchange market, especially the private-line segment for business customers. Thus, the growth of computer-data has also increased demand for networks capable of data transmission and created new markets. "Demand for new services, coupled with the invention of new technology capable of meeting this demand, created ideal conditions for competitive entry into long-distance markets." (Wilson, 2000:118)

Demand characteristics for telecoms services have changed considerably over the past decade. Telecoms services represent quite distinct patterns of demand for business and residential customers, each with very different demand profiles. While the residential market is fairly homogeneous in demand characteristics, new technology to enable new business data services presents growing and diffuse segmentation between different business groupings in terms of markets, services and interests, with different demand and cost structures for each customer group. The table below, adapted from Falch (1997:110), presents a broad overview of the differentiated demand characteristics for residential and business customers:

Table 4 — Differentiated customer demand characteristics

Residential Market	**Business Market**
• Homogeneous market	• Heterogeneous market - mix of large and small customers
• Multiple small customers	
• Typical 1-2 lines per customer	• Fewer customers, often with many lines
• Predictable and limited traffic per line	• More traffic per line
• Limited use of advanced services	• Demand for a wide range of services
• Relatively low demand for sophisticated services	• Require solutions rather than one service

Source: Falch, 1997:100

The long-term investment characteristics of telecoms networks require careful demand forecasting of services that will allow an acceptable return on investment. But, growth rates and service demand to date have been difficult to forecast, particularly in the business market. The major proportion of total investment costs lie in the access network. "In the OECD area, high growth rates in revenue in the mid-1980s have been followed by more moderate growth rates in the 1990s." (Falch, 1997:107) While an increased array of services has been added in the decade, particularly data and mobile, these are sufficiently heterogeneous in demand to make network service forecasting particularly difficult.

3.3.2 Rapidly changing supply conditions

Technological improvements allow newer networks to be highly flexible and scaleable at a much lower cost than older network technologies. Newer networks are able to provide greater capacity, are more sophisticated and offer better quality of service. Technological innovation also allows new entrants to offer services at a much lower marginal cost. New networks can be designed for limited, highly profitable market segments, with the initial investment closer to private-sector appetites than the older networks required. The following sections detail the significant changes in the cost structures that have driven changes in supply conditions.

Lower equipment costs

Copper wire and limited capacity coaxial cable have provided the backbone of telecoms networks. Innovations in microwave, satellite, coaxial cable and optical fibre (more recently spectrum applications such as wi-fi and wi-max) have introduced new transmission media of greater capacity and functional capability, thus reducing costs dramatically and increasing efficiency. Apart from the high-speed transmission, optical fibre cables are more resilient and can be installed at relatively low cost along the right-of-way of existing power and rail networks, reducing the cost of deployment. More than a decade ago, "innovations both in the technology for manufacturing optical fibre and in transmission equipment have steadily reduced the cost of optical fibre systems at about 70% annually." (Saunders, Warford and Wellenius, 1994:39) This rapid pace of technological improvement of fibre has continued to the present day. Microwave relays

with very high frequencies can transmit communications signals between line-of-sight antennas. These were deployed both in the long-distance networks and more recently in outlying areas. Satellite transmission is used in the long-distance and international networks. In developed countries, these transmission media were initially deployed over medium and long-distance, but, the costs of fibre have decreased dramatically and it is standard practice to utilise fibre-optics in the deployment of new networks. Total network cost reductions were a result of both reduced equipment costs and the capacity to handle higher bandwidth requirements.

Increased capacity and reduced space requirements

Traditional switching equipment was either electro-mechanical or electric analogue, but digital soft switches have now become the industry standard. Not only has the cost of the hardware declined but soft switches have also reduced the need for large switching centres and personnel to manage these systems. Costs of switching equipment were approximately $300-$400 per connected line in the 1970s to approximately $10 per connected line today.

Electronic switching technologies reduced the cost of end-user equipment and central office switching. Innovations in microelectronics and manufacturing technology also undermined the traditional economies of manufacturing scale associated with switching. This lowered the entry barriers to certain segments of the equipment market, thus making it possible for a relatively small business to assemble a telephone or PBX from easily available components at comparable costs to a large manufacturer. (Vietor, 1994:189)

Improved reliability

Modern digital networks require less human intervention than older analogue technologies. "Digitalisation has virtually eliminated the traditional boundary between switching and transmission, reduced the interface costs, and enabled more efficient and flexible use of equipment." (Saunders et al., 1994:44) Digital technologies also mean there is greater control of the network, including the ability to monitor and guarantee system uptime. As a result of these increased efficiencies, operating costs have been reduced.

Telecoms networks are complex systems of supply that have become an integral part of national, regional and global infrastructures in the information economy. Increasing technological innovation and decreasing costs have significantly affected the supply of products and services and driven demand. Proper employment of telecoms networks and systems can serve as platforms for promoting growth, enhancing national infrastructure and facilitating access to the knowledge economy. However, success in achieving this is highly complex and requires balancing intensive, highly technical networks, complex geographical characteristics and varying consumer requirements. In a monopoly industry, ownership and control of the infrastructure also become of vital importance in supply-side dynamics and thus telecoms is heavily dependent on technology and public policy.

3.3.3 Economies of scale and technology

Fixed network costs are significant in telecoms and thus economies of scale are a significant factor influencing the entry and number of players in telecoms network markets. Capacity increases can be gained at a less than proportional rise in total cost. High fixed costs at the network level are a major driver of economies of scale.

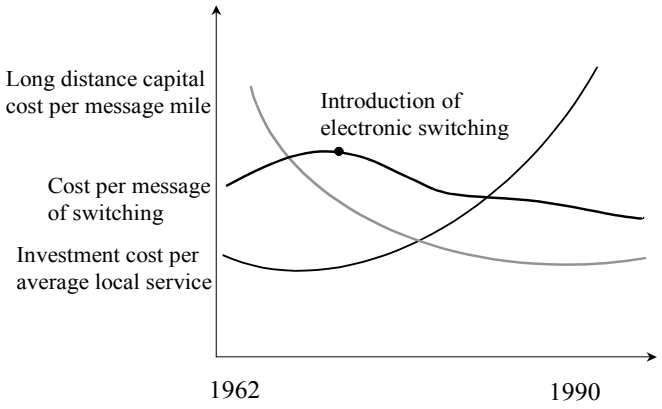
This does not necessarily mean there are automatic economies of scale in telecoms network markets. Economies of scale exist over some range of output and not others. "At high levels of output, management might not be able to oversee closely all the operations of the firm, giving rise to inefficiencies that can dominate any technological cost advantages of large scale operation." (Intven, Oliver and Sepulveda, 2000:b-4) Given the size and complexity of large, multiplant firms, decision-making is often slower and the remoteness of executives from the day-to-day operations often impairs the quality of the decision. "How well companies cope with the managerial problems of size appears to depend upon the complexity of production and marketing challenges and the abilities of a firms guiding individuals. A few firms are fortunate to secure leaders with sufficient organisational genius to sustain superior profitability despite what might otherwise be debilitating scale." (Scherer and Ross, 1990:106) The realisation of

economies of scale is also subject to diminishing returns at some point. Learning curves flatten out as very large cumulative volumes are attained and set-up costs start to become insignificant.

Economies of scope exist if two or more products can be produced by one operator at a lower cost than if each product was produced separately by different operators. This often arises if common equipment and facilities are required to produce these products. In telecoms, a single network is required to produce most of the products, as the intelligence for network management lies at the central switching area. For example, most public service telecoms operators have local-loop networks to their residential customers so adding national long distance and international services is at an incremental cost to the network. Weak demand conditions for a single-service often cannot justify the provision of a single service and thus provides incentive for the provision of multiple services. Traditionally, incumbents have produced all services, but technological advancements, particularly internet-protocol-based technology allow for separate providers of particular services, e.g. VANs. There has been considerable disagreement on the extent of economies of scale in the telecoms services industry. This study accepts the premise that the significant technological and market changes have undercut the economies of scale justification of natural monopoly.

The introduction of digital technologies accelerated the pace of development, particularly in the application of computing and networking technologies. These new technologies allowed the introduction of new services that were able to respond to pressing customer demand. "It is the computer control of the telephone switching, and the telephone network capability to switch and transmit computer signals, that is causing the two fields to grow together." (Vietor, 1994:189) While local loop costs continue to be expensive and allow the incumbent operator the last frontier of domination, new technological innovation will continue to challenge this. These innovations have fundamentally changed the architecture and economics of the network.

Figure 5 — Telecoms cost characteristics



Changing cost characteristics in telecommunications

Source: Graph adapted from (Vietor, 1994:19)

The graph above is illustrative of the dramatically changing cost characteristics of the fixed-line network. The costs of fibre have since steadily declined further and the introduction of mobile at significantly lower costs also impact the cost dynamics. It has been estimated that a mobile network costs 50 percent less per connection than fixed lines and can be rolled out much faster. The cost advantages of mobile phones consist not only of lower costs per subscriber but also the smaller scale economies that can be achieved. (Waverman, Meschi and Fuss, 2005) Further, alternative technologies to address the residential customer have brought down the cost per subscriber, e.g. wireless local loop, wi-fi, wi-max, CDMA, etc. Both capital expenditure and operational expenditure have significantly decreased. As a result, it is now possible to profitably service even subscribers with a very low marginal income. Increasing innovation in wireless and GSM technologies could also mean that these could provide similar levels of broadband connectivity to fixed services.

Network costs in certain segments (e.g. access) of the network do indicate some economies of scale, but, these are not significant enough to make competition unworkable. A large proportion of the cost structures have developed under monopoly

conditions and it is arguable whether the same cost structures would emerge under different market and technological conditions (Falch, 1997:111). This study argues that the significant technological changes do not justify the economies-of-scale argument.

3.3.4 Entry barriers

While a policy of free entry in most industries is not an issue and is most often determined by market opportunities, this is problematic in telecoms. Inherent industry conditions like elements of natural monopoly, economies of scale in some parts of the network, high upfront investment, long return on investment, etc, all present a case for structured and managed entry, but the benefits of competition in product and technology innovation, low prices and cost reductions argue strongly for free market entry. The specific nature and characteristics of telecoms network markets make free entry and open competition difficult to achieve. Natural monopoly conditions in certain parts of the network and a history of a dominant and integrated, often state-owned, incumbent have created complex vertical structures. This also is often a deterrent to investment in the industry. In addition, the public-interest nature of telecoms networks, including access to rights of way and spectrum, combined with managing efficiency and consumer benefit, call for government intervention to ensure a balance between supply and demand. The multi-product nature of the industry, non-storability of output, time variance and random demand characteristics, high sunk costs, capacity constraints, network externalities between users, elements of natural monopoly in some parts of the network and complex vertical structures create multiple entry barriers.

The benefits of competition must be weighed against the possibility that too many companies may enter, so infrastructure roll-out cannot be managed in any way. This could lead to unnecessary and expensive infrastructure duplication and thus inefficient allocation of scarce public resources. Some analysts fear that free entry may also lead to "cherry-picking" or "cream-skimming", i.e. entrants entering only profitable market segments without corresponding obligations to service non-profitable segments or fulfil their network roll-out obligations. Incumbents may then struggle to bear the costs of delivering to all market segments and financing the rest of their operations, e.g. regulated

tariffs will constrain the ability to utilise segments/services to finance unprofitable parts of the network.

"The more prone markets are to a breakdown of competitive supply conditions, either because scale economies limit the number of suppliers or because buyer and seller are locked together in complex coordinating relationships, the stronger is the buyers incentive to protect itself by integrating upstream." (Scherer and Ross, 1990:110) The provision of telecoms components, materials and services requires compelling economies of scale in itself, thus adding another important dimension to the choice between integration and disintegration. Scale economies can result in limited suppliers, creating monopolistic pricing of components. Buyers are aware of being held hostage to elevated prices, even if a supplier chooses not to exercise its power. "To avoid actual or feared monopolistic exploitation, users of high-scale economy materials or components often decide to undertake internal production, even though they may incur a cost penalty in doing so." (Scherer and Ross, 1990:110) In some instances, these factors have led to the development of large, unwieldy telecoms companies.

There is no doubt there has been a fundamental shift in the structure of the telecoms market globally. While there have been many proponents of telecoms as a natural monopoly because of the high upfront investment costs combined with a long return on investment, this study argues that due to the rapid changes in telecoms development, these monopoly institutions cannot effectively respond to the changes in the economic, political and social environments. They serve to entrench monopoly power, stifle innovation and block competition. Melody argues that "monopolies operating in a protected, stable environment are not well-suited to adapt to a new and increasingly diversified and dynamic market place." (1997:3) It must also be noted, that not all liberalisation processes necessarily result in competitive market structures or immediate benefits for the consumer. The OECD has identified certain negative aspects of liberalisation of services and deregulation as experienced in other countries, including increased local rates, initial customer confusion and, to some extent, inconvenience (1988:60). The intention of this study is to provide recommendations to increase market

forces that will create efficient allocation of resources and a socially acceptable distribution of income.

The inter-connected and inter-networked nature of the industry requires that these changes are filtered globally so that both countries and companies are able to compete. The factors outlined above illustrate that the issues of market intervention and regulation cannot be simplified to a choice between free-market solutions, i.e. allowing the free reign of markets as the most efficient means to allocate resources, or monopoly, where the market is regarded as unable to satisfy service requirements sufficiently. Imperfect markets, dynamic industry structures and social and political realities suggest the emergence of market structures which balance competing social and economic objectives and which reflect characteristics of the two ideal structures (OECD, 1988:53). This study argues that market structure in telecoms is highly dependent on the rapidly changing and evolving technological and political environment. The fluid impact of the market structure must therefore be considered in any analysis.

3.4 Conduct — Company dynamics in a newly competitive environment

Telecoms networks are dependent on public infrastructure and resources. It is a wires industry reliant on rights of way. As a result, historically, co-ordination of supply and demand for public utilities was achieved through centralised structures – either public enterprises or private monopolies — which were then often subjected to price and earnings regulation. Yet success to date, in managing these complex systems to ensure the efficient employment of resources has been dubious. Monopoly operators have been characterised by poor management, inflexibility in responding to consumer demand because of rapid changes in technology, limited innovation in products and services, high prices and over-capitalisation of the network that did not match demand. As a result, they were unable to respond to the changes in the economic, technological and social environments. In a newly competitive market, where incumbents display significant market power and new entrants are highly dependent on incumbents to provide services, significant potential for abuse of monopoly power exists. The behaviour of incumbents

regarding pricing, product innovation and legal tactics employed to stall the new operator become increasing important.

Vertically integrated monopolies "create the incentive and opportunity for anti-competitive behaviour." (Armstrong et al., 1994:136) The likelihood of an incumbent abusing its position in a liberalised market is particularly high because the pressure to increase profitability from private-sector investors is also high. While elements of telecoms services are potentially competitive, e.g. long-distance, VANs, effective competition is impossible without access to essential related facilities like the local loop, ducts and interconnection. Incumbent networks generally have full control of these facilities and often refuse to provide access to competitor networks. Terms and conditions of access, price of access and terms for interconnection become the central pillars of conduct regulation. The potential for incumbents to deny new entrants access to the network, especially with vertical integration, is very high. Competition alone cannot be relied upon to contain the market power of the incumbent firm. Effective regulation is therefore necessary to curb the incumbent's power and create conditions for fair competition. "Unless the monitoring of anti-competitive behaviour is very effective, it may also be desirable to help new entrants into network operation while they build their sunk costs networks to develop an effective competitive challenge to a dominant incumbent." (Armstrong et al., 1994:290)

Market power

Telecoms have primarily developed in a monopoly environment internationally and, as a result, incumbent operators exercise significant market power. Typically, incumbent operators have control over essential facilities. In the absence of regulation, monopoly firms have no limitations on pricing, except what the market can bear and consumer willingness to pay for products.

A legacy of market failures, especially natural monopoly cost conditions in parts of the industry and a history of actual monopoly over nearly all of the industry, provides the underlying reason for policy intervention (Armstrong et al, 1994:195). Telecoms

customers are unaccustomed to competition in this sector. As a result, there is a high degree of customer inertia. New entrants find it difficult to persuade customers to switch from the incumbent's network, particularly if this entails changing phone numbers, dialling extra digits, dealing with two phone bills, etc. Regulation that promotes competition without unfairly handicapping the incumbent should be in place.

Incumbent operators were allowed to build their networks in a monopoly environment, the majority of them with the protection of government funds. It is almost impossible to expect new entrants to replicate the ubiquitous network of wires and switches that blanket countries in a competitive environment. If competition is to gain a foothold, it will be built in markets that are related to the core network industries and must be built on the basis of sharing the bottleneck facilities and services provided by those networks. "The fiction of facilities-based competition should not be allowed to destroy the competition in applications, content and services that ride on underlying telecommunications facilities." (Cooper, 2002:35)

Pricing

Incumbents have developed in a protected, monopoly environment, often without any regulation on prices. Unregulated monopolies have thus set prices which result in inefficient resource allocation. Ideally, in a well-functioning, fully competitive marketplace, prices are equal to marginal cost. "To maximise social welfare, departures from marginal costs should be set to minimise total surplus losses while allowing the supplier to break even." (Intven et al., 2000:B6) Demand elasticities for most telecoms services and customer classes, particularly in the business sector, are relatively low. As a result, unregulated monopolies can charge prices that often lead to "a dramatically inefficient allocation of resources." (Armstrong et al., 1994:13) Theoretically, in a fully competitive marketplace, prices approximate marginal cost because of the intense competition.

Internationally, in a liberalised market, incumbent operators have failed to charge competitive prices. In keeping with traditional economic theory, competitive, well-

functioning markets lead to efficient prices that maximise society's welfare. But for a market to be competitive, the market must meet a number of conditions, i.e. several buyers and sellers, with none so large that it can affect prices; no one must be dominant with no significant externalities and with free entry to or exit from the market. As outlined above, this description of competitive markets is not applicable to the telecoms sector for a number of reasons. Thus, given the nature of the industry and a history of an inability to function efficiently, internationally, price regulation for network markets has been imposed by regulators.

In a competitive environment, two groups of pricing are particularly important, namely, prices for consumers of telecoms services and prices for connecting to the incumbent network (interconnection). Cost-based methods of determining prices have been found to be particularly onerous on regulators because the informational requirements are particularly intensive. They entail a detailed understanding of the costs of providing each individual service and its related elasticities. They also assume that operators have a detailed understanding of the costs and elasticities of each service and, if they do, would be willing to pass this information to regulators. Often, telecoms operators have been integrated public monopolies with very little understanding of their costs. In a privatised, dynamic environment, the natural inclination is to obscure the facts to the regulator so as to gain the best possible pricing to retain monopoly profits.

Significant technological changes in the telecoms industry are driving convergence of technology and products with significant implications for operator costs and product pricing. As digital voice, data and multimedia applications are increasingly being carried across the same network infrastructure, the related cost of carriage for each service is falling. The actual path travelled by data or voice need not be related to the distance between the calling parties. As a result, a cost-based justification for differential pricing for different services is rapidly disappearing. The implication arising from this convergence trend is the huge increase in available capacity. This effectively means that the marginal cost of the network capacity that is required to provide carriage services is insignificant and may even be approaching zero. At the same time, large capital

investment in network facilities is required to meet ever-increasing demand for services. Against this background, network infrastructure is increasingly being characterised as a fixed cost. The underlying network expenditure required to provide communications services are becoming more fixed than variable in nature. The implications of these trends on the global telecoms industry is that networked business models will be increasingly based on services supplied and cost, rather than price. The move to new digital IP networks makes the reasonable identification of constituent cost elements more difficult. This phenomenon is already illustrated in the international data market which, although highly competitive, currently accounts for 50% of global telecoms traffic, yet only generates 34% of industry revenues.

It is not the intention of this study to examine the various methodologies or the pros and cons of price regulation but rather to examine the impact of pricing. This will include analysis of the impact on pricing in the South African market, as benchmarked against other markets.

3.5 Sector performance

Established network operators enjoy major advantages over new entrants. Incumbent operators own and control essential facilities such as rights-of-way, local loops, numbering and spectrum. Duplication of these facilities is often economically inefficient or technically difficult for new entrants to replicate, and to offer telecoms services new entrants require access to these facilities. Historically, abuse over control of these essential facilities in the absence of regulation has been common – incumbents often deny new entrants access to facilities, charge high prices that make the competitor's costs unfeasible, or provide inferior quality of service to new entrants. Monopoly markets mean that incumbents typically have access to and control the entire telecoms value-chain. For example, they operate international long-distance networks, national long-distance networks and local-access networks, in addition to providing the newer value-added services. Apart from the obvious cost advantages to owning all parts of the network, it is also easier and less expensive to co-ordinate provisioning and management within a single firm as opposed to arm's length negotiations and transactions.

Performance of the telecoms sector is a key indicator of the progress of telecoms reform. Melody identifies four key areas that illustrate demonstrable progress: (1) market unbundling, (2) development of competition, (3) reduced prices and improved service and (4) expansion of universal service. In developing countries, increased investment infrastructure is also an important indicator. Despite concerted efforts by governments to introduce competition, newly liberalised countries have found that private monopolies can be as effective as public monopolies at inhibiting competition and hindering the entry of new players. New entrants typically do not have the range of services or the deep pockets of incumbents with which to compete effectively. Market unbundling of major services such as VANs will ensure that incumbents maintain a stranglehold on the industry and hinder the development of the Internet and data-services market. Combined with regulatory unbundling of non-core services, a wholesale regime that encourages fair competition is vital to developing the services sector.

Government intervention in ensuring the proper functioning of markets is applied at both a structural level and at a conduct/behavioural level. Through regulation, governments and regulatory agencies seek to modify company behaviour. Introducing competition in telecoms is particularly difficult for regulators, especially in the transition from a monopoly operator to a newly liberalised market. There is often tension between protecting new entrants, introducing competition and balancing the interests of the consumer while not inadvertently disadvantaging the incumbent unfairly.

Developing competition and imposing regulation is a long-term process requiring careful thought, clear vision, planning and commitment to the process. Melody identifies defining institutional structures that clearly separate policy-making from regulation, with distinct roles for these bodies, as particularly important to sector development and investor confidence (1997:18). While policy-making is focused on defining the long-term social objectives and providing overall direction for the sector, regulation's core task is to implement policy, ensure performance accountability by operators, especially incumbents, facilitate dispute resolution, monitor industry developments and act in an

advisory capacity to sector policy development. "The effectiveness by which this fundamental separation of basic functions is achieved will have a significant impact upon the growth of the sector. The more effective the separation, the better will be the climate to attract financing and undertake investment." (1997:19) The regulator must have standards of reporting and accountability to the government, industry and the public. Independence of the regulator coupled with a strong, capable regulator is vital to the proper functioning of the sector. Melody reiterates this: "It is absolutely essential that the 'competition' among the major industry players be moved from the arena of politics and bureaucracy to the marketplace, and to achieving the industry performance objectives of government policy." (1997:22)

The ability of regulators to implement and enforce regulation is undermined by the lack of technical knowledge and allows incumbents to manipulate arguments by citing "technical reasons". Regulatory authorities often lack the capacity and knowledge to further interrogate and challenge these arguments. It is therefore essential that regulatory authorities possess the skills and capacity to prevent incumbents from manipulating information in an effort to hinder the development of competition.

In conjunction with the changing dynamics of the telecoms industry, the role of regulation has changed from concentrating on consumer disputes, universal service issues and price-setting to a much broader role of regulating the sector to enable competition. Responsibilities include dealing with interconnection, operator disputes, wholesale tariffs (including access charges), and keeping up with new products and services.

In the transition from monopoly to competition, focus and skills required of a regulator vary widely, from managing relationships between operators and government (licensing) to relationships between operators (interconnection) to relationships between operators and customers (prices, complaints).

In dealing with the issues likely to arise in the transition from monopoly to competition, regulatory authorities generally require substantial professional cadres, capable of

handling complex regulatory concepts and processes. Although, it is not critical for the regulatory authority to possess all the special skills and competencies itself, it is essential that it has adequate funding to employ high-calibre professional staff and consultants if it is to implement regulatory objectives, in the face of the substantial technical and financial resources that can be brought to bear by the operators. Without such funding, regulation is unlikely to be effective.

3.5.1 Improving the performance of imperfect markets in telecoms

Over the years, regulatory provisions that enable competition have been identified. In a study for the European Commission on market-entry issues in the EU, the USA, Norway, the Czech Republic, Poland and New Zealand, industry consultants Teligen (2000), identified the following barriers to market development, and made recommendations to facilitate the development of competitive markets. This study will analyse market performance against these competition-enabling provisions and also look at any further regulatory inhibitors.

- *Separation of means and ends*

To deliver the anticipated benefits of competition, the regulatory framework should set out the ground rules for competition and not attempt to manipulate the market. Regulatory intervention to deliver ends rather than means creates concern among investors and acts as a deterrent because they perceive the playing field as being tilted against them. This is often a significant barrier to entry and a disincentive to invest.

- *Inconsistent regulation and application of regulation*

Regulation is key to the telecoms industry. Investors require a level of certainty that the regulatory environment is independent and consistent. If companies expect that it will take long for their business to develop a positive cash flow or that the regulatory environment is likely to change significantly, they are less inclined to invest.

- *Access bottlenecks*

Access to the customer is key. Bottlenecks in the local loop or in the mobile networks are making it harder to access customers. The ability of non-incumbent networks to limit the use of their network by service providers is a barrier to development for service providers.

- *Incumbent behaviour*

Incumbents own and control significant areas of the network. New entrants are dependent on the incumbent for critical elements of the services, e.g. leased lines, interconnection. Unclear and poor processes for supply of these services imply that the new entrants take longer to get products to market, placing them at a competitive disadvantage. This situation is exacerbated by weak regulation, under-resourced regulators and political agendas. Although regulators should let the primacy of commercial negotiations prevail, the supply of certain service elements should be ensured to enable equal negotiation between incumbent and new entrants.

- *Price ceiling*

Cost-oriented retail price regulation can act as a barrier to entry, as it puts artificial downward pressure on prices. As a result, new entrants have little space for movement against an incumbent's decreasing prices. Companies see limited profit potential in these price-regulated services, especially in the local loop.

- *Slow implementation of enablers of competition*

In many instances, governments and regulatory authorities have been slow to implement the key enablers of competition, i.e. number portability, carrier pre-selection, unbundled local-loop. The lack of these regulatory instruments has made it difficult for new entrants to compete with incumbent operators.

3.6 Enhancing the structure-conduct-performance model

The information and communications industry is complex with many specialist areas of research, often examined in single studies, e.g. the potential of new technologies, implications of policy and regulation, implementation of accounting separation and many more. Many perspectives can be taken when covering an industry as complex as the ICT industry. Often studies have therefore focused on the diverse specialised aspects of the industry in isolation. In addition, following market liberalisation and increased technological improvements, the convergence of information technology, telecoms and broadcasting has blurred the traditional boundaries between previously distinct technologies and applications, thus yielding new service possibilities. Convergence has driven supply-side phenomena such as technological innovation of products and services.

This has in turn led to demand side phenomena, such as the rapid absorption of new services. These factors have become the principal driving force behind industry transformation. This research, as a result, assumes a holistic relationship between the various elements of the model rather than a direct link of causality, as assumed by traditional industrial organisation theory. Thus a broad market-centred approach to the analysis is adopted to understand the various dynamics driving the industry. This research supplements the basic structure-conduct-performance model with a model adapted from an international research and consultancy company, Pyramid Research, by including an analysis of the business and political environment.

This research views the market as the central arena which drives the overall industry dynamics – the place where competition, customers, regulation and technology interact. It is within this market arena that change, growth and trends are propelled. As such, the following model, adapted from Pyramid Research (2001:8), illustrates the number of inter-related factors that influence market performance and attempts to provide a balanced view with which to comprehend industry dynamics and thus make recommendations. Pyramid Research is an internationally renowned consulting company specialising in market research analysis, particularly in developing countries. The model utilises an underlying model of industrial organisation theory. This research has been enhanced through the addition of comprehensive analysis for the business, telecoms, social and political environment, which is also seen as influencing the development of the market.

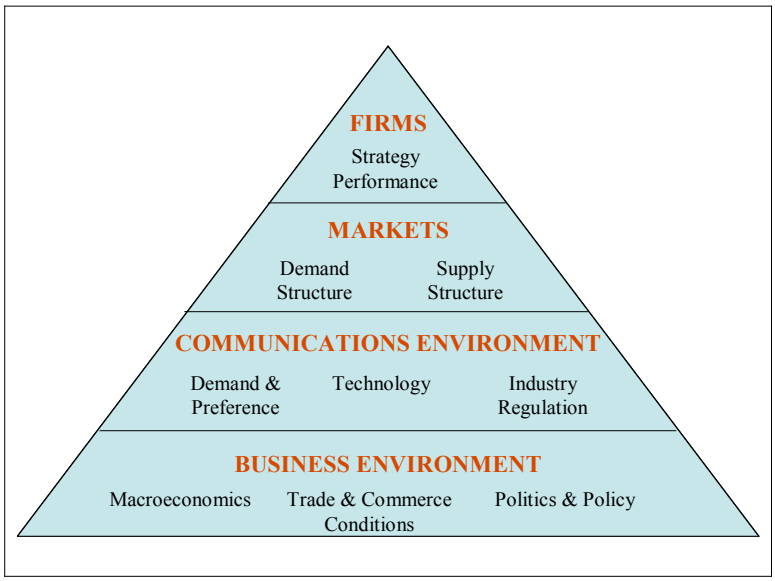
Recent research on institutions highlight that institutions are an important factor determining and shaping economic growth. The level of sophistication and maturity of institutions supporting technological advancement, physical capital formation and the efficiency of the economy and the resource allocation process are all important determinants of the outcomes of overall economic growth. "Institutions influence or define, the ways in which economic actors get things done, in contexts involving human interaction. They do this by making certain kinds of transactions, or interactions more

generally, attractive or easy, and others difficult or costly." (Nelson and Sampant, 2001:39)

Levy and Spiller (1996) in their study of telecoms regulation outlined that the credibility and effectiveness of a regulatory framework and thus its ability to facilitate private sector investment varies with a countries' political and social institutions. For this model of regulation to work, certain conditions are required: a strong administrative tradition, the ability to undertake commitments that endure from one government to the next, and a judiciary that is impartial, immune to government and political pressures and able to make enforceable decisions. Developing countries tend to display few of these characteristics. Thus, given South Africa's developing country status, these factors have been taken into consideration in order to determine market outcomes more clearly.

The intent of this model is to illustrate the variety of inter-related factors that influence the performance of the market. The results from this model are often utilised by potential private-sector investors seeking to enter new markets in order to understand the opportunities that exist within the market, and by existing operators who need to understand the market dynamics in order to operate. This model is designed to analyse each of these areas simultaneously as well as the relationships between them in order to comprehend industry dynamics. This holistic approach to market analysis is intended to provide a more comprehensive framework of the key drivers affecting markets, an understanding of the role of policy and regulation, and determine future recommendations. While the Pyramid model provides an intense focus on the market opportunity, ie the return potential for investors, this research has focussed on the entire environment, particularly the business and political environment in order to understand market outcomes. While, the Pyramid model intends to provide a business case prior to investment, this research further analyses company performance, post investment in order to make conclusions on the market environment. This research is more policy and regulatory focused to analyse market performance.

Figure 6 — Research approach



Source: Adapted from Pyramid Research, 2001:IX

Business Environment — The African business environment is significantly different from most developed markets. An analysis of the business environment attempts to examine general factors influencing South Africa's telecoms market, including macro-economic factors such as conditions for attracting investment, strategies to develop infrastructure, country demographics, and broader government and social objectives. This provides a holistic picture of the key drivers of reform, and the overall ability to attract investment. It is also pertinent to highlight the key macro-economic drivers for reform.

Telecoms Environment — The existing telecoms environment and the level of investment is an important indicator to both government and investors about the level of reform required to be able to attract significant investment. Policy and reform are important components of the overall industry and determine the ability to attract investment. In a highly monopolistic industry like telecoms, it determines the nature of competition. An analysis of the telecoms environment refers to basic characteristics of the environment that govern supply and demand within the relevant market, examines technology trends, policy and regulation.

Markets — Key data indicators to highlight the size and illustrate activity within the sector are important for understanding the dynamics within the sector. The indicators are gathered from a range of stakeholders including existing players, incumbents, potential investors and most importantly consumers. An analysis of the market as a whole will illustrate market performance, including the relative bargaining power of buyers and sellers, identification of substitutes and complementary products, pricing dynamics, market size and growth and industry trends.

Firms — This looks at the conduct of key industry players, their strategies, and the level of success currently achieved. Financial data from key South African telecoms network operators are benchmarked against international peers to compare the performance of South African companies with other jurisdictions internationally.

A pyramid structure was chosen to represent the methodology because it assumes that the fundamentals of the business and communications environment are important for driving markets. This in turn drives company strategy. In addition, the base levels of the pyramid represent fundamental macro-economic factors necessary for setting the broader perspective. The upper tiers of the pyramid represent micro-economic functions.

3.7 Conclusion

Managing sector reform and ensuring the development of competition is a complex issue, complicated by a dynamic, changing industry. Internationally, there has been a fundamental shift in the structure of the telecoms market. The digitisation and improvement in interconnection protocols have made possible the unbundling of services from facilities. This in turn has generated new services industries like value-added network services and mobile services. This has also created the basis for competitive licensing. As the telecoms network market becomes increasingly competitive and dynamic, industrial organisation research focusing on the telecoms network market must start to incorporate further analysis, including the increasing importance of strategic behaviour by firms, and the effect of external impacts in the business and political environments. Market structure is affected by a variety of factors so that it cannot be simply assumed to be either exogenously or endogenously determined. The findings

from other country experiences will be utilised as the basic framework of analysis in attempting to understand the changing configuration and structure of the South African market at the transition from monopoly to competition. The experiences analysed are primarily based on first world research, models and experience that have been underway for more than two decades and secondarily on that for developing countries where the experience is more limited. This research seeks to link the appropriate findings and lessons within the African environment.

4 Changing role of the market in telecoms policy development

Introduction

This section will provide a brief background to global trends in telecommunications by examining trends in the transition from monopoly to competitive markets, including the initial decisions on market structure and the subsequent impact on the market. It examines the structural components of reform, in particular, a detailed examination of two international case studies of developed countries which are often regarded as leaders in market reform – the United Kingdom and the United States. It focuses on the underlying rationale for the decisions taken by these countries and the resulting market structure to provide a framework to examine the implications for policy. It is important to highlight that, while the dynamics of these markets are vastly different, the underlying rationale and strategies employed can be useful as indicators for introducing competition in other countries.

4.1 Structural components of international reform

Although telecoms policy issues and options facing governments internationally are fairly universal, there has been no specific model followed to date. Each model is highly country specific. While the underlying principles have not differed, there has been debate around the structure, co-ordination and implementation of liberalising these markets. Change can be broadly categorised in both developed and developing countries along the following lines:

- *Commercialising operations and separating operational functions from government*

State-owned entities have been reorganised to perform like commercial enterprises, with separate boards of directors and independent reporting structures. While some countries have completely privatised telecoms utilities, others have opted for state-ownership with increased commercial goals.

- *Shifting government focus from ownership and management to policy and regulation*

Governments are increasingly focusing effort on developing broader sector objectives, and national and regional development goals to ensure market efficiency. To facilitate

this, operations are separated from the functions of policy and regulation with independent boards of directors. In some instances, government officials occupy limited positions, while in others this is completely separate. "Irrespective of the particular sector and ownership structures adopted, regulation is needed to enhance economic efficiency of markets, contain monopoly power, and create market rules to encourage investor and consumer confidence." (Saunders et al., 1994:5)

- *Increasing the participation of private enterprise and capital*

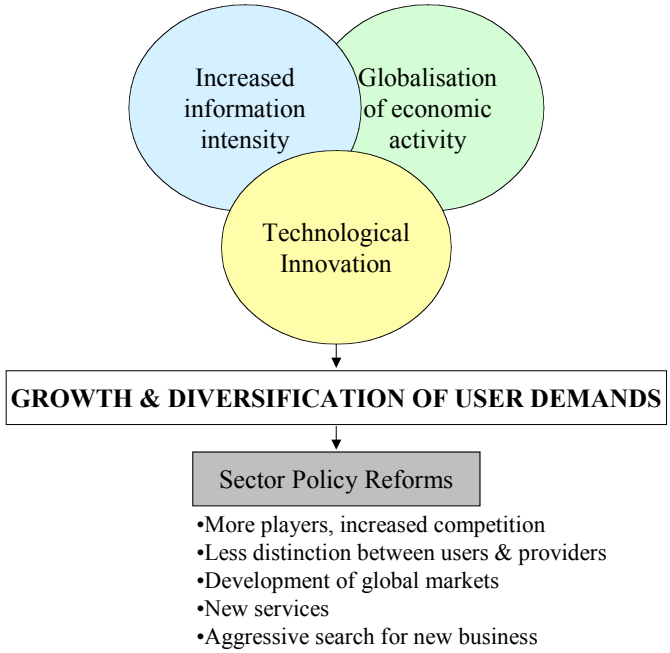
Increased private sector involvement can attract new sources of capital, management and technology to the sector. In addition, innovations in technology have made it possible to deliver services similar to those of full national monopoly providers at a much lower investment. The level of investment required is closer to private sector appetites and thus attracts increased capital. Increased activity in telecoms has also allowed for greater rates of return on investment, particularly in mobile.

- *Containing monopolies, developing competition and diversifying supply of services*

Monopoly providers are increasingly finding it difficult to meet diverse and changing market demands. The number of separate providers of telecoms networks and services is increasing. Competition or the threat of competition is likely to spur established organisations to improve services, reduce costs, lower prices and, in some instances, expand their network. Diversifying supply can attract new sources of capital and management to the sector, develop rivalry among service providers over performance and price, and generate cost benchmarks to guide pricing of monopoly supplies.

Commercialising operations, separating operational functions from government, shifting government focus to policy and regulation, increasing private sector participation and developing competition are the broad parameters governments have embarked on to institute sector reform and enable greater market performance. Details of how this is done and what assumes significance varies widely from country to country. Converging trends such as increased information intensity in the information society, globalisation of economies and increasing technological innovation have thus driven changes in sector policy reforms. Key attributes of this are illustrated below:

Figure 7 — Driving forces of reform in the telecoms sector[3]



4.2 International benchmarks

Given the huge differences in implementation and the country-specific objectives, it is difficult to pinpoint best practice in liberalising telecoms markets and to introduce competition. Some lessons from the early-adopters in industrialised countries and the continual struggles to introduce competition and break the stranglehold of the incumbent can provide important indicators for late starters.

Designing a liberalised sector is difficult for policy-makers as it requires a complex array of interrelated factors. Policy decisions are influenced by the optimal market structure to adopt, the degree of boundary between monopoly and competitive services, and the timeframe for maintaining entry restrictions. Added to this, regulatory safeguards and structures must be put in place prior to liberalisation to guarantee fair practice and ensure competitiveness. Experience has shown that policy-makers also have to consider

[3] Adapted from Saunders, R., Warford, J. and Wellenius, B. (1994:306) *Telecommunications and Economic Development,* The Johns Hopkins University Press, Baltimore.

operational issues that are likely to impact the market structure such as cross-subsidisation, tariff rebalancing and abuse of dominant market power. The challenge for regulators has been to balance often conflicting objectives.

The United Kingdom and the United States of America were among the front-runners in the process towards more open telecoms markets. British Telecom (BT) was the first large incumbent to be privatised in the early 1980s. Competition started in the UK a lot earlier than in most European countries and to date has the most companies competing in the market. Despite early privatisation and liberalisation processes in the UK, however, competition has developed gradually. BT still has significant market share compared with the new entrants, particularly in voice telephony. The two case studies below illustrate the complexity of dealing with liberalisation and introducing competition. The section that follows attempts to provide a brief outline of the key elements of policy and regulatory reform and the market impact to date.

4.2.1 United Kingdom

As in most countries, BT under the Post Office was the monopoly supplier of telephone services in the United Kingdom until 1981. Changes in technology and a mass move to more liberalised markets started the deregulation process. The London Business School, led by Michael Beesley, was commissioned by Parliament in 1980 to investigate the implications of competition, particularly resale. (Beesley, 1981) The study concluded that the consumer benefits outweighed BT's loss of revenue from lifting restrictions on services to the home market. It recommended that there should be no restrictions on services to the home market. Customers should be free to lease these at appropriate prices irrespective of the purpose of their use but leased-circuit pricing for home use should continue to be decided independently. BT should also be free to engage in competition in a non-voice market, subject to regulation. These conclusions were drawn under the impression that resale of services would encourage innovation and competition in the industry. Despite the study's conclusions and the associated consumer benefit, the government chose not to liberalise by permitting resale. (Beesley, 1981; Beesley, Laidlaw and Gist, 1987)

The liberalisation process began with the British Telecommunications Act in 1981 which split BT from the Post Office, and established BT as a public corporation responsible for telecoms services with some competition in terminal equipment. This retained exclusivity granted BT the ability to regulate the industry. A second-network operator was granted a licence in 1982 to run and operate a telecoms network in competition to BT. Mercury, a subsidiary of Cable and Wireless, was awarded a five-year exclusive licence. The licence conditions were not as stringent as BT but it did require Mercury to provide services in stipulated areas. In 1982, the government announced plans to privatise BT. The duopoly policy was announced a year later, thus guaranteeing both BT and Mercury seven-year exclusivity for national fixed-line networks. The rationale was to protect Mercury from competition while it constructed its network.

Mercury never envisioned itself becoming a total competitor to BT. Its services were aimed at the point-to-point corporate leased-line market. Residential voice was only introduced in 1987. Mercury concentrated on the high-value-added parts of the network and on the profitable long-distance and international markets.

The 1984 Telecommunications Act established the basic framework for competition and regulation in the industry and abolished BT's statutory involvement in regulation. The Act also created a telecoms regulatory body, Oftel. This completed the process of separating regulatory and operational functions begun in 1981. In 1984, BT was privatised with 50.2% of its shares sold through public listing. In 1991, 23.8% was sold and the remainder in 1993. Mobile services were launched in 1985, with two operators awarded licences – Cellnet and Vodafone.

As a result of the limited benefits derived from the gradual introduction of competition as well as increased moves towards a services-based economy, a new policy was needed to encourage new telecoms operators to enter the market and allowed existing operators to offer a wider range of services. This would include allowing new operators to fund "fixed link" networks in the UK, allowing cable companies to provide telecoms services

in their own right rather than as agents for BT or Mercury, licensing simple resale on international routes where the far-end was also liberalised, and extending the scope of class licences to the provision of a number of additional networks and services. As a result of this, a number of new national PTOs were licensed, and new operators continue to be licensed. (Ypsilanti, 2002:13)

New entrants have typically concentrated on the more profitable segments and competition is still limited to these segments, with BT very strong in the residential sector. "Resale of spare capacity is standard practice and is growing with the creation of new networks. This appears to be providing significant benefits for larger businesses, although the appearance of Mercury was sufficient of itself to promote competition in Mercury's targeted markets so the additional gain has not necessarily been all that large." (Curwen, 1997:130)

Since the privatisation of British Telecom in 1984, the UK telecoms market has experienced unprecedented expansion in terms of both, the overall volume of business and the range of services on offer. According to a 2005 study by Ofcom, total telecoms revenue increased from £7.5 billion in 1984 to over £40 billion currently. Prior to liberalisation, consumers were totally reliant on one state-owned monopoly provider to meet all their telecoms needs. They now have a choice at every level of the telecoms value-chain. Liberalisation and competition have been key to price reductions and increased consumer choice. Market data reveals that BT still largely dominant in the UK, particularly in voice. Revenue growth has been mainly in newer services such as mobile and Internet. Interconnect revenues have increased as a result of increased competition. Growth in fixed-call volumes has been driven by the Internet. Mobile has enjoyed phenomenal growth; in 2000, the number of mobile subscribers exceeded the number of fixed lines for the first time – 34,766 fixed lines compared to 43,452 mobile subscribers. (Ofcom, 2005). Ofcom frequently undertakes market and customer reviews in an ongoing effort to introduce competition. One of the results of this approach has been the replacement of the licensing regime for services that were highly stratified and limiting with a general authorisation regime. The general authorisation regime requires voluntary

notification of service provision to Ofcom by the service provider. This approach has created a host of companies involved in network and service provision with limited bureaucratic hurdles. The level of liberalisation in the UK, the growing complexity of suppliers in the telecoms value chain and the increasing blurring of divisions between broadcasting and telecoms makes the process of measuring the sector difficult. Broadly, the table below provides an overview of some types of players in the telecoms sector and illustrates how the sector is dominated by a few large players but includes many smaller companies, thus encouraging innovation and optimal use of existing infrastructure.

Table 5 — UK telecoms market players

Type	Examples	No of Players
BT		
Cable	ntl, Telewest	1
Corporate alt-nets	Cable & wireless, Energis	2
Other alt-nets	Easynet	c 20
Mobile networks	Vodafone, O2, Orange, TM, 3	5
Major service providers	Centrica, Virgin, AOL, Wanadoo	c 20
Niche service providers		several 100's

Source: Ofcom, 2005

The emergence of increased network competition has resulted in a large proportion of total market revenues that are actually interconnect, i.e. simply inter-industry transfer. The figure below splits the revenues into retail and wholesale. These wholesale revenues account for interconnect but retail is a truer reflection of actual activity in the market. Ofcom estimates wholesale activity to be in the region of 19% of total industry revenues. Removing wholesale activity from the total revenue figure reveals that the total end-user spending on telecoms services in the UK has increased by 5% since 2003.

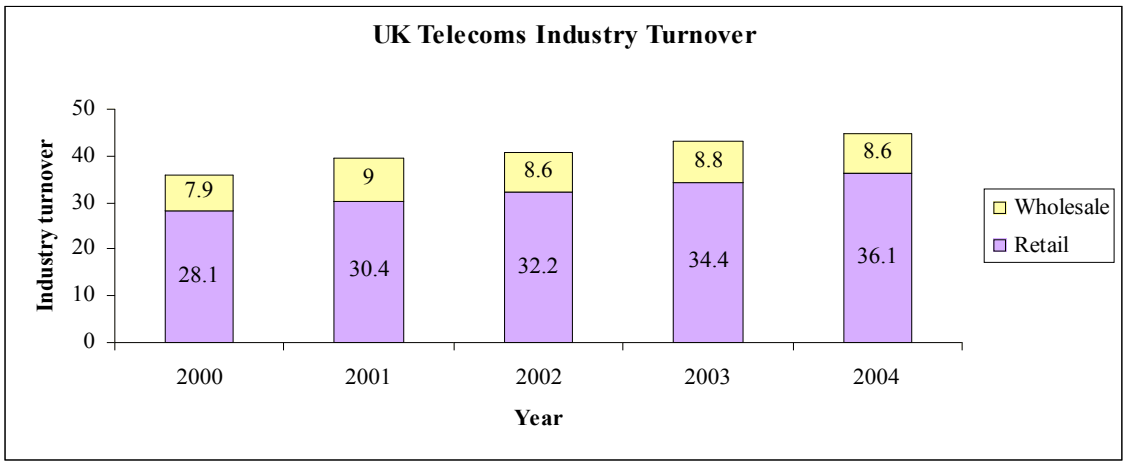
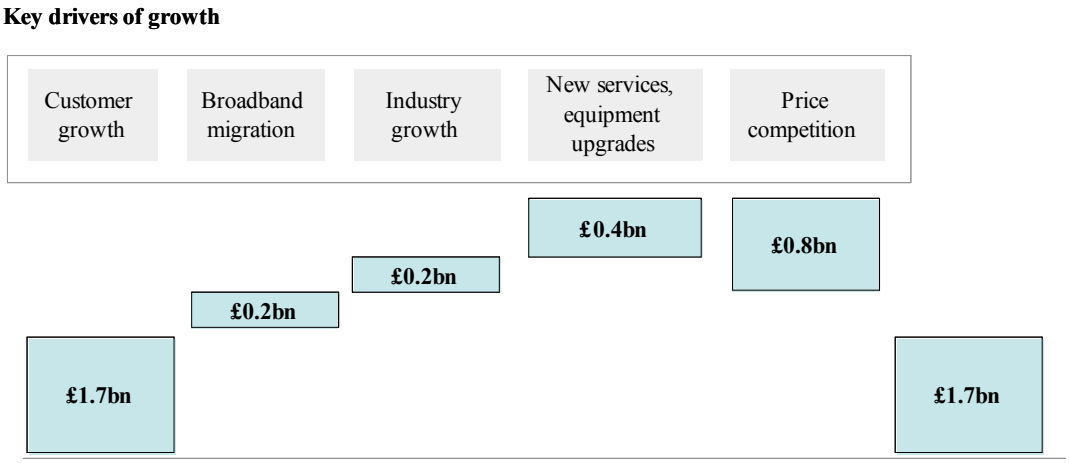


Figure 8 — UK telecoms industry turnover

Source: Ofcom, 2005

Mobile and data are the main growth drivers of the sector; significant fixed mobile substitution has followed the decline in the total number of fixed lines. There has been an increase in the number of internet connections and broadband services. The differential in pricing is evident from the fact that mobile contributes a higher proportion of revenues than volumes. The next table provides a breakdown of the main growth drivers in the telecoms sector, and highlights that new customers are the single largest driver of growth. It also illustrates that customer growth is a key driver. All other services, products and innovations depend on customer growth. This growth is unlikely to be achieved in monopoly markets where incumbents seek to maximise profits by charging the highest prices to the smallest segment of the population.

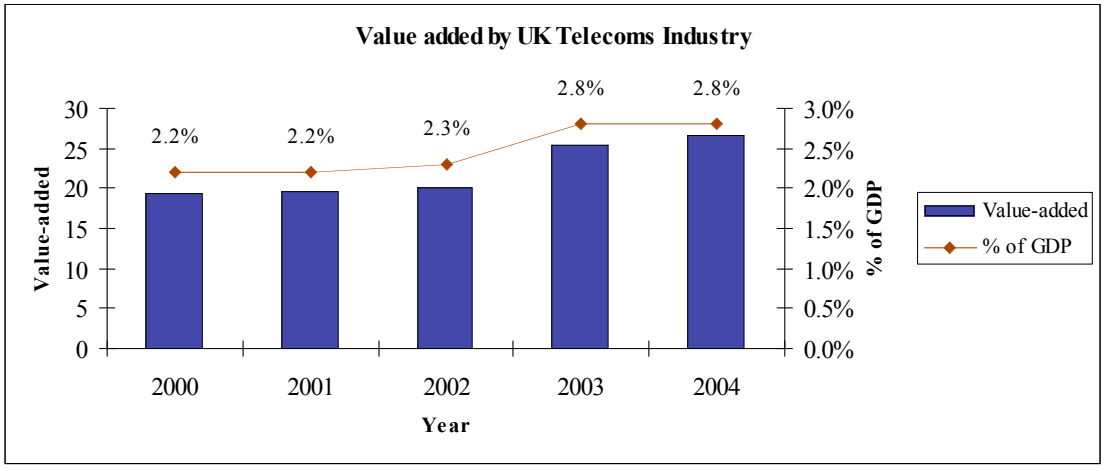
Figure 9 — Key drivers of growth in UK economy



Source: Ofcom, 2005

Telecoms is a significant contributor to the UK economy with a 2,8% contribution to GDP in 2005 with steady growth over the years. The figure below illustrates telecoms contribution to the UK GDP.

Figure 10 — Telecoms contribution to UK GDP

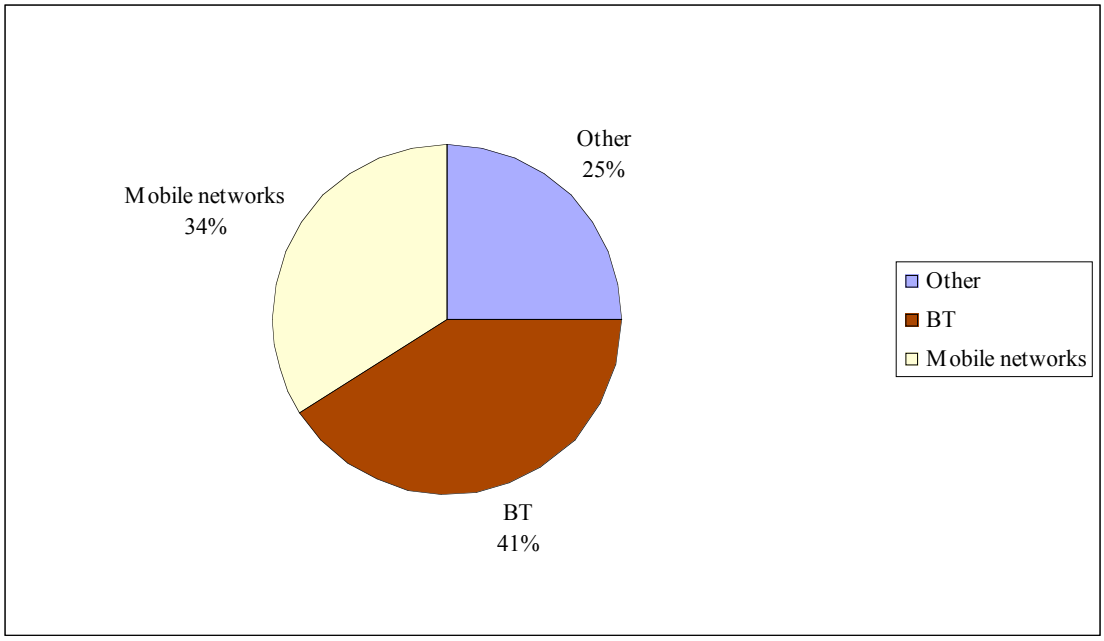


Source: Ofcom, 2005

Despite years of market reform and a concerted effort by the regulator to decrease the power of BT and introduce further competition in the telecoms market, BT remains the

single biggest player in the UK telecoms sector, even though its market share has declined to just over 41%.

Figure 11 — Share of UK telecoms industry revenues



Source: Ofcom, 2005

Responsibilities of the Regulator

In keeping with the increasing convergence of telecoms, information technology and broadcasting, five regulatory bodies in the communications sector — the Broadcasting Standards Commission, the Independent Television Commission, Oftel, the Radio Authority and the Radiocommunications Agency — were merged in December 2003 to create the Office of Communications (Ofcom) with wide-ranging responsibilities across the countrys' communications markets.

Ofcom's statutory duties under the Communications Act of 2003 included the aims of furthering consumer interests in communications in relevant markets, where appropriate, by promoting competition to ensure a wide range of electronic communications services, including high-speed data services, would be available throughout the UK. Although, Ofcom's regulatory principles show bias against intervention, in instances of market failure, it does have a willingness to intervene firmly as required. Continuous market

evaluation and research is also a core principle. This approach allows Ofcom to keep track of the market on an annual basis and intervene if necessary.

A recent OECD review on regulatory reform in the UK identified the following strengths and weaknesses of the current policy and regulatory system (2002:62).

Table 6 — Strengths and weaknesses of the UK policy and regulatory system

Strengths	**Weaknesses**
• Mature regulatory body with structures to ensure technologically neutral and consistent sector regulation • Early implementation of pro-competitive regulatory measures • Rapid development of fixed and mobile sectors • Price competition resulting in relatively low prices for consumers • Low access charges for narrowband Internet services • Well-developed interconnection or wholesale regime	• Slow introduction of local-loop unbundling and full carrier pre-selection • Lack of alternative fixed infrastructures in the local loop for a relatively large part of the country (approximately 45% of the population) • Relatively high retail prices for short-leased lines • Poor roll-out of broadband • Lack of fining powers for Oftel

Source: OECD, 2002:62

Ofcom's continual attempts to understand the market dynamics through strategic and policy reviews have assisted in ensuring that market development is not significantly constrained. To expand market development and foster competition, Ofcom undertook a strategic review of the communications sector, including telecoms and broadcasting, in 2004, and is contemplating full deregulation of the market through a number of options including the introduction of spectrum trading and liberalisation of spectrum management. The new approach promises a more liberal regime and will hopefully promote better use of scarce resources, enable increased innovation and increase the number of players providing services. Actual implementation of spectrum liberalisation may prove challenging, however.

Key lessons from the UK experience

- The consumer benefits from competition outweigh the incumbent operators loss of revenue;
- Resale of services encourages innovation and competition in the industry;
- Duopoly policies are unlikely to significantly stimulate competition or massive infrastructure investment;
- The introduction of privatisation and increased competition has increased overall industry revenues, sector contribution to GDP and increased consumer benefits – including price reductions and increased choice.
- Frequent market reviews to understand market development and the need for regulatory intervention where required;
- Allowing market forces to enable convergence of services by liberalising the licensing regime;
- Increased customers drive market growth by a variety of means – increased service providers, increased interconnect revenues and sector activity;
- Even after many years of privatisation and liberalisation, the incumbent operator is still strong. Thus, it will take many years to reduce the power of the incumbent.
- The continual attempt to understand market dynamics and assess the level of competition within various levels of the value chain. As a result, it has a dominant incumbent operator with a significantly smaller market share than most incumbents internationally.

Concluding comments

Some critics have claimed that consumers were denied the benefits of competition because the duopoly policy protected BT from the full rigours of a competitive market and gave Mercury a false sense of security, causing it to be conservative in its network and service development. Armstrong et al (1994) describe the period of liberalisation in UK telecommunications as a decade of lost opportunities. Although, at the time, the privatisation and liberalisation decisions were radical and started an international trend towards more liberalised markets, the liberalisation policy itself ensured a soft transition for BT to a more competitive market. To a large extent, BT was shielded from

competition and only had to face real changes in the 1990s. Although competition has not developed as fast as desired or predicted, consumers have been able to benefit from lower prices and increased choice. However, BT is still dominant in the residential market and competitors continue to have difficulty accessing the local loop. Oftel's policy of promoting infrastructure competition at the expense of service competition has been criticised. A strong argument in favour of the conservative approach to market restructuring decisions has been that the UK was a front-runner in an untested marketplace. But because technology, political, social and economic circumstances have changed radically in the past twenty years, the validity of this model being replicated in developing countries is arguable.

4.2.2 The American telecoms market

The US market makes an interesting case study, primarily because it developed differently from the national publicly owned networks, and is often used as a benchmark for liberalising markets. Until 1934 AT&T was the dominant national telephone monopoly, under the guise of providing universal service. The pressures of technological change and monopoly cross-subsidies grew in the 1960s when regulatory reform was pushed by a number of factors: rapid technological innovation, ambitious entrepreneurs, changing economic conditions, political norms and regulatory failure. This period also saw the emergence of computing services. Computers were beginning to run communications networks, as substitute services for traditional public service telecoms networks. These services were highly competitive, efficient and innovative with low barriers to entry. They were also simultaneously substitute services for traditional regulated services but were also dependent on the underlying communications network. Seeing the potential of these new services, the telephone companies also wanted to provide these services and thus became a competitor as well as a service provider.

Despite its domination and monopoly position in most markets, however, AT&T increasingly faced competition from other value-added carriers, local, long-distance, satellite, mobile and equipment providers. Technological innovation, including the convergence of computing and telecoms and increased pressure from the computer

manufacturing companies, sounded the death knell for the AT&T monopoly. Services such as ISDN demonstrated the simultaneous switching and transmission of voice and data. The possibilities for integration with computer and data processing technologies pressured the market for more open terminal equipment markets. As the number of computers in the United States grew from 250 in 1955 to 69 000 in 1968, demand for high-quality, high-speed data transmission grew. Under pressure from the computer industry and the need to introduce new services, the US Department of Justice was forced to consider competition in telecoms services.

As a result of the increasing importance of computers and the convergence of telecoms and computing services, the FCC launched an Inquiry to examine the issues of convergence and transformation in telecoms and draw boundary lines between regulated and unregulated services. The Computer Inquiries initiated by the FCC have become historic in its approach to deregulation. In 1986, the Commission stated:

> The regulatory issues spawned by the technical confluence of regulated communications services and unregulated [computer networks] have been among the most important matters this Commission has dealt with over 20 years. Indeed, during this period, we have continuous basis, as we have sought to revise and refine our regulatory approach in light of rapidly changing technological and marketplace developments.[4]

The key issue facing the Commission in the sixties was the issue of "convergence" of computing and telephony. The Commission outlined the task before them in Computer Inquiry I as follows:

(a) [t]he nature and extent of the regulatory jurisdiction to be applied to data processing services; and

(b) [w]hether, under what circumstances, and subject to what conditions or safeguards, common carriers should be permitted to engage in data processing.[5]

The FCC attempted to deal with this issue by segregating services as "pure communications" and "pure data processing" and created four categories of service —

---

[4] Amendment of Sections 64.702 of the Comm'n's Rules and Regs. (Third Computer Inquiry), *Report and Order*, 104 F.C.C2d 958, para. 9, 60 Rad. Reg.2d (P&F) 603 (1986)

[5] Computer I *Tentative Decision, supra* note 5, para. 14.

traditional communications services; hybrid communications services (telecoms making use of computing techniques); computing services; and hybrid computing services (computing services making use of telecoms techniques) (Carpentier et al., 1992:17).

These categories were vague enough to make implementation of the regulations difficult. The Commission recognised the problem with the vague definition of hybrids and attempted to resolve the classification of these services on an ad-hoc, case-by-case basis. This eventually became too cumbersome and combined with the pace of change in computing, particularly the increasing popularity of micro-computing, forced a second inquiry. The key failing of Computer Inquiry I was that it attempted to determine differences between technologies and regulate accordingly. Computer Inquiry II attempted to examine the differences between services experienced by users. The main consequence of this was to change the classification of services into the following categories:

- Basic services (including voice and data transmission) classified as essential services that remained regulated. Basic service is defined as the provisioned transmission service "regardless of whether subscribers use it for voice, data, video, facsimile, or other forms of transmission."[6]
- Value-added services encompassing all those services specifically tailored for a use, e.g. message systems, transactions. CPE was also deregulated. AT&T was not allowed to offer the unregulated service.

Instead of attempting to segregate processing capabilities as in the old definition, the Commission decided to make the classification dependent on the nature of the activity involved, thus, transforming the analysis from an examination of technology to service provisioned. Further, given the unique position of incumbent providers, the Commission was also concerned about the potential for abuse. In 1987, the Federal District Court for Washington, D.C. stated:

---

[6] *Computer II Final Decision, supra* note 15, para. 83.

> That the ability for abuse exists as does the incentive, of that there can also be no doubt. As stated above, information services are fragile, and because of their fragility, time-sensitivity, and their negative reactions to even small degradations in transmission quality and speed, they are most easily subject to destruction by those who control their transmission. Among the more obvious means of anticompetitive action in this regard are increases in the rates for those switched and private line services upon which Regional Company competitors depend while lower rates are maintained for Regional Company network services; manipulation of the quality of access lines; impairment of the speed, quality, and information services to take advantage of planned, but not yet publicly known, changes in the underlying network; and use for Regional Company benefit of the knowledge of the design, nature, geographic coverage, and traffic patterns of competitive information service providers.[7]

To protect abuse of dominant positions, the Commission imposed structural separation of services on all carriers with sufficient market size to be able to abuse their position. Large carriers were required to have separate subsidiaries in the provision of enhanced services.

AT&T's response to the onset of competition, including its regulatory tactics and product policy, led to its eventual dissolution. "By controlling entry, price, facilities and product offerings, regulation shaped the industry's structure and defined the boundaries of telecommunications markets." (Vietor, 1994:167) Its tactics were subsequently listed among the anti-trust charges against it. AT&T responded with products and services designed to pre-empt the competition, e.g. Telpak. The lucrative private-line market, which comprises many large US corporate clients was growing, so in response to competitors entering the market, AT&T developed four packages aimed at this segment. Its new rates offered huge discounts over existing rates (in some instances up to 85%), which it justified as "value-of-service" pricing unrelated to cost structures or technology, which its competitors were unable to match. (Vietor, 1994:203)

[7] United States vs Western Electric Company, 673 F.Supp.525,566 (D.D.C 1987).

AT&T's anti-trust trial opened in January 1981 and the settlement was announced a year later. The case was based on AT&T's vertical integration of regulated and unregulated activities being inherently anti-competitive and conducive to predatory behaviour (Vietor, 1994:210). Ownership in the equipment market facilitated monopolisation; ownership in local exchange companies allowed for the cross-subsidisation and facilitated monopolisation of long-distance markets.

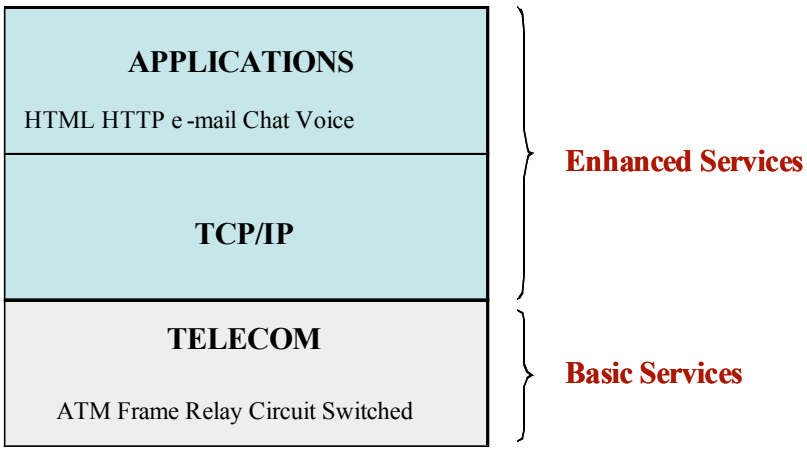
The AT&T break-up in 1984 was the forerunner of more liberal markets. AT&T had been the dominant national carrier, with activities spanning all areas of the telecoms value-chain. Local network services were provided by the Bell operating companies, all subsidiaries of AT&T. Each of the 22 subsidiaries held a local monopoly in its region. AT&T carried 96% of long-distance traffic, including acting as the common carrier for the Bell operating companies. Equipment manufacturing was done by a group subsidiary, Western Electric, which supplied the entire group. "It sold 90% of its product internally and made up two-thirds of the manufacturing activity in the American telecoms industry." (Carpentier, Farnoux-Toporkoff and Garric, 1992:10) AT&T also ran the largest private research organisation in the world through Bell Laboratories.

In 1984, the US Department of Justice announced the break-up of AT&T, which was ordered to relinquish interests in local services and divest itself of its 22 Bell operating companies as well as equipment manufacturing. The divestiture has been described as the biggest, most complex restructuring in the history of business. AT&T's assets went from $155 billion to $35 billion. It was allowed to develop outside telecoms, which also included computing and international. The 22 Bell operating companies were grouped into seven regional operating companies, each of similar financial strength. Long-distance services were covered by the scaled-down AT&T and any other companies that wished to participate. The value-added network sector was now open to competition. "The creation of eight separate companies, each with assets of at least $16 billion, dramatically interrupted the evolutionary course of deregulation, network engineering, market structure, competitive relationships, and political interests were recast." (Vietor, 1994:211)

To keep up with a rapidly changing and evolving industry, a third computer inquiry was launched in 1985 to establish "new deregulation rules". The outcome was a move towards open-network architecture. Its main aim was to break the network down into components to which any value-added services user could connect at any point and thus allow non-discriminatory access by all users of these services. "The open network architecture therefore strives to allow the network to evolve so that new value-added services can be created by providers other than the telephone companies without the need to conform to any particular restrictions or to incur unwarranted costs." (Carpentier et al., 1992:32)

Cannon comments that the Computer Inquiries "is not a history of technologically biased regulation, segregating one computer from another based on the technology employed. Rather, this is a market policy, segregating competitive markets from non-competitive." (2001:169) Broadly, the conceptual framework of the FCC ruling follows a layered model of regulation, as illustrated in the diagram below:

Figure 12 — Layered model of regulation



Source: Cannon (2001:1)

These separate layers permitted separate markets to develop. Today there are over 7000 ISP's in the United States with a choice of more than 7 ISP's for most Americans. High-speed data transmission, innovative and cheap prices are common for consumers. However, it must be noted that this model of regulation was not immediately apparent. Many lawsuits and industry consultation led to this deregulated model.

The 1996 Telecommunications Act brought about the next wave of radical change in the United States. The Act aggressively pursued a more competitive market structure. It removed the barriers that previously separated the telephone and cable industries. It allowed the cable industry to enter the local telephone-services market and telephone companies to enter the broadcast-video market. It also reintroduced vertical integration, so that companies could again combine equipment manufacturing, long-distance services, enhanced services and local services. Regional operating companies were allowed to participate in the equipment manufacturing and long-distance markets outside of their defined territories, but only on the following conditions:

- The FCC would determine whether the company had complied with the opening of its networks to local competition (checked against an FCC checklist).
- The operating company would have to secure a binding contract with a competitor for an interconnected service, including the provision of unbundled local network functions, if requested.
- If these conditions were met, the FCC would grant the company a licence to provide competitive long-distance services through a structurally separate affiliate.

Since the 1996 Act, there has been a dramatic increase in the number of carriers, in the services offered by them, and in the overall traffic carried on networks. Prices also declined substantially. AT&T, although still America's largest long-distance and international carrier lost more than a third of its market share since the introduction of competition. From a 100% market share in the long-distance market prior to deregulation in the Eighties to less than 50% market share in the enterprise market and about 70% market share in the consumer market. Increased competition, also forced AT&T to

become more efficient. The company now has higher gross revenues and profits than it did prior to the introduction of competition.

Following aggressive liberalisation policies, a number of telecoms companies were started. Telecoms liberalisation was a key factor that drove the productivity boom in the US and other parts of the developed world in the late 1990's. Ineffective monitoring of powerful incumbents and inadequate regulatory provisions in introducing competition were some of the factors that also led to many companies failing, for example, ICG Communications, Iridium, Northpoint Communications, Winstar Communications and Worldcom, whose effects were felt globally. As Cooper (2002:35) points out, "the FCC should give much more weight in its consideration of long distance entry to the mountains of evidence provided by competitors that the incumbents have not really opened their local markets. It should ensure that the lucrative area of advanced telecoms services, including high speed Internet, is open to all competitors on a non-discriminatory basis". Large incumbents still dominate the industry and the failure of large long-distance suppliers like Worldcom to penetrate the market effectively and challenge the incumbent need to be examined in light of new technologies and changes to supply and demand factors.

The ex-chairman of the FCC who oversaw the 1996 Act, Reed Hundt has, however, commented that these failures are not directly attributable to policy failure alone. "Some companies have managed their investments poorly and over-invested, but now there are countless miles of fibre that have been laid, and tower sites on hills, and satellites up in the sky that will be useful assets for decades. The US telecommunications market is the biggest, best and most competitive telecoms market in the world. We are connecting through more means and passing more information more efficiently than ever before, and it's only getting better." (Koselka, 2001) He added that communications companies have to face the challenges of a competitive market. "It's a brand new experience for communications companies, which have been protected from downside risk as well as denied the upside of growing markets and rewards for innovation." The introduction of competition has been good for introducing investment into the sector and for the country

as a whole. As a result of the introduction of competition and the advent of newer, cheaper, more efficient technology, the US information sector has doubled its share of the total US economy from 1992-2000, even after the dot-com bubble burst.

Key lessons from the US experience

- Competition was significantly hampered in the US for many decades as a result of exclusionary licensing policies driven by the unnecessary duplication of infrastructure policy; protected monopoly status for incumbents under the guise of universal service and guaranteed revenues and returns for regulated utilities through the regulation of rates.
- The effect of dominant operators like AT&T that control all aspects of the value-chain are still evident many years after liberalisation ;
- Technological change and entrepreneurial innovation forced policy changes;
- The Computer Inquiries resulted in adoption of a layered model of regulation in the conceptual framework which allowed for regulation of markets. The different layers notably, (1) physical network layer, (2) logical network layer (3) applications and services layer and (4) content, demarcate natural boundaries between markets. "Thus, by conceptualising the policy as layers, the analyst is enabled to identify markets, clarify issues, create boundary regulations that are effective, and in so doing, target solutions where issues reside without interfering with other industries and opportunities." (Cannon, 2003:195)
- The underlying philosophies of the Inquiries i.e. concern for anti-competitive behaviour, maintaining an open communications plan and allowing for innovative development of technology stimulated competition and market development
- Creating open communications platforms where innovation can occur, independent of dominant communications players by avoiding imposing legacy regulation to new services.
- Complicated implementation regimes can hamper progress and allow incumbents time to ward of competition.

4.3 Conclusion

Key lessons from the US and UK experience

Policy and Regulatory

- Markets develop differently and at a different pace. Thus, frequent market reviews are necessary to understand market development and the need for regulatory intervention where required;
- Competition was often significantly hampered as a direct result of policy decisions to protect incumbent operators often under the guise of universal service or the need for infrastructure-based competition;
- Dominant operators that control all aspects of the value-chain are likely to engage in anti-competitive practices. This can happen even after many years of privatisation and liberalisation. Regulation to curb the dominant power of the incumbent is often required in order to protect smaller entrants and stimulate competition.
- Technological change and entrepreneurial innovation flourishes in an open market environment. Creating open communications platforms where innovation can occur, independent of dominant communications players by avoiding imposing legacy regulation to new services;
- Complicated implementation regimes can hamper progress and allow incumbents time to ward of competition;
- Duopoly policies are unlikely to significantly stimulate competition or massive infrastructure investment; and
- Regulation that allows for the analysis of markets rather than specific technologies, enables market development and identifies problem areas.

Market Competition

- Resale of services encourages innovation and competition in the industry;
- The introduction of privatisation and increased competition has increased overall industry revenues, sector contribution to GDP and increased consumer benefits – including price reductions and increased choice. These benefits outweigh the incumbent operators loss of revenue;

- Liberalising the licensing regime will allow market forces to enable convergence of services and thus stimulate market competition and innovation;
- Increased customers drive market growth by a variety of means – increased service providers, increased interconnect revenues and sector activity.

Both these markets have demonstrated that the rapid pace of technological change forced regulators and policy-makers into introducing competition. Market demand, often led by technological change, also impacted on regulation. Even though the incumbent had significant monopoly power and exercised this in the markets in which they operated and through their influence in the policy and regulatory arena, they were unable to slow market innovation and growth. While the UK and the US have been the forerunners in introducing competition, policy-makers and regulators were forced into concessions by increasing political pressure combined with significant changes in technology that could not be ignored. These processes have not been proactive in creating new market structures to enable competition, but have rather served to protect the incumbent and only allowed competition at the fringes of the network. "One of the most important conclusions that can be drawn from observing these experiences in industrial countries is that the process is complex and there is no single model or design. This is because of the multitude of factors, conflicting interests, and interrelated events that are involved." (Saunders et al., 1994:10)

5 The African business environment

Introduction

The African business environment is substantially different from most developed countries. The issues driving telecoms reform in developing countries are largely different from those of most developed countries. Developed economies often have a well-run, profitable incumbent with high-quality infrastructure that covers the majority of the country. Thus, tariffs, customer service, consumer choice and curbing monopoly power are some of the primary issues driving sector reform. But, for developing economies, critical infrastructure shortages, low-income profiles, scarce skills, generally poorly run state operations and the lack of competitive market conditions are some of the issues that characterise telecoms reform. These issues are often further complicated by varying political, social and economic imperatives. Uncritical implementation of developing country's reform initiatives as outlined in the previous chapter are almost certain to fail. "Models must be critically examined in light of the distinct circumstances in each developing country, and shaped, extended, restructured or displaced by a model of reform that best serves each country's development objectives." (Sanatan and Melody, 1997:324)

5.1 Background

The 1990s is generally regarded as a period of market reform for countries around the world, especially in developing and transitional economies, which underwent massive structural changes that included market liberalisation, unbundling of state-owned enterprises and the introduction of new laws and regulations to facilitate competition. Market reform was motivated by the need for increased state revenue, and so policy-makers tried to maximise revenues by granting temporary periods of exclusivity to privatised entities. Despite major structural changes in economies that embraced open-market policies, the reform process in developing countries has not been simple or straightforward and, in some instances, has often become mired in controversy. A combination of the need to balance conflicting objectives, political constraints and biased advice has resulted in many conflicts between governments, regulators and private sector

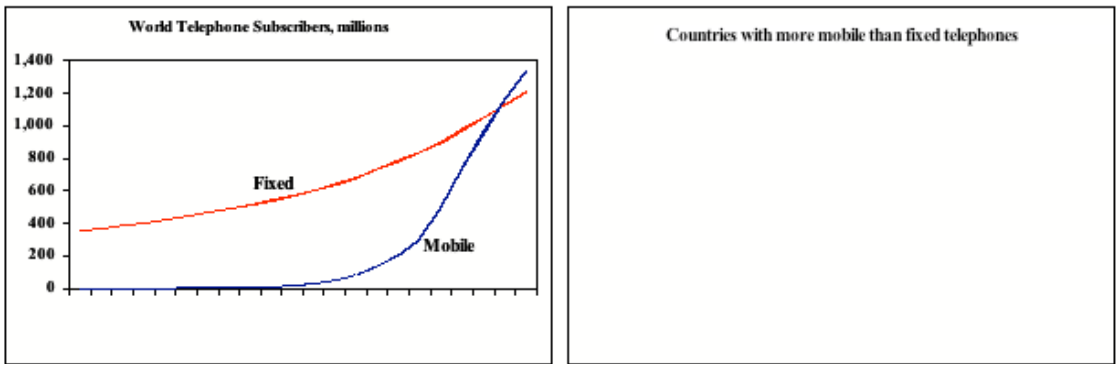
investors, often to the detriment of the development of the sector. As mentioned by Wallsten, et al, "regulations, regulators, regulated industries, and politics interact in complicated ways that affect the development of the industry as well as the rest of the economy." (2004:2) Telecom reforms in developing countries were often part of a much larger fiscal restructuring process.

Wellenius (1997) notes that, although the primary purpose of reform is to give consumers more, better, newer, and less costly services, pressure from interest groups – incumbents that want ongoing protection, new entrants seeking special deals, treasury officials expecting licensing revenues to reduce budget deficits, financial advisors earning success fees tied to transaction prices – have significantly affected the reform process. Given the nature of the telecoms industry, unlike other corporate deals, privatisation of a large telecoms monopoly creates a private firm capable of exercising significant market power. "The investor is not simply buying a firm's assets, but also the right to operate in a particular way in a particular market. The details of the privatisation often implicitly define the market that the investors are bidding to serve and simply moving a monopoly from the public to the private sphere will not necessarily result in competitive behaviour." (Wallsten, 2003:3) Thus, the privatisation process and the resulting details are particularly pertinent as they often determine the resulting market structure and the outcomes. "When markets are contestable and competitive entry is fairly easy the details of how the firm is privatised may not have many implications for the market as a whole." (Wallsten, 2003:13) The reform process, including the resulting regulatory environment, is fundamental in determining the development of a competitive market environment. "Institutional reform in telecoms usually takes three forms: organisational reform of the incumbent operator, the introduction of competition, and the establishment of regulation." (Samarajiva, 2000) Although, these three components are irreducible, they are intimately connected and their interaction will fundamentally determine the ultimate market structure.

The focus of policy and regulation for developed markets in the late Eighties and Nineties remained on introducing competition in the historically monopoly, fixed markets,

particularly through the introduction of value-added network services that required an underlying fixed infrastructure. With the introduction of new wireless technology, combined with inadequate fixed incumbents unable to deliver services in developing countries, mobile services became particularly attractive and, in some instances, the de facto voice provider. Mobile services were able to fulfil the void left by incumbent operators for the provision of voice services. The higher growth potential of mobile, lower incremental investment costs over fixed infrastructure and increased opportunities to compete with the often inefficient incumbents have attracted private-sector investors. In the early nineties, as mobile began to gain increasing popularity internationally, government's decided to embark on private sector licensing for mobile for a number of reasons. Firstly, mobile at the time was never anticipated to become a major competitor to fixed services, secondly, governments were not keen to take on additional funding for what was then a potentially risky investment and thirdly, the ability of incumbents to deliver the service was questionable. In the South African example the new coalition government had explored the option of licensing just Telkom to provide a mobile service. But Telkom representations to government had failed to convince government that it could deliver mobile services. Telkom's inherited debt situation and inability to borrow doomed its chances. At the time, Telkom could only raise R600 million for a capital investment that was estimated to be R3 billion. (Horwitz, 2001:200). This situation is true for most developing countries.

Figure 13 — World telephone subscribers, global fixed versus mobile connectivity



Source: ITU World Indicators Database

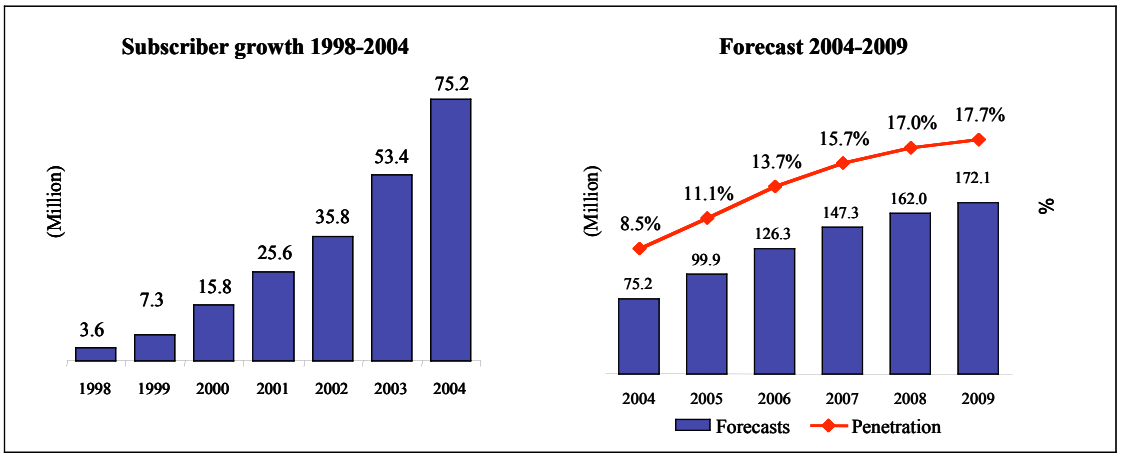
This does not mean, however, that the fixed sector can be ignored, because "fixed line services are important for economic development – businesses rely heavily on them for critical applications. Economies of countries with underdeveloped fixed sectors may suffer in international trade, and underachieve in terms of attracting foreign investment." (Analysys, 2003:12) Unprecedented subscriber growth and large mobile networks have made mobile operators similar to the large fixed incumbents in developing countries, posing a challenge for policy and regulation.

As new technologies are constantly introduced, such as broadband penetration via mobile, serious policy and regulatory issues are raised. After taking initial liberalisation decisions, and making reforms, developing countries are faced with somewhat different dilemmas, depending on the path of reform they have chosen.

5.2 Mobile — An overview of some successes

Mobile telecoms have far exceeded expectations and have overtaken the number of fixed subscribers in most developing countries, particularly Africa, because of ease of roll-out to highly mobile populations. Mobile is the main means of voice communication in Africa today. It is estimated that there is still significant untapped mobile-market potential in Africa, driven by slowly growing or stagnant fixed-line network roll-outs. Forecasts by communications experts expect mobile penetration on the African continent to reach 18% by 2009, from approximately 9% today (fixed line: 3%), illustrating continued strong growth in the mobile sector in developing countries.

Figure 14 — Current state of and forecasts for mobile penetration on the continent



Source: EMC, Figures as December of each year

As mobile operators have become the new incumbents and state-owned fixed operators struggle to compete with the private sector, important questions for policy and regulation are raised. While mobile technologies do represent a solution for Africa, the key question remains that of implementation of licenses, to ensure access at affordable prices. Further, broadband internet penetration remains particularly low with almost no competition in internet services, despite competition in most markets. While mobile can fill the voice void, it is unlikely to be able to provide the high-speed data communications required for corporates to operate, at least in the short to medium term.

As a result, although no blueprint for developing-country reform exists, it is recognised that telecoms reform is critical to overall development. African governments have therefore put reform policies on their agendas, together with broader ICT strategies. To date, there has been mixed success in attracting private-sector investment. The ITU regional forum for Africa has identified the high costs of infrastructure, the inadequacy of qualified human resources, and the non-existence of an attractive environment (regulatory, administrative, fiscal and political) as impediments to sector development. In addition, it recognised that political will was often not aggressive enough to make ICT serve as a development lever. Creating an environment conducive to investments in ICT and a strong political will to turn ICT into a development lever were identified by the

ITU forum as key factors for growing the sector. Although there is an underlying acknowledgement about the role of ICTs, the competitive dynamics, culture, politics and geography of each country are unique, making market reform difficult for policy-makers. The following sections examine some of the challenges of the reform process facing developing-country policy-makers and regulators.

5.3 The African telecoms environment

5.3.1 Network development and infrastructure investment issues

Network infrastructure is often critically under-developed but governments often lack the skills and ability to raise the substantial funding required for large-scale infrastructure upgrade and roll-out, or have the appetite to take on additional funding risks when there are more pressing basic social development needs such as housing, water provision and electricity. "Massive investment, at the level of tens of millions of US dollars world-wide, is required to combat low telephone densities and poor service quality to take advantage of modern technologies. Such investments are far beyond the reach of many governments that have other social and development programs in urgent need of funding." (Pisciotta, 1997:333) Newly elected governments, often also moving towards more market-driven economies, are usually keen to attract foreign direct investment into the country. As a result of these constraints, strategic equity partners are sought. In addition to sharing the investment risk, strategic equity partners are perceived to be able to bring much-needed managerial, operational and technical expertise to the sector.

In principle, opening markets to competition will ensure enhanced and possibly faster roll-out, but there is also the risk that strategic equity partners will focus on high-value urban areas where it is easier to recoup investments and cheaper to roll-out a network, but ignore the social objectives of government such as universal service. This approach runs the risks of infrastructure duplication and over-investment in certain areas, leaving others unserviced. Given the limited amount of investment capital, particularly in developing countries, appropriate policy and regulatory measures are critical to ensure that the benefits of competition and infrastructure roll-out in both rural and urban areas can be met. In an attempt to maximise profits and recoup investments as quickly as possible,

strategic equity partners are often prone to monopoly practices, i.e. high tariffs, refusal of services to potential competitors, limited service innovation, low levels of customer service. Adequate policy and regulatory instruments capable of both expanding infrastructure and addressing government's objectives are therefore particularly important. This requires long-term sector management once the initial policy framework is in place.

5.3.2 Political commitment to competition

One of the strongest arguments to emerge from developing-country reform processes, and one that significantly influences investment decisions, is the need for political will and commitment to competition. (Ramanadham, 1994; Abdala, 2000; Makhaya, 2002) Conflicting objectives from governments over privatisation, infrastructure expansion and the need to maximise returns from state-owned enterprises, together with the need to lower input costs and increase market competition, make reform decisions particularly difficult. Strong alliances — for example, with labour unions, or making deals with strategic equity partners — give rise to policy and regulatory trade-offs that ultimately inhibit competition. Even though there maybe structurally separate ministries and regulatory agencies, the regulatory agencies are often held to ransom by the need to preserve and drive revenues in the incumbent because of existing government shareholding and/or simultaneous privatisation processes. (Bitran and Serra, 1998) It is not uncommon for separate government departments to handle privatisation processes and sector reform, hence the need to maximise cash from the sale of state-owned companies is a stronger inducement than enabling the best market structure for the sector, as the objectives are vastly different.

In addition, through the privatisation processes, strategic equity partners are often incumbents from developed countries with significantly more experience and resources in policy and regulation than developing-country policy-makers and regulators, and are therefore able to influence policy-making to the detriment of the government's social and development objectives.

A scarcity of skills in the telecoms arena throughout the value-chain, from policy-making to regulation, may result in inadequate policy and policing of the incumbent, which may indulge in monopolistic practices and anti-competitive behaviour. To exacerbate the problem further, because governments are unable to afford private sector salaries, quality staff are often lost to the private sector, along with the investment in their training.

5.4 Telecoms and investment risk for the private sector

Doing business in Africa presents many risks and challenges to investors and operators, ranging from financial, economic, political, legal and regulatory and operational risks. Crime, corruption and untested political regimes make investors particularly nervous about investing in major infrastructure on the continent. In some African countries, the transition to democracy is incomplete, following many years of military rule. In some countries, a fragile peace exists and the threat of religious and ethnic violence erupting is not uncommon. Economic policies are often inextricably linked to the country's political future and new governments are notorious for changing policies. Economic policies are often also still new and untested, along with the relative inexperience of policy-makers and administrators in developing and implementing long-term macro-economic policies.

5.4.1 Financial and economic risk

As with most infrastructure projects, telecoms requires large, upfront funding with a long pay-back period. As a result, investors are particularly stringent when looking at funding these types of projects. In risky markets like Africa, raising funding for telecoms can be challenging and expensive for operators. When MTN invested in Nigeria, the following comments were made: "Arranging a loan package can take up to a year in Africa – during which MTN will remain at risk. Some domestic debt is an option, as the project will generate revenues in Naira. Because of the size of the project (most of the infrastructure equipment will be imported from the US or Europe), only a small portion of the total package can be provided in naira and substantial currency risk will remain with the project. High interest rates are also a problem." (Financial Mail, South Africa, 2001)

In most free-market exchange-rate systems, movement of the exchange rate broadly follows a pattern linked to the differential in inflation rates and interest rates (Brady and Jenkins, 2001). But, in narrowly based Third-World economies highly dependent on single products or sectors, with relatively few buyers and sellers of the currency, significant swings in exchange-rate movement may result. For investors, this increases their risks for tariffs and revenues, as these are based on local currency, while the project funding is dollar denominated. This was experienced by the Egyptian mobile operators in 2000, when the Egyptian pound significantly devalued against the US dollar. As a result, capital expenditure was limited to servicing the most lucrative segments of the population. To date, Egypt has a mere 14% penetration in mobile services, with a population of 70 million. Although the long-term effects can be mitigated, currency fluctuations are more likely to have short-term effects and could lead to cash-flow problems.

Theoretically, currency risk can be managed by raising the bulk of the funding in the local currency, but local markets are usually not big enough to absorb the amounts required so equipment must often be purchased in US dollars. Operators looking to invest therefore have to find First World funders. Because of the risk associated with emerging markets, and in line with First-World market expectations, telecoms investors and funders usually want a higher dollar return.

5.4.2 Operational risks

Ideally, Governments tend to prefer to licence operators to equity investors as they bring in skills and expertise in running operations and often have a better chance of succeeding. For operators, particularly newer operators, international growth requires significant resources in both cash and human capital, as each new licence calls for highly skilled technical staff in network construction and operations such as marketing, administration, customer service, information technology and billing. The technological nature of the telecoms industry demands specialised skills, especially in the start-up phase. These skills are often not readily available in the local market, creating the need for expensive expatriate resources, particularly in the initial start-up phase.

In the case of privatisation of state-owned enterprises, this process often requires significant skills to turn the operation around and match world-class standards. Thus, only after significant outlays have been made in network construction and operations management – known as peak funding – will the company start to generate a return. The mobile market has been highly successful, generating far quicker returns in excess of expectations, largely as a result of pent-up demand and the nature of the mobile investment.[8] The fixed line sector does, however, pose significantly more risk as the bulk of the investment is made upfront prior to any revenue generation. Internationally, fixed-line voice revenues are under pressure and regulatory constraints limit the aggressive growth of the monopoly era. It is therefore easier to find funders and operators for mobile licences than for fixed services.

5.4.3 Infrastructure constraints

Operating in Africa requires telecoms firms to create their own infrastructure, from building individual base-station grids to separate transmission and telecoms facilities and services. The lack of basic infrastructure like electricity and roads increases the cost of doing business while also posing significant business challenges at the operational level. In Nigeria, as a result of the poor fixed-line services, MTN[9] had to construct its own optical-fibre backbone network at an investment of $120m, install power supplies and other infrastructure to be able to run the network. This is highly unusual for GSM operators in First-World countries. Building fixed-line networks is even more complex

[8]Incremental network build is possible and thus revenue generation can begin faster. The pay-back period on the investment is often quicker.

[9] MTN is a South African mobile operator that is regarded as the largest on the continent by a number of measures including revenues and subscribers. It is listed on the Johannesburg stock exchange. M-Cell was the holding company for the MTN Group until its unbundling in 2002 and subsequent renaming to the The MTN Group. The company is 10 years old and has grown from an operator with a single mobile license in South Africa to operating in 11 countries across the African continent. It is known for investing in risky political environments eg Nigeria, CongoBrazzaville, Rwanda, and more recently Iran and Afghanistan. MTN's investment strategy and underlying philosophy is important in understanding private sector investment in developing markets.

as the terrain is often rough and in harsh climates over large geographical areas. As a result of these factors, together with often high licence fees and onerous obligations, network development becomes expensive.

5.4.4 Market perceptions

Investing in emerging markets requires a non-traditional approach to business. Official GDP/capita figures are often low and do not consider the informal sector, which accounts for a large proportion of GDP.[10] These are also often cash-based societies, making any estimates on potential spend difficult.

Even though there are potentially high rewards for investors in telecoms in Africa, financial markets are sceptical of risky infrastructure investment in Africa and even entrepreneurial operators are cautious when investing on the continent. MTN's share price lost forty-five cents after announcing winning the licence bid to operate a mobile network in Nigeria. According to one analyst, even though the cost of the licence on offer was paltry compared to what is being paid in Europe for third-generation licences, it still amounted to substantial investment, particularly given the high risks. In addition, M-Cell was also expected to pay $500-$600m to establish the infrastructure on top of onerous licence conditions (*Financial Mail*, South Africa, 2001).

5.5 Conclusion

There is no doubt that the African telecoms environment presents unique challenges to both policy-makers and investors. To attract investment, policy and regulatory interventions must consider the multiple facets of medium to long-term sector strategy for the country, overall macro-economic fundamentals, the appetite of financial markets for large infrastructure investment as well as general availability of supporting infrastructure. Contextualising the difficulty of attracting private-sector investment in Africa to a certain extent justifies regulatory protection and the limited introduction of competition, but recent global and regional developments have challenged this notion. Africa does not

[10] The Economist estimates Nigeria's informal sector to account for 78% of GDP

function as a uniquely autonomous continent and is subject to the trends, dynamics and policies of more developed countries. Despite a global downturn in the telecoms environments, rapidly growing African markets with low penetration, and thus significant potential for growth and new revenues, have attracted the attention of global investors looking for superior returns to shareholders. They are prepared to pay a premium, e.g. Vodafone recently acquired a 15% stake in Vodacom for R16-billion, increasing its shareholding from 35% to 50%, thus giving it joint control of the operator. This values the whole of Vodacom at R106 billion. (*Business Times*, 2005) This price works out to roughly US$924 per subscriber. Following the events of 9 September 2001, cash-flush Middle Eastern investors and operators are also looking for new investment opportunities outside of the developed world and are increasingly bidding for operations and licences in Africa, at significantly higher prices, e.g. MTC recently acquired Celtel International for US$3,4 billion. The price paid for Celtel's 5 million subscribers at the end of 2004 works out at roughly US$680 per subscriber. Prior to the sale, analysts estimated Celtel's value at closer to US$2 billion if it had undertaken the IPO. (*Telecom Africa Online News*, 2005) South Africa struggled to attract any credible investor for the second fixed network operator licence five years ago. While the policy and regulatory environment did not favour investment, a downturn in the global telecoms environment also affected South Africa's ability to attract investment.

These new developments highlight that capital will follow superior returns. Even though policy and regulation in Africa struggles to police large incumbents, private capital is prepared to take financial risks that can guarantee superior returns. Allowing mobile to develop with relatively little regulatory interference has allowed for superior returns. Thus, this research argues that, although creating a stable policy and regulatory environment to attract investment is important, it should not be the only driving factor. Market conditions, coupled with the prevailing economy of the time, are a significant determinant of infrastructure investment. Good policy and regulation must ultimately deliver on the identified long-term sector objectives for the country.

6 Changing role of the market in telecoms policy development. Developing markets case studies

Introduction

This chapter attempts to provide a brief overview on the policy and regulatory choices that selected developing countries have taken in the transition from monopoly to full liberalisation and highlights some of their successes and failures. It is important to note that telecoms reforms are often part of a much larger macro-economic reform process and thus requires a broader strategic policy vision and political commitment if the reform process is to be successful. Although the countries chosen by no means exhibit best practice in terms of market liberalisation, however, increased subscriber growth, investment in infrastructure and, in some instances, lower tariffs, warrant further investigation towards understanding the factors driving the success.

India's stagnating subscriber growth, limited infrastructure investment and numerous licensing debacles and court challenges are often cited to show how poor policy and regulation can lead to investor uncertainty. Recent decisions by the Indian government to change the status quo by introducing unified licenses, new policies and tariff structures as well as rejuvenating the regulator have fuelled unprecedented subscriber growth. This highlights the merits of committing to a degree of competition and more open-market policies by making policy and regulatory changes. In Morocco the introduction of an independent regulator and competition in mobile made it a leader on the African continent and fuelled telecoms growth in the country. Lastly Sri Lanka has also committed to introducing competition and market reform, which has been rewarded by exceptional telecoms growth. While all of these countries embarked on different liberalisation processes, all had to re-evaluate and re-assess their initial strategy, because of the market development and technological changes.

The country experiences below highlight how market reform leads to market development and restructuring. The efforts of regulators to increase penetration and encourage subscriber growth are also described. These sections show the routes followed

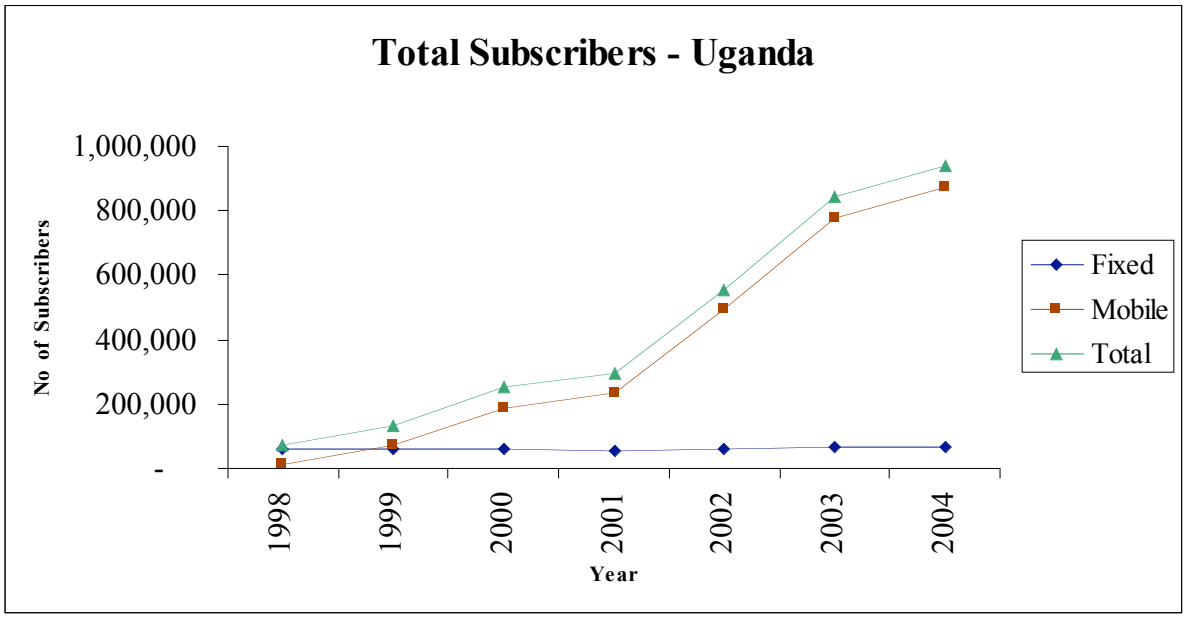
to market reform as well as the ongoing challenges posed by the reform process. Some of the case study material for Uganda, Nigeria and Morocco utilises research and information from ITU case studies. (2004, 2001)

6.1 Uganda

Uganda has enjoyed rapid development in its telecoms sector after implementing private sector participation, innovative licensing and approaches to promoting access in rural areas. The transformation of the sector began with economic reforms in 1987. The first mobile operator was licensed in 1993 to supplement the services of the fixed-line operator. Telecoms sector reforms began in earnest in 1996 with the publication of the Telecoms Policy. At the outset, objectives and goals for the sector were clearly outlined so that policy-makers, regulators and consumers understood the goals. Goals and objectives were identifiable and achievable. The overarching objective of the policy framework was to increase telecoms penetration and availability at affordable prices. Other objectives included increasing geographic coverage and ensuring access to telecoms services in rural areas. The policy statement also defined an implementation strategy which entailed the privatisation of the incumbent, establishing an enabling regulatory framework, with an independent regulatory authority and the introduction of competition.

In 2001, the Uganda communications commission issued a rural communications development policy. It provided for expansion of access to telecoms infrastructure and services, promoted the use of Internet and ICTs and established a rural communications development fund.

Figure 15 — Fixed and mobile subscribers



Source: ITU World telecoms indicators database, 2005

Initially, Uganda adopted limited competition as its key strategy for achieving telecoms policy objectives. Licensing was the key instrument for putting an appropriate market structure in place. There are three major operators and several minor operators. Regulatory oversight of the market has ensured the benefits of competition.

Uganda's success in introducing competition was the result of adopting clear policies and an appropriate regulatory framework at an early stage in the reform process. Another key driver was an innovative and flexible licensing approach towards implementing limited competition and liberalisation. Government soon realized, however, that privatisation of Uganda Telecom was not proceeding as planned, in 1998, so licensed a second national operator (SNO). Their choice of an investor was also an important factor because not all countries have enjoyed the same success, despite similar strategies. Significant subscriber growth started after the introduction of the SNO. This was spurred by the privatisation of Uganda Telecom in 2000. Current teledensity is 3.5, surpassing the target penetration of two by 2005 anticipated by the Telecoms policy of 1996.

Uganda was among the first African countries to license an SNO with a mobile licence and privatise the incumbent. It also has a well-conceived rural access policy, now in advanced stages of implementation. To reach its universal-access objectives, the regulator, Uganda Communications Commission (UCC) asked the two licensed national operators to declare the sub-counties in which they would be able to achieve the target level by mid-2002. Their declarations showed that they would be unable to achieve the target level in 154 sub-counties. In terms of their licences, they had to give up their right of exclusivity. Accordingly, the UCC opened the sub-counties to competitive entry, offering subsidies through a "reverse auction" towards the net cost of providing services. The UCC established specific subsidy caps and will award a licence to the bidder requiring the least subsidy.

The regulator is currently reviewing its telecom policy and market structure. As in South Africa, while initial market-entry decisions have lain a solid foundation, implementing further reforms and liberalising the market becomes complex and difficult with newly entrenched incumbents (both fixed and mobile) and powerful private sector interests.

Key lessons from the Uganda experience

- Immediately introducing limited competition in all services by licensing a full service second network operator, that also included mobile. Together with Uganda Telecom, the new operator assisted in increasing teledensity and fostering competition;
- Specifying rules prior to licensing of operators. Licences were prepared for both the second network operator and the incumbent prior to invitations to tender being invited from interested applicants. These licences specified important elements of the regulatory regime and reduced the regulatory uncertainty for investors; (Private Sector, 1999)
- Establishing interconnection rules upfront so that it did not become an area of contention; and
- Insisting on obligations that demand investments that are not commercially viable, risks forcing companies to undertake bad investment and could create the need for renegotiation of special privileges. For example, in South Africa, the new public

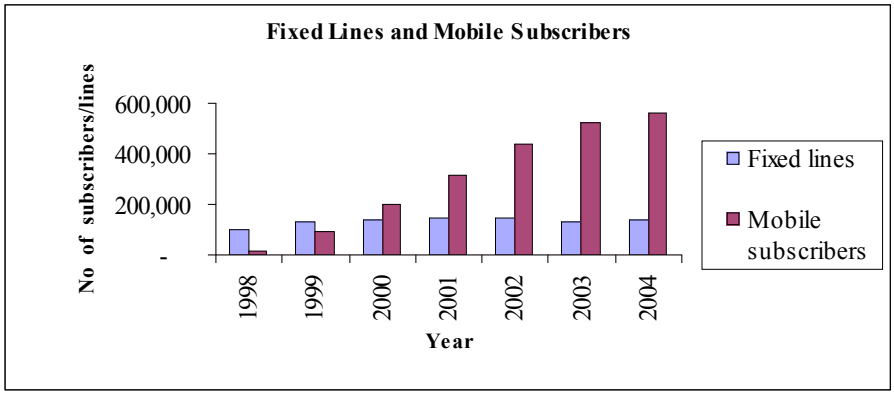
commercial television broadcaster was given onerous local content obligations that it struggled to meet and was forced to renegotiate the terms. Adopting a market-based approach to universal service ensures that the best qualified operator is licensed to provide the service.

6.2 Botswana

Botswana undertook sector reform in the 1990s with a commitment to the process from the highest levels of government. It empowered an effective and independent regulatory body to establish a regulatory framework conducive to competition and innovation, with full licensing authority, financial independence from government, and based on strong legal processes. The results can be seen in the vast improvement in teledensity.

Botswana undertook liberalisation in stages by holding consultations across the country, devising policy that was supported by government. This led to consistent and transparent legislation and established a strong regulatory authority charged with facilitating competition in the provision of telecoms services. In addition to fixed competition, two mobile operators were licensed in 1998 and serve as an incentive to improve the incumbent's performance.

Figure 16 — Number of fixed lines and mobile subscribers in Botswana



Source: ITU world telecommunications database, 2005

The sequence of the sector reform – preparing a policy, deriving legislation from the policy statement and establishing a regulatory authority with responsibility for facilitating

competition in the provision of telecoms services – all prior to authorising market entry by competitive players is important. Clear policy and legislation enabled Botswana to attract quality investors willing to make long-term commitments. Without these key legal instruments, Botswana would only have succeeded in attracting investors interested in quick, short-term gains.

Key lessons from the Botswana experience

- Proper sequencing of reform to signal government's intention to investors;
- Commitment to reform from all levels of government;
- Clear policy and legislative regime.

6.3 Morocco – introducing a strong and effective regulator

In the late Nineties, Morocco was one of the poorest countries in North Africa, with one of the lowest teledensities. To become globally competitive and to remain at the forefront of information and communications technologies, the Moroccan government embarked on a national strategy to make Morocco a player in the knowledge and information society. ICT's were at the forefront of its national socio-economic development plan. Institutional reform followed, including a new national telecoms policy in 1997. A national regulatory agency was created to govern and regulate the telecom sector, promote the rapid modernisation of the telecoms systems and services in Morocco and introduce competitive telecoms market policy. "These reforms backed by the political will that has been evident in regard to their implementation and monitoring at the government level, have enabled Morocco to take its place on the international stage and gain a reputation as a stable country with clear rules and a high level of confidence." (ITU, 2001) The primary objective of the new Telecoms Act was to "establish a telecommunications market that: avoids domination by one or two key players; supports entrepreneurialism; encourages new entrants and competitors; and, that operates in the consumer interest." (Ibahrine, 2004)

The new law provided for the splitting of the National Post Office and Telecommunication Agency into two independent public enterprises responsible for

telecoms services and postal services respectively; the setting up of an independent telecoms sector regulatory body; the establishment of private networks if the incumbent operator was not able to provide PSTN services; and the establishment of a second mobile network to compete with the incumbent. The gradual opening up of the sector to competition with mobile telephony in 1999, and VSAT in 2000, full liberalisation of value-added services and selling of a partial stake in the incumbent operator in December 2000 have ensured that the country's teledensity has improved.

A second fixed-line licence was awarded in July 2005 to a consortium including Telefonica and Portugal Telecom, each holding 32,18%, with the balance held by local Moroccan investors. This ended the monopoly held by Maroc Telecom. It is also envisaged that two 3G licences and a third fixed-line licence is expected to be awarded soon. "The ending of this control is expected to see an opening up to competition in international calls, the national backbone and the local loop, improving services and, consumers hope, reducing call costs. The move is also widely seen as necessary if the fixed-line system is to expand sufficiently to widen internet usage and boost call capacity." (Oxford Business Group) Morocco's regulator expects the sector to be completely deregulated by 2008.

Coupled with policy and legislative changes, Morocco also formulated a national strategy at the level of the Office of the Secretary of State to the Prime Minister responsible for postal services and telecommunication and information technologies. This body plays a key role within government as the administrative unit is responsible for developing and implementing policies pertaining for new information technologies in the wider society, rather than in the narrow telecoms sector alone.

These reforms are enabling digitisation of Morocco's transmission network, growth in the number of both fixed and mobile subscribers, increased Internet access providers and major investments in telecoms and information technologies. Particularly pertinent to this research is the total commitment towards the development of a sustainable competitive telecoms market. Morocco's example shows how an effective national

strategy can enhance a country's information and communications sector and advance growth. Through changes in the fundamental infrastructure sectors, it has enabled an additional focus on e-enabling technologies with which to enhance the use of technology, promote more efficient services and perhaps fuel overall growth through the use of e-services.

Key lessons from Morocco

- Commitment to competition and development of ICT's;
- Licensing multiple operators to establish a competitive market that avoids domination by key players;
- Strategies must be implemented effectively or else it will result in stagnation of market growth.

6.4 Nigeria

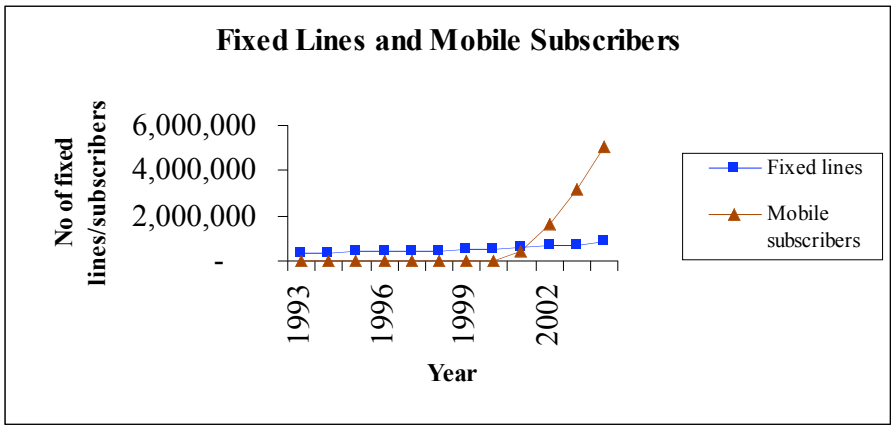
The implementation of reforms in Nigeria has transformed its telecoms market from one of the least developed on the African continent to one that is rapidly growing and will possibly become one of the largest African telecoms markets in the next few years. The key enablers of this feat were a clear policy and a flexible regulatory framework that allowed the regulatory authority to employ innovative licensing approaches.

Nigeria's reform process began in 1992 with the passing of the Communications Act and the establishment of the Nigerian Communications Commission (NCC). The overriding objectives of the Act were to achieve the modernisation and rapid expansion of the telecoms network and services and thereby enhance social and economic development, allow Nigeria to participate in the global ICT environment, and make telecoms services efficient, affordable, reliable and available.

The regulatory authority adopted a phased approach to the liberalisation of the telecoms sector, through different licence mechanisms and schemes. Liberalisation began in the fixed-telephony market by licensing private-owned telecoms operators to compete with the state-owned monopoly operator in the provision of fixed services. But these PTOs

were unable to compete with the incumbent because of a lack of access to infrastructure and capital. Most of the licensees were small and medium enterprises. The selection process had not considered the ability of licensees to meet the required roll-out of services. The formulation of the National Telecoms Policy in 1998 therefore set specific targets for improving telephone penetration. A second national carrier was licensed in 2002, and fixed-wireless-access operators were licensed on a state-by-state basis. Despite these efforts to increase teledensity, the fixed operators have been unimpressive. To meet the objectives of the National Telecom Policy and its targets, three GSM operators were licensed through an auction process to provide mobile services. The licensing of mobile services significantly changed the Nigerian telecoms market.

Figure 17 — Number of fixed lines and mobile subscribers in Nigeria



Source: ITU world telecommunications database, 2005, NCC

The pent-up demand for telephony services can be seen from the massive increase in subscribers after mobile services were introduced, despite very high prices at the inception of services. Demand for mobile services has also resulted in a proliferation of smaller entrepreneurs selling single calls to that section of the general public who cannot afford a mobile service. Nigeria's single-call market, or "umbrella operators" as they are commonly known, significantly changed the boundaries of the call market by forcing operators to rethink their tariffs and introduce cheaper call rates to accommodate bulk operators.

Umbrella operators in Nigeria

In markets where initial connection fees are high and pre-paid airtime rates are out of reach of most people, entrepreneurs arbitrate the market by purchasing either pre-paid or post-paid contracts from mobile operators and reselling this airtime at rates slightly above post-paid rates but lower than pre-paid rates. For mobile operators, this approach increases network traffic and keeps the average revenue per user high.. In markets such as Nigeria and Cameroon, airtime resellers are estimated to account for 30% to 40% of the overall post-paid traffic (Pyramid, 2005). For consumers, it expands the reach of mobile networks, provides an interim solution to affordability issues, especially to users who cannot afford the initial connection fees. It also forces prices down because mobile operators are no longer in control of pricing. Resellers are extremely sensitive to price but are valuable to operators as high value customers. Operators therefore vie to keep these customers through lower pricing, thus forcing price-based competition which mobile operators are keen to avoid. An added benefit is that it creates jobs in most markets, and in Nigeria this has become a viable sub-industry. Although the legislation gives the regulator extensive powers over tariff regulation, the current level of competition allows a shift from specific approval of the tariffs of non-dominant operators to issuing guidelines and monitoring.

The Nigerian experience shows that liberalising before privatising can be effective in achieving development goals if appropriate licence approaches are used. In addition, the government was able to recoup potential revenue from the privatisation through the licence auctioning process as well as from forthcoming tax revenues from the highly successful mobile companies. The GSM licences each sold for US$285m. The Nigerian government granted a five-year tax holiday to new licensees, which attracted investors. Competition, a large market with pent-up demand, innovative licensing approaches and consumer vigilance combined to increase connectivity and access to ICTs and also drove down retail tariffs. The Nigerian experience highlights the significant variances from developed country approaches and the success of innovative locally developed solutions for attracting investment and increasing access to telecoms services.

Key lessons from Nigeria

- Licensing multiple operators in mobile early; four operators from the outset ensured that competition was instituted early. Further, all these licensees were under pressure to build their network as fast possible in order to remain competitive;
- The auction licensing process undertaken for the mobile licenses were particularly successful in generating revenues for government and assuming market-related prices for licences;
- Consumer activism and entrepreneurship also play a significant role in allowing competition to develop and force lower prices;
- Constant monitoring of incumbent operator behaviour including pricing, interconnect and quality of service by Parliament and the regulator;
- Liberalising prior to privatisation forced competition on the incumbents;
- Creating a package of incentives e.g. tax holiday, customs, etc made the country an attractive investment destination; and
- Flexible regulatory framework e.g. wireless licensing created many competitors at the fringes; who are now challenging mainstream operators.

6.5 India — embracing a commitment to market competition

India began a process of market reform in the early Nineties by changing its historically socialist market policies. Its new economic policy opened up many sectors previously under government to competition, including software and telecoms. As part of these macro-economic reforms, the government also initiated a liberalisation of the telecoms sector. But a number of factors, including questionable commitment to reform and the state's inability or unwillingness to give up control of these sectors, has led to the telecoms sector being unable to perform to its full potential. The Indian telecoms environment has had a turbulent history, often mired in political, legal and regulatory challenges that have severely hampered the development of the market and impacted on subscriber growth. The sector has been at the mercy of confused government policy and ineffective regulation, largely because state-owned companies and departments remain the biggest players in the sector. This has resulted in policies that protect or further their interests.

A comparison with China, which has a similar population size, highlights the result of a policy vacuum in India, with the significant variant being the number of subscribers. In January 2003, India had 11.2 million mobile subscribers against China's 216 million. In addition, China adds about five million new subscribers every month. While geography[11] and culture could account for some of the difference, much of this variance can be attributed to the Indian policy and regulatory environment which can best be summarised as follows:

> *The reform of the Indian telecom sector has been an amalgam of regulation, administrative intervention and political decision. The interplay of forces has increased regulatory uncertainty, introduced political forms of competition, and favoured or disfavoured particular players. That is not a good legacy if what is looked for is vigorous, fair competition unaffected by arbitrary official interference.* (Desai in Malik, 2003)

Up until 1985, India had a typical state-owned PTT model, with the provision of telecoms services being the exclusive domain of the Department of Posts and Telegraph. Liberalisation started in 1984 with the opening up of the equipment manufacturing sector. In 1986, the Department of Telecoms was created, with an exclusive role in the telecoms sector. Two companies were created: MTNL to provide services in two metropolitan cities (Bombay and Delhi), and VSNL for international services. The government introduced competition in value-added services in 1992 but retained the lucrative international services under government monopoly. There was little improvement in services, however, and significant power struggles between the three entities.

Following widespread change in global telecoms practices and international pressure to speed up the liberalisation process, the Indian government instituted the National Telecom Policy of 1994 to open up the basic services sector, long-distance services in 2000, and international telephony in 2002. After the announcement of the new policy in December 1994, auctions for mobile licences were held in 20 states. The first round of

[11] The concentration of economic activity in China's eastern coastal region gives mobile operators economies of scale.

the basic-services auctions attracted 80 bids for 40 licences from 16 companies, but a fiasco involving unrealistically high licence fees, which the bidders were unable to pay, launched a new round of licensing, attracting only six new bids. Finally, of the 21 circles up for auction, only six licences were issued. Many foreign telecom companies participated in the auction because of the potential market size of an estimated 250 million customers and a waiting list of more than three million. Disillusioned by the government's handling of the deregulation, several international telecom companies pulled out of India, blaming unfriendly telecom policies, high licence fees and the lack of a powerful regulator. (Bagchi, 2000:28)

Cellular services were not much different. Even though the licences raised over $7 billion in licence fees for the government, this did not translate into any improvement in consumer services. Duopoly market structure was introduced with mobile services and 42 licences were awarded in pre-defined circles. The high licence fees led to high tariffs for consumers as it formed 50 percent of the roll-out cost. "Given the high sunken cost of initial investment, the lower than expected subscriber base and the high licence fees, cellular operators in India, with the exception of those in Mumbai and New Delhi markets have been posting losses from the outset." (Bagchi, 2000:29)

Both parliamentary politics and bureaucratic reluctance stalled the setting up of a regulatory authority, with the result that the Department of Telecoms retained both policy-making and regulatory authority in the process of introducing its competitors. It was only in 1997 that an independent regulator, the Telecom Regulatory Authority of India (TRAI), was established. TRAI was riddled with problems from the outset. Although the TRAI Act gave the regulator powers to resolve disputes between service providers, it had no jurisdiction over the Department of Telecoms, which was the most powerful force in the industry and the chief mischief-maker. Faced with ever-increasing court challenges between TRAI, private-sector operators and the Department of Telecoms, together with a stagnating telecoms industry and an inability to attract further private sector investment, the government decided to introduce widespread changes with the introduction of a new telecoms policy in 1999. This increased responsibilities for the

regulator, including prices, dispute resolution and increased consultations, while the role of the Department of Telecoms was to be minimised.

The Indian government continued its liberalisation process by selling control of state-owned VSNL, the sole provider of international voice services, to the Tata Group in February 2002. It also launched a unified licensing regime that allows any operator the right to provide any access service using any technology. This blurred the distinction between services. The introduction of the unified licence profoundly affected the investment decisions of India's operators, and the focus of investment shifted from fixed to mobile. "This extraordinary transition to more efficient mobile access cannot happen in a country that licences discrete services and, more importantly, separates landline from the mobile operators." The cost efficiencies enabled by the unified license allows Indian operators to deploy networks based on the most efficient technology rather than with technology determined by the regulator. The number of licences and the types of licences issued also means that the basis for competition has been set. To remain competitive, operators must reduce tariffs and introduce new services. (Shosteck Group, 2004:25)

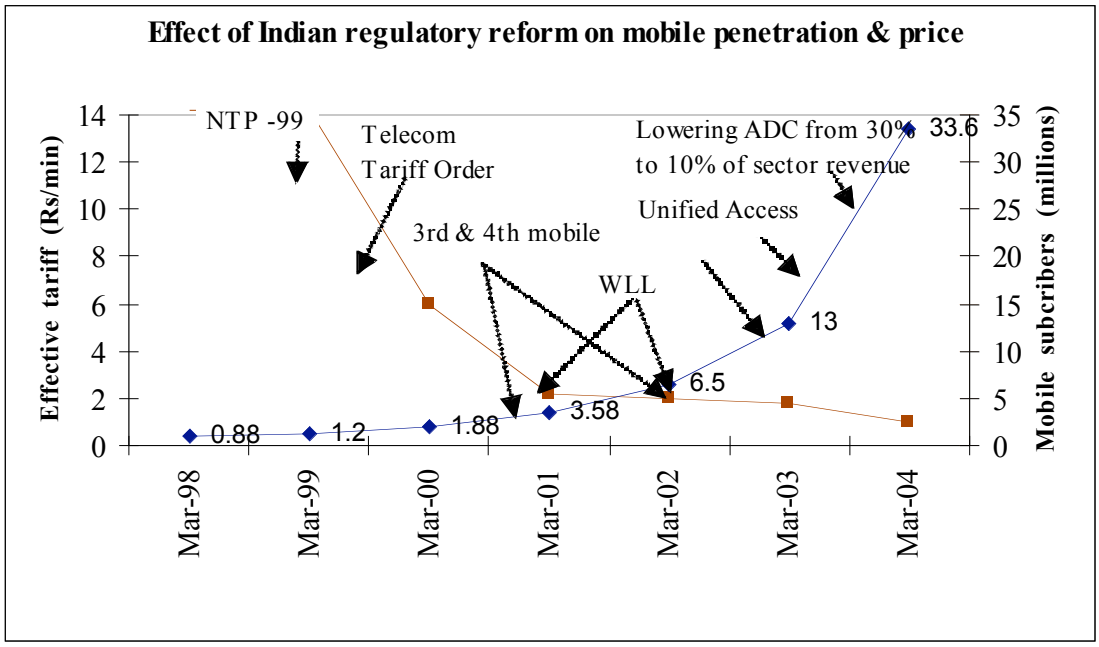
While not inherent in the concept, the unified licensing approach in India has stimulated competition and is driving network convergence by broadening the services operators can offer. Sharing network elements and sub-systems and converging networks also enable such efficiencies. Competition among operators has forced tariffs down to among the lowest in the world, leading to continued subscriber growth. These market outcomes highlight the value of deregulation, open markets and competition as mechanisms of public policy to enable increased investment, broaden access and reduce prices. (Shosteck Group, 2004:31)

In this new environment, tariffs have declined, so operators are focusing on converged services and networks to maximise cost efficiencies. Prior to this, Indian telecoms reform was on the verge of disaster – the regulatory environment was adhoc and lacked a clear strategy for market entry. The resultant market structure was unable to deliver the

benefits of competition. Operators were therefore unable to predict market and subscriber growth, and thus plan network roll-out investments or new products and services.

Easing regulation has stimulated operators to expand services and to reduce tariffs as a means of doing so. Operator consolidation is increasing and this would provide greater purchasing power and economies of scale, allowing the surviving operators to compete more effectively as well as providing easier access to capital. Unified licences have also speeded up the transition to more efficient mobile access and landline connections have slowed. This does not, however, signal the end of landline, rather the deployment of landline where it makes economic sense. Also as part of the new regulatory framework, TRAI introduced new competition by issuing additional mobile licences, awarding wireless local loop (WLL) licences in 2002 and introducing a call-party-pays regime.

Figure 18 — Indian Regulatory Reform



Source: (Samarajiva, 2000)

While the Indian market is currently experiencing unprecedented growth and increased competition, it will be interesting to watch the reforms unfold. "An important

observation on the infrastructure reforms in India is that irrespective of the sector the incumbent has slowed down reform, as reform would lead to an annulment of their arbitrary powers. So much so, the inherited strength of the incumbent coupled with the powers residing with it can impinge on the process of liberalisation. Until a clear policy on competition is put in place economic growth and consumer welfare will remain hostage to incumbent's control." (Malik, 2004:27)

Key lessons from the Indian experience

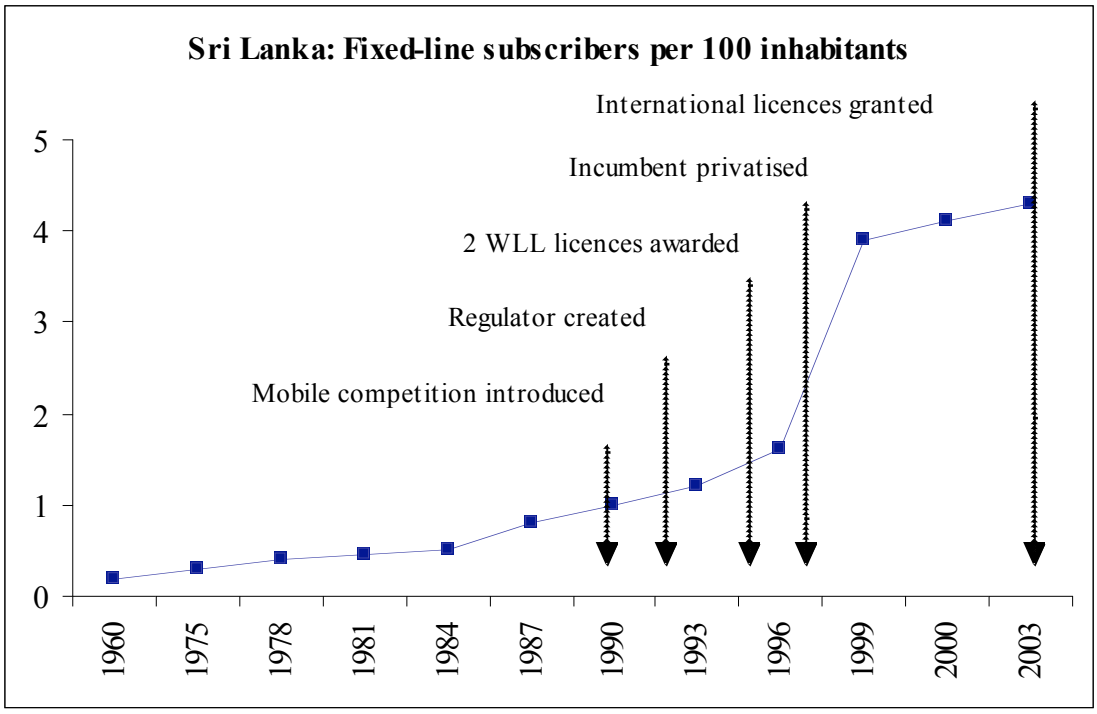
- Lack of commitment to reform from the government will often strengthen incumbents and hamper competition;
- High licence fees may increase government coffers, but is often unlikely to result in increased spending by newly licensed operators. It is most likely to lead to high tariffs as investors attempt to recoup investments;
- Competition at the fringes influenced/forced major policy changes in mainstream markets e.g. wireless local loop and mobile. It also led to a unified licensing regime;
- Clear separation of powers between government departments, regulators and operators are necessary to ensure competition;
- Strong incumbents, whether government-owned or privately-owned, have enough incentive to hamper growth;
- Unclear policy and regulatory environment creates uncertainty in the market, particularly for potential investors;
- Technological and market changes sometimes demand new approaches to policy and regulation. Once a reform path has been chosen, technological and market changes may demand new approaches; and
- A strong administrative tradition backed by an independent judiciary influences the level and nature of competition.

6.6 Sri Lanka — The benefits of competition

Despite political turmoil, the Sri Lankan telecoms industry has been fuelled by progressive market reforms, economic liberalisation, a light-touch regulatory environment and pent-up consumer demand.

Sri Lanka's pro-market policies are remarkable for a small country with a population of about 20 million people, and a GDP per capita of $874. Sri Lanka ranks among the lower-income countries whose telecoms penetration rate is much higher than its average income suggests it should be. "Competition since 1995-96 has done more to improve connectivity in Sri Lanka than a century of so-called public service. Twice as many connections have been provided in the past five years than since the introduction of telephony to Sri Lanka in the 19th Century." (Samarajiva, 2000)

Figure 19 — Number of fixed-line subscribers in Sri Lanka



Source: ITU database; Samarajiva, 2000

Sri Lanka instituted liberalisation initiatives and sector reforms in the early 1990s with the promulgation of the Sri Lanka Telecoms Act. At this stage, it had the option to reform and privatise the incumbent before introducing direct competition. Instead, Sri Lanka chose to introduce competition and strengthen the regulatory agency before privatisation. Both the South African and Indian experiences have shown that gaining compliance from a rejuvenated incumbent with a powerful strategic investor in a

monopoly culture makes the introduction of competition and strengthening regulation exceedingly difficult (Samarajiva, 2000). There is no doubt that this approach has aided the development of competition in the country.

The new Telecoms Act separated the policy and corporate responsibilities of the Ministry of Posts and Telecoms and created the incumbent, Sri Lanka Telecom, as a separate legal entity with the right to provide local and international voice traffic. The Act's main effects were to introduce a licensing framework that enabled the Minister to licence additional network operators, set up an independent regulator whose function it was to advise the Minister on licensing, police adherence to licence conditions and promote the public interest in telecoms. It also converted the incumbent operator from a department within the ministry to a state-owned corporate entity. In conjunction, a separate regulatory authority was created – the Office of the Director General of Telecommunications, which later became the Telecommunications Regulatory Commission (TRC).

In 1996, two additional fixed-line licences were issued with local-loop licences to utilise wireless local-loop technology and compete directly with the incumbent operator. Even though competition was introduced through different technology, it affected the incumbent operator. "The new regulatory framework and subsequent competition for fixed lines has led to rapid growth in Sri Lanka's access opportunities." (OECD, 2004:18) Despite these changes, Sri Lanka Telecom continues to dominate in the fixed-line sector as it owns the majority of fibre capacity in the country. The two private WLL operators are largely confined to the cities and towns. Until recently, international services remained the exclusive domain of the incumbent, but a recent decision to open international services to unlimited licensees will lower the price of international services.

As opposed to the fixed market, competition in the mobile sector is fierce, with four operators. Mobile has become the de facto service for voice telephony to the majority of the population, given the inability of the incumbent to deliver fixed services. In addition, operators are allowed to introduce new services and products, including ISDN, pre-paid fixed and mobile access services, per-second billing, among others.

"The Sri Lankan experience shows that competition not only yields good sector performance but, perhaps even more importantly, energises organisational reform of the incumbent and contributes to consolidating and legitimating the regulatory process. Without the external impetus provided by competition, internal reform of incumbents and efforts to create modern regulatory agencies are likely to succumb to the inertial forces that have held back telecoms development in the first place." (Samarajiva, 2000)

Key lessons from the Sri Lankan experience

- Competition, once introduced, is difficult to roll back;
- Introducing competition prior to privatisation of the incumbent can be useful. Privatised incumbents are often more powerful and open to abuse of market power.

6.7 Conclusion

Key lessons from developing markets experience

Policy and regulatory

- Competition, once introduced, is difficult to roll back. Thus, licensing multiple operators early in the reform process will accelerate the onset of competition. Liberalising prior to privatisation dilutes the power of the incumbent operator and forces competition;
- Constant monitoring of incumbent operator behaviour by Parliament and the regulator;
- High licence fees may increase government coffers, but is often unlikely to result in increased spending by newly licensed operators. It is most likely to lead to high tariffs as investors attempt to recoup investments;
- A strong administrative tradition backed by an independent judiciary influences the level and nature of competition. Clear separation of powers between government departments, regulators and operators assist in enabling a competitive market, particularly in country's lacking a strong administrative tradition;
- Technological and market changes sometimes demand new approaches to policy and regulation. Once a reform path has been chosen, technological and market changes

may demand new approaches. Thus, a flexible regulatory framework is required to allow for new technologies e.g. wi-max; wi-fi; cdma;

- Reform is most successful when backed by overall macro-economic reform, including a more liberal tax regime, lower customs and excise duties, currency stability etc;
- Commitment to reform from all levels of government. A clear policy and legislative regime, backed up with proper implementation of objectives and strategies will determine the level and nature of competition. Specifying rules prior to the licensing of operators and establishing interconnection rules upfront so that it does not become an area of contention;
- Keep operator's obligations reasonable. Insisting on obligations that demand investments that are not commercially viable, risks forcing companies to undertake bad investment and could create the need for renegotiation of special privileges.

Market

- Consumer activism and entrepreneurship also play a significant role in allowing competition to develop at the fringes and force lower prices;
- An unclear policy and regulatory environment creates uncertainty in the market, particularly for potential investors.

The countries analysed have chosen different routes for the introduction of competition to enable telecoms reform. The development of competition in India was hampered for a number of reasons and at a number of levels — lack of political will, a strong regulatory regime at institutional level and a lack of clear commitment to pro-competitive market principles at the political level (Malik, 2004:3). Any attempts to maximise state revenues, strengthen the national fiscus or fund incumbent infrastructure is likely to be at the expense of the development of the entire sector. In addition, an unclear political and regulatory environment is likely to ward off private investors despite the market potential. It is also important to highlight that, once a particular liberalisation path has been chosen, it is not necessary to continue along this path at the expense of the development of the sector. Technology changes and market development demand

flexibility in policy and regulatory approaches e.g. wireless local loop (WLL) licensing, unified licensing and calling party pays (CPP) regimes, as in the case of India. Nigeria's experience with licensing multiple operators has made the market particularly efficient in regulating prices, more so than any other regulatory intervention, and has created viable opportunities for entrepreneurs. Uganda's clear objectives outlined in its policy framework, coupled with innovative universal service policies, has benefited the country. All stakeholders have also been made aware of the policy and regulatory environments and any planned interventions.

Finally, often competition or the threat of competition, whether by conventional or unconventional means, as in the case of Sri Lanka's WLL operators, is enough to stimulate the market, particularly the incumbent, to deliver services. It is clear that "competition is developed gradually, but it is difficult to roll back. Not only that, it prevents other institutional reforms being rolled back too. The existence of viable operators who have something to lose from the re-imposition of monopoly practices is the best guarantee of consolidating institutional reform." (Samarajiva, 2000)

7 Overview of South African policy and regulatory environment

Introduction

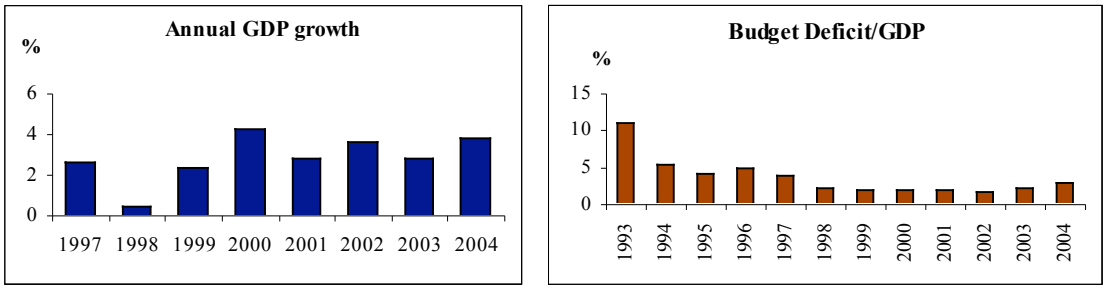
The literature review and analysis of policy, regulation and market development provided background on both developed and developing countries. This chapter uses the analyses from the earlier chapters to contextualise and evaluate the South African policy and regulatory framework within the broader international policy environment. Key debates arising from the policy review process, including submissions to the Department of Communications, the Parliamentary Portfolio Committee, interviews with investors, media commentary and the researcher's personal experience working with a potential investor, will inform the discussion in this chapter.

7.1 History and overview

It is impossible to analyse the South African telecoms environment without some understanding of the impact of apartheid on the country's infrastructure. Prior to the 1994 elections, South Africa's infrastructure investment was concentrated in the historically "white" suburbs, while large areas of the country were left under-serviced. The historic democratic elections heralded South Africa's re-entry into global markets. Decades of sanctions, civil unrest and spiralling debt demanded serious macro-economic reforms. In addition, significant investment in infrastructure was required if South Africa was to be able to compete globally.

The newly elected government's election mandate lay in addressing the huge backlog in the provision of basic services, i.e. housing, electricity, telephones, water, schools, etc, particularly in previously under-serviced areas. At the same time, government lacked the capital to invest in infrastructure that would enable it to address the infrastructure backlog. In the early 1990s, government debt as a percentage of GDP was nearly 50% and the main budget deficit was 8.3% in 1993 (*Financial Mail*, South Africa, 2005). South Africa's financial crisis is illustrated in the graphics below:

Figure 20 — Key financial indicators for South Africa



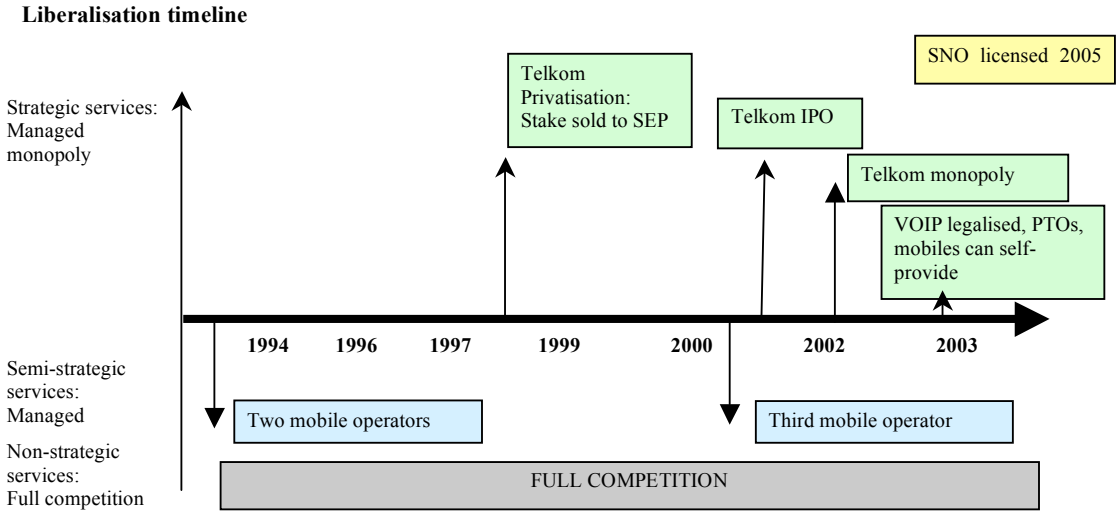
Source: Financial Mail, South Africa, February 2005

While privatisation was seen as the best vehicle for attracting foreign revenue that would pay for the infrastructure upgrades, it was not popular with the trade union movement, COSATU, and the South African Communist Party (SACP), which between them represented a significant proportion of the ruling-party electorate. In addition, state-owned enterprises had historically built up huge inefficiencies because they had served as a job-reservation programme for the conservative Afrikaner minority. Thus, the threat of job losses fuelled the anti-privatisation debate among both left- and right-wing politicians.

Government's chief concern was that, if state-owned utility monopolies were immediately privatised, the new owners would focus solely on maximising profits. Low-income earners, particularly in previously disadvantaged areas, would therefore be at a disadvantage because the focus would not be on rolling out new infrastructure in what would be regarded as high-risk areas for investment capital. As a compromise position, the government adopted a policy of *managed liberalisation* — to privatise the state-owned utility companies slowly over several years and gradually introduce competition. The policy of managed liberalisation essentially had two contradictory underlying objectives. Managed liberalisation acknowledged that the state was unable to own and operate telecoms infrastructure and thus should be opened up to the private sector. Telecoms infrastructure was seen as the key to developing previously disadvantaged areas but the private sector could not be trusted to deliver. The public sector needed to maintain some control over infrastructure to ensure that these goals were met.

Key among liberalisation goals was increasing access to communications infrastructure through boosting investment in the sector, addressing the imbalance of infrastructure provision and improving efficiency. The provision of basic services to under-serviced areas, lower costs and increased black economic empowerment remains a politically and socially strategic issue for government.

7.2 Managed liberalisation



The South African telecommunications sector began liberalising in the early 1990s — the VANs sector opened in 1993, followed by customer-premises equipment (1993) and mobile (1994). Key elements of the telecoms sector framework were initially outlined in the Telecommunications Act 103 of 1996. Most notably, these were:

- Three to five years of exclusivity for Telkom in PSTS services
- Setting up of an independent regulator
- Obligatory interconnection with Telkom
- Rate regime for Telkom

The five-year exclusivity on PSTS was intended to position the telecoms sector within the overall development objectives of government and raise the cash-value of the entity for eventual public listing. To ensure that the new management fulfilled the goals of infrastructure provision and prepared Telkom for competition, licence conditions were

imposed. At the time, the capital investment for network expansion, digitisation and modernisation was estimated to be in the region of R50 billion rands. In exchange for exclusivity, Telkom also committed to digitising the network, improving its service record, reducing the waiting period for installation and fault repairs, and reducing the number of faults. The tables below outline Telkom's line roll-out targets and the financial penalties that would be imposed for failure to reach these targets.

Table 7 — Telkom line rollout targets

	97/98	98/99	99/00	2001	2002	Total
Total new access lines brought into service	340,000	435,000	575,000	675,000	665,000	2,690,000
Underserviced areas	265,000	318,000	359,000	357,000	378,000	1,677,000
Priority customers	3.240	3.845	4.055	5.060	4.046	20.246
Villages served	510	610	610	800	644	3,174
Payphones	20,000	25,000	25,000	25,000	25,000	120,000
Replacement lines	20,000	13,000	65,000	551,000	603,000	1,252,000

Source: Joint Economic Development Plans

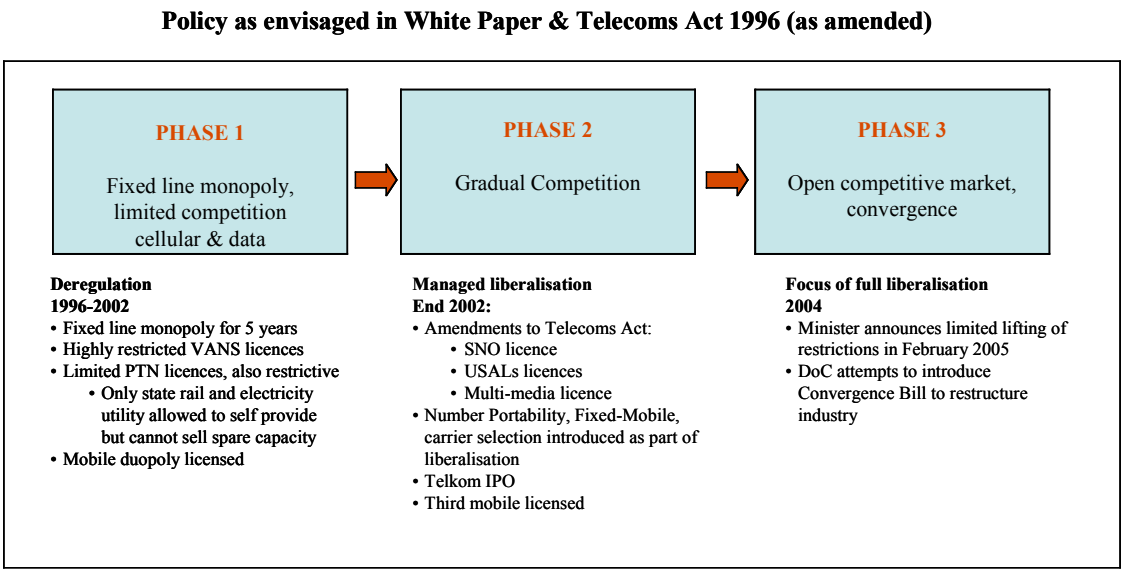
Table 8 — Telkom penalties

First 100,000 lines	R	450.00	additional R900 for every extra line missed
Priority customer targets	R	4,500.00	per unit
Schools	R	900.00	
Public payphones	R	2,250.00	
Villages	R	1,125.00	

Source: Joint Economic Development Plans

The South African policy and regulatory environment, as envisaged by government, can be broadly categorised into three periods – monopoly, gradual competition and open, competitive market.

Figure 21 — Overview of the introduction of competition in South Africa



The 1996 Telecoms Act was meant to allay fears and prepare the foundation of a vibrant infrastructure and the eventual privatisation of Telkom that could ultimately service the country's demands for a sophisticated information society. In parallel to this process, recognising that an SOE would find it difficult to generate the funds needed for extensive infrastructure development without private support, government opted to sell a 30% stake in Telkom to a strategic equity partner, comprising a consortium of SBC (60%) and Telekom Malaysia (40%). SBC is an American company known for its aggressive approach in highly regulated markets. This phase was marked by the absence of competition and the highly restrictive nature of the South African telecoms environment. VANs were limited to the provision of data services, excluding voice, resale, self-provisioning, and VANs activity, was carefully policed and monitored by Telkom and the sector regulator, Icasa. The Telecoms Act of 1996, the Thintana shareholders agreement and Telkom's licence governed the sector until 2002. The 2002 Amendment Act was an attempt to address these issues and attempt further liberalisation of the sector.

Phase two can be broadly described as a period of gradual liberalisation and is the focus of this study. The two conflicting objectives of liberalising the sector and privatising a

state-owned enterprise created a conflict of interest, resulting in a range of problems for policy and regulation. The Department of Communications initiated the second phase of the reform process with a colloquium in early February 2001 in an attempt to gain stakeholder consensus on the process and find the ideal market structure.

The policy process was mired in controversy, which caused delays. An absence of a framework for the process, including timeframes, created a high level of uncertainty in the industry, for both existing and potential investors. Policy directions with significant differences in the broad framework were released at least three times. Key debates raised by some of the main stakeholders provide some understanding of the factors which shaped the outcomes of the Amendment Act. COSATU,[12] the Department of Communications,[13] the Department of Trade and Industry,[14] Eskom[15] and Transtel,[16] Icasa, the Ministry of Public Enterprises,[17] various bodies representing the VANs and ISP sectors, Thintana and various private sector investors were the primary players attempting to shape and influence the liberalisation debate. Within government itself, various conflicting agendas were at play. The Department of Trade and Industry advocated early and open deregulation to encourage foreign investment, the Department of Public Enterprises pushed for extending the monopoly to raise the value of Telkom's IPO, and the Department of Communications was caught between the battle lines with the intention of fostering development and competition in the ICT sector while also attempting to raise the value of Telkom's IPO. Telkom and Cosatu pushed for slow deregulation and job security, through maintenance of Telkom's monopoly. Private-sector investors pushed for at least a limited period of exclusivity to guarantee their investment in infrastructure. Icasa, the South African users, led mostly by the business community, which is a large user of telecoms services, and the VANs and ISP sectors

[12] The Congress of South African Trade Unions — a federation of organised labour movements.

[13] Responsible for advising the Minister of Communications.

[14] DTI — concerned with trade policy, foreign investment.

[15] State-owned electricity companies.

[16] State-owned transportation companies.

[17] Determines policy processes and is responsible for management of state-owned enterprises.

pushed for rapid deregulation of the sector. The stakeholders were numerous and varied, so the policy was largely a reflection of compromises reached within these debates rather than a clear policy framework that attempted to provide vision and direction for the sector. What ultimately resulted thus was a compromise policy that sought to pacify all of these competing interests, while not necessarily serving the best long-term interests of the country.

The draft policy was officially published on March 23, 2001, and open for comment until May 2, 2001. The telecoms policy announced in March of 2001 set out a plan to continue managed liberalisation by introducing a second national operator (SNO). Then in July 2001, the Government succumbed to pressure from the business community and international leaders and considered appointing a third national operator. Following pressure primarily from Telkom, it reverted to its original position, and allowed for the introduction of only one other competitor. This vacillation by the Department of Communications on key policy directions contained in the Amendment Act highlighted the deep indecision, lack of professionalism and absence of appropriate industry consultation. Even though the final outcome was in favour of private-sector investors, it illustrated the inability of the Department of Communications to handle major policy reviews, undermined the credibility of the Department and made present and potential investors nervous about the stability of the framework.

The Telecommunications Amendment Bill was promulgated in 2001, setting out the framework for the managed liberalisation of the fixed-line market and paving the way for the licensing of an SNO and possibly further operators in the future. In parallel to the policy process attempting to liberalise the market, an IPO further liberalising Telkom was also in process when the monopoly licence expired in 2002, a further 25% of Government's shareholding in Telkom was sold on the Johannesburg and New York Stock Exchanges. To date, government remains the largest single shareholder in Telkom.

The managed-liberalisation process and implementation of competition in the fixed-line sector were intended to stimulate new investment and increased demand for

communications services through affordable prices and the offer of new and innovative products, thus enabling wider access to ICTs, particularly for disadvantaged communities living in under-serviced areas of South Africa. Because of the high level of uncertainty in the South African regulatory environment, however, a policy process that changes frequently and unpredictably or is vague, will cause concern among investors. The focus of the Amendment Act was on the introduction of a fixed operator and a competitor to Telkom, but lacked the vision to create a foundation for a competitive sector. This would have entailed a fundamental rethinking of the process begun in 1996, amid market and technological changes, to create a policy and regulatory environment to manage these widespread changes. The reform process for phase two, which envisioned the gradual introduction of competition, and its subsequent unfolding are analysed in the discussion below.

7.3 Overview of key policy provisions and analysis of the policy

In keeping with its managed-liberalisation policy, the Bill allowed the introduction of one new full-service operator and an additional international-service operator, awarded to the state enterprise, Sentech, with the potential for a service-based operator to be introduced in 2005, subject to a market study. The Telecoms Amendment Act determined that the telecoms assets of Eskom and Transnet would be incorporated in the SNO with a 15% stake each, a further 19% was granted to a BEE consortium called Nexus Connexion, and 51% to a strategic equity partner.

Addressing the access gap

In an attempt to increase access in rural areas, the Amendment Act made provision for the establishment of licences for under-serviced areas (USALs). These were envisaged to be small regional monopolies operating where Telkom had reached less than 5% penetration, with special permission to establish infrastructure and use voice-over-data technology to deliver telecoms services. To date, at least half a dozen of these USAL operators have been granted licences and a R15 million subsidy to assist with start-up operations granted by the universal-service agency. Ideally, these regional telecoms operators would have utilised Telkom's or the SNO's backbone network while building

their own local networks in their region. Lengthy delays and regulatory changes have significantly affected their business plans. Most have teamed with the mobile operators to provide mobile services. Although the USAL model was still a viable opportunity seven years ago, delays in promulgating and implementing the legislation, combined with the widespread availability of mobile services, have rendered these operators almost obsolete. The major mobile networks cover almost 98% of the population between them and are constantly rolling out network where there is demand. In addition, complicated interconnection arrangements, which need to be negotiated with each of the operators, and capital-intensive network requirements in a high-risk environment make the viability of these operations questionable. The majority of the rural population lives on a marginal income that is barely able to sustain them. Spending on telecoms is a luxury when basic needs have to be met. Rural telephony models are unlikely to survive on market-based mechanisms alone and will require extensive state support in terms of both financial and operational assistance.

During this phase, services such as self-provision, resale and VoIP were not liberalised but left to the discretion of the Minister of Communications. From April 2003, carriers are to contribute 0.5% of their turnover to the Universal Service Fund, a fund managed by the Universal Service Agency, to ensure that infrastructure is implemented in areas currently without telecoms services. An e-rate is to be introduced for government-funded schools whereby operators will give a 50% discount on calls made for Internet access. Public emergency communications centres are to be established, and accessed by means of a 112 number service.

International best practice highlights that good policy-making is meant to develop broad overall objectives with which to create a framework and strategic direction. The literature review in chapters three and four highlighted a number of factors that are key competition enablers. The next table compares the results of the research from the literature review with South Africa's compliance with international best practice in regard to the structural components of reform. The table below highlights how, while South Africa has theoretically complied with international best practice, a commitment to

market reform has created significant gaps in the implementation, which have allowed the state-owned incumbent to entrench its position.

Table 9 — Comparing structural components of international reform with SA

	Best practice	**South Africa**
Commercialising operations and separating operational functions from government	State-owned enterprises re-organised to perform more like commercial enterprises. Structural separation of operational functions from the policy-making role of government.	Theoretical structural separation of Telkom, with significant influence in the overall policy development as a direct result of government's shareholding. Telkom privatised to powerful international private-sector player, accustomed to operating in monopoly environments.
Shifting government focus from ownership to policy and regulation	Internationally, government focus primarily on sector regulation and enhancing the economic efficiency of markets in the ICT sector.	Confused focus in the SA policy and regulatory environment. Government still unclear whether focus should be on sector management or maximising profits from state-owned interests in sector.
Increasing participation of private enterprise and capital	Total private-sector involvement in developed countries, while developing countries are moving in the direction of private-sector investment.	SA has struggled to attract private-sector investment. Additional network investment from Telkom has been curtailed since the end of the exclusivity period and the absence of a competitor. As a result, activity in the downstream equipment sectors has also slowed.
Containing monopolies, developing competition and diversifying supply of services	Increasingly aggressive anti-competitive regulation aimed at breaking the monopoly power of incumbents.	Unchecked anti-competitive behaviour by the incumbents, no diversification of supply of services in fixed and limited diversification in mobile.

The table below compares the results of the research from the literature review highlights and analyses international best practice against South African policy.

Table 10 — SA policy analysis against international best practice

Policy	Best practice	South Africa
Separation of means and ends	Market performance under constant review to analyse whether the market is able to deliver the benefits of competition to consumers and attract investment. Ongoing liberalisation in an attempt to deliver the benefits of competition to consumers and thus grow the ICT sector.	Market structure manipulated to protect incumbent. Regulatory intervention designed to deliver ends rather than means. Market unable to deliver the benefits of competition to consumers. As a result, significantly lower investment in sector.
Inconsistent regulation and application of regulation	Certain policy and regulatory environment consistently applied across the markets. Little government intervention in the application of regulation.	Uncertain, frequently changing, often to suit the state-owned incumbent. Government intervention in the application of regulation.
Access bottlenecks	Regulatory mandated access, with clear dates and times followed by rules and regulations. Constant monitoring by the regulator allows for access to key parts of the networks by smaller operators.	Unclear regulation on access allows the incumbent to deny access to new operators. Local-loop unbundling not clear. Convergence regulation likely to create further confusion in access issues as there are no clear rules, especially for smaller operators.
Incumbent behaviour	Clear regulation and processes for supply of key services by incumbent or, alternatively, in the cases of a very poor incumbent, as in Nigeria, allowing new operators to provide their own facilities.	Clear anti-competitive behaviour, particularly in VANs. Regulator unable to regulate. Absence of economic regulation for anti-competitive behaviour. Principles enshrined in policy but require further detail to prohibit anti-competitive behaviour and clear processes for proper regulation.
Slow implementation of competition enablers	Carrier pre-selection and number portability instituted in most markets.	Delays in introducing carrier pre-selection and number portability. Number portability is particularly important for the mobile sector to allow for further competition.

The section below analyses in detail some of the fundamental flaws in the South African Telecoms Act, 2001.

7.3.1 Separating means and ends

Although the Amendment Act clearly states the objectives and benefits of liberalisation, it fails to focus on developing a market structure within which this can be achieved. Instead, the state has cherry-picked lucrative segments of the market through the licensing of state-owned entities such as Sentech (international and multi-media), Telkom (fixed-mobile licence and access to 1800mhz spectrum) and increasing value for state-owned entities through the prescribed equity set-aside for Transtel and Esi-tel, in return for the contribution of their respective assets in the SNO.

It is unprecedented internationally to mandate shareholdings to two state-owned infrastructure providers from outside the telecoms sector as well provide for a foreign investor. Where government has mandated this approach, it has included only one utility company – either rail or electricity. At the parliamentary portfolio committee hearings (2001), Icasa questioned the validity of these licences: "Licences cannot be granted to operators unless they apply for these and in compliance with the provisions of the Telecommunications Act. The Authority is concerned that the policy directions attempt to grant licences to operators, in violation of the provisions of the Telecommunications Act and principles of transparency, just administrative action and the values of the Constitution." Icasa also questioned the "granting" of licences in law as this "would be contrary to the letter and spirit of the Telecommunications Act and the government's commitment to transparency, public participation in the economy and liberalisation of the Telecommunications Sector. Granting of licences in this manner is contrary to the international trend and undermining of the Government's own rationale for the establishment of the regulator." (Icasa submission to Parliamentary Portfolio Committee on Communications, 2001) The granting of a license to itself in policy is in contravention to South Africa's world trade organisation's (WTO) agreement. Icasa is the telecoms regulatory body tasked with the administrative regulation of the sector.

The South African approach creates a number of problems. The two entities will compete to provide services to the SNO. The value of their contributions from their existing assets can only be done after a detailed due-diligence exercise. The regulator will be unable to determine the role of the state-owned entities in the SNO until an invitation to apply for the licence is issued. Mandating a shareholding in excess of their ability to contribute to the investment in the SNO will impact on the ability of the SNO to attract foreign investment or raise external finance. Mandating equity stakes for all the state-interested players is akin to a "forced marriage", thus making it difficult to attract any investment. In addition, a mixture of shareholders forcibly thrown together by policy is likely to create numerous shareholder disputes, thus detracting from the management and operation of the business.

The Act undermines existing licensed private-sector players by placing unfair and possibly unenforceable limitations on VANs licensees through the prohibition of voice over IP, resale and self-provision. "The Telecommunications policy has been inconsistent as the Government pursues ICT-enabled economic growth, but is unwilling to take the path that it requires." (Bridges.org, 2001) The failure to attract quality investors for the SNO twice is testament to the impaired policy and regulatory environment in South Africa. There is no doubt that this is also severely affecting telecoms development in the country, even without considering other aspects of the business environment affected by high costs of telecoms.

7.3.2 Fixed-mobile licence

The Telecoms Amendment Act specifically created a fixed-mobile licence category that is unique to the South African environment. In a world of rapidly changing technology that significantly affects the performance and the nature of investment, it is generally considered sensible to leave decisions regarding choice of technology to operators rather than to regulators. The fixed-mobile licence is problematic because it creates the "potential for a two-tier licensing structure in fixed and mobile services. At the higher tier will be fixed-mobile services licences, able to provide both types of services over a single, integrated network; at the lower tier will be PSTS and MCTS licences, limited in

the range of technologies open to them." (Arup, 2001:2) Levelling the playing field between fixed and mobile operators in a competitive environment will therefore be difficult. The fixed-mobile licence is limited in that it limits the ability of the licence holder to provide full services.

The justification for introducing a fixed-mobile licence category was to enable fixed operators to take advantage of mobile technology with which to provide infrastructure in previously disadvantaged areas and to allow for the integration of fixed and mobile infrastructures. But neither of these aims justifies the creation of a new licence category. In fact, allowing commercial negotiation between operators is more likely to facilitate competition. "The new fixed-mobile services licence seems expressly designed to ensure that Telkom acquires its own mobile-services licence. That is a legitimate policy objective, but it is unfair to do so in a manner that creates an advantage for Telkom in both the fixed and mobile services markets." (Arup, 2001:2)

It is unnecessary to licence specific technologies within an overall policy statement. Technologies change frequently and cannot be used to determine customer uptake. What was necessary from a policy perspective was to provide access to spectrum and leave the operator to decide on the service, based on market analysis of cost and demand. If a licence category such as fixed-mobile became necessary, it should be granted on the basis of a free, fair and open licensing process rather than given to predetermined operators, as the earlier analysis of India and Nigeria highlighted. In both these countries, fixed-wireless licences became particularly important for introducing competition.

7.3.3 Infrastructure sharing

The underlying rationale for licencing a second national network operator before opening up the market to competition was to create an alternative fixed infrastructure for Telkom. The exclusivity period was to ensure that prospective profits from market entry were used to stimulate network investment and give Telkom time to adjust. But as international experience shows, it is arguable whether this is the best strategy, as was demonstrated in an earlier chapter on the UK's approach to licensing one competitor to BT as an

alternative facilities-based operator. The analysis in that chapter showed that the seven-year exclusivity granted to Mercury did not bring about the benefits of competition, nor was Mercury a commercial success because of policy and regulation limitations, such as no duct sharing, no local-loop unbundling, no co-location at exchanges, no special rights to transmission facilities.

The Act makes provision for the SNO to utilise Telkom's facilities on a resale basis for a period of two years after the date of being awarded the PSTS licence, in accordance with the terms and conditions of an agreement to be entered into between Telkom and the SNO. To be able to offer the most cost-effective end-to-end services to consumers, infrastructure sharing between public switched telecoms service operators should be an ongoing feature dictated by the prevailing, relevant conditions of supply and demand in the market, and not limited to two years by legislative proscription. Inadequate provision for infrastructure sharing would limit customer choice and competition in some areas, increase the cost of services to the consumer, lead to over-supply of facilities that are not matched by market demand, result in inefficient and wasteful duplication of infrastructure, and undermine the SNO's ability to expand into new areas not already connected to Telkom's network. The two-year limitation on infrastructure sharing and facilities leasing is insufficient to enable competition.

"Part of the liberalisation process in all developed countries has been to facilitate the use of existing infrastructures as an economic means of multiplying the number and variety of networks and forms of access to services. This is a permanent shift, which produces as a consequence an unbundling of services and specialised markets in rights of access, rights of way and use of infrastructures. All utility sectors, not just telecoms, benefit from these aspects of liberalisation." (Arup, 2001:9) The limitation of the use of Telkom's facilities to the two-year period would:

- Conflict with internationally accepted principles relating to access to essential facilities incorporated in the Competition Act 89 of 1998;
- Be practically unfeasible and likely to lead to inefficient and unnecessary duplication of infrastructure;

- Result in over-supply of facilities that are not matched by market demand; and could devalue the South African telecoms sector as a whole.

As outlined below, infrastructure sharing would also require a number of additional policy and regulatory provisions to make an SNO viable:

Leased Lines

It is in the public interest for the SNO to have preferential terms for leasing lines from Telkom. Wasteful duplication of infrastructure is unnecessary, so the SNO should be encouraged to build its own infrastructure only where it is commercially feasible. New operators, including VANs, must have access to Telkom's network at wholesale rates, preferably at cost. Recent studies on pricing show that a key driver of the high cost of telecoms services is Telkom's lack of a wholesale pricing structure. Currently, there is no incentive, including regulatory imperative, to introduce a wholesale pricing structure.

Local loop unbundling

Unbundled access to the local loop allows new entrants to compete with the dominant operator, particularly in areas where the new entrant has not yet rolled out infrastructure. Internationally, local-loop unbundling is recognised as a means to establish competition in local networks quickly. But, despite regulations to unbundle the local loop, this has not been particularly successful. Internationally, particularly in Europe and America, alternative forms of infrastructure access are possible either through the cable networks or alternative operators as a result of market liberalisation. These options do not exist for South Africa. Without local-loop unbundling, the high cost of local-access infrastructure is likely to reduce the ability of the new entrant to compete with Telkom in this arena, and therefore restrict its ability to offer consumers an alternative at competitive prices. Although it would not be economically feasible for new entrants to duplicate the incumbent's local-access infrastructure in its entirety within a reasonable time, the Act prohibits unbundled access to Telkom's local loop. Ideally, the key elements of local-loop unbundling that should have been included in the Act are to compel the incumbent to unbundle elements of service, starting from raw copper upwards, based on a timetable

for implementation in key markets, to determine rights of collocation with the incumbent operator and enable the regulator to determine a pricing structure based on costs.

Rights of access to international transmission links

Telkom is the signatory to and owner of the South African portion of the international communication links and therefore has a monopoly on international cable routes to and from South Africa, including landing rights. It would be uneconomical for the SNO to install its own international transmission links to and from South Africa. If Telkom was free to negotiate commercial terms with the SNO, it would extract monopoly rent. The SNO should be entitled to lease spare capacity on existing international cables on indefeasible rights-of-use terms, which convey full rights for the lifetime of the cable.

Controlling incumbent behaviour to avoid anti-competitive behaviour:

The Act does not recognize the concept of economic dominance or the principle of significant market power, which is an important factor in regulating a dominant monopoly operator. As a result of Telkom's dominance, asymmetric regulation is required to facilitate competition and to level the playing field, particularly for new entrants. Internationally, the focus of telecoms regulators and competition authorities has been on the introduction and development of competition, particularly the examination of individual market-operator positions with significant market power. Apart from a policy and regulatory vacuum on competition-enabling legislation, South Africa has not focused any attention on establishing processes for the assessment of market competition. Particularly important is the absence of sufficient enforcement of anti-competitive conduct rules. As a result, Telkom continues its dominance over the sector with unchecked anti-competitive behaviour.

7.3.4 Interconnection:

Internationally, experience has shown that the success or failure of new operators depends largely on the interconnect terms and conditions. Because of the high dependency of new entrants on the incumbent operator for access to networks and the provision of facilities, interconnect agreements and rules for leased-line provision have to be developed that are fair and based on acceptable principles both technically and

commercially. The policy relating to interconnect agreements therefore needs to emphasise principles of cost-related tariffs and non-discrimination between operators. The SNO will require access to Telkom's infrastructure on stable, predictable and cost-effective terms wherever necessary. The separation of accounts and account reporting is important to control incumbent behaviour against abuse of its dominant position and to create clear timeframes for the rapid development of appropriate management accounting practices in Telkom. Although COA/CAM[18] regulations and timelines are in place for implementation, Icasa lacks the power and the skills to implement these.

The interconnect pricing methodology should protect the SNO against predatory pricing by Telkom. No interconnection terms and conditions are specified in the Act, it is assumed that regulations will be drawn up by Icasa or in the SNO licence agreement. This is not ideal as it leaves too much room for negotiation and creates uncertainty for investors.

7.3.5 Implementation of competition enablers

Carrier selection and carrier pre-selection

The Act's lack of key competition-enabling mechanisms, e.g. delayed introduction of carrier pre-selection, number portability, facilities leasing, interconnection and access to facilities, were a cause for major concern and made investment unattractive. Internationally, it is widely accepted that carrier selection[19] and carrier pre-selection[20] play an important role in promoting competition. A study conducted in the European Union in 2001 found that, in many instances in Europe, the "lack of … [such] regulatory

[18] Chart of Accounts and Cost Allocation Manual

[19] Call-by-call carrier selection is a service that enables fixed subscribers to select a carrier different from their local loop operator for the routing of a specific call by dialling a prefix or an access code which identifies the selected carrier's network.

[20] Enables fixed subscribers to select a carrier different from their local loop operator for the routing of outgoing national long distance, international long distance and local calls. As subscriber's choices are programmed in advance, they do not need to dial the carrier-selection prefix unless they wish to override the pre-selection choice for any call.

instruments have made it difficult for new entrants to compete with incumbent operators." (EU, July 2001)

The policy makes provision for introducing number portability in 2004 and carrier selection and pre-selection in 2005, two years after the licensing of the SNO. Timeframes for the implementation of these enablers has fluctuated as a result of rigorous lobbying by various interest groups. Ideally, these regulatory enablers should have been in place from day one. Mobile number portability was finally introduced in November 2006, the results of which are yet to be seen. Carrier pre-selection has yet to be implemented.

The early implementation of key competition enablers such as carrier pre-selection, carrier selection and number portability is important for enhancing customer choice and to allow for early competition. Without these measures, it will not be possible for any consumer not directly connected to the SNO network to benefit from the competition brought about by the introduction of the SNO. It would take several years before the SNO's network could provide similar levels of local access to those of Telkom, even if financially feasible. Accordingly, without the introduction of carrier selection and carrier pre-selection, a large portion of residential and small-business consumers will not benefit from competition for several years.

International experience has shown that there is some correlation between the implementation of carrier pre-selection and lower incumbent market share. "In Sweden and Austria, where CPS has been implemented, overall fixed-line penetration stood at 76 percent and 63 percent respectively at the end of 2000, while in Switzerland, one of the earliest carrier pre-selection adopters, the operator's share of international long-distance traffic has fallen to as low as 55 percent, and domestic long-distance traffic to 69 percent." (Toland, J, 2001 in M-Cell submission to Parliament, 2001) In countries where the incumbent's market share is the highest, carrier pre-selection has not yet been put into place.

Number portability

Number portability has been recognised internationally as an enabler of competition. It is not only a policy and regulatory issue, but is also complex in its implementation, technically, operationally and procedurally. The Act simply states that number portability will be introduced, but it fails to distinguish between the various types of number portability that can be implemented: operator,[21] location,[22] and service,[23] The biggest obstacle to local number portability implementation is in the adaptation of support systems such as customer databases and accounting systems, service management systems and network management systems. Implementation will be particularly complex in South Africa because of its mix of analogue and digital infrastructure.

"There is clear evidence that customers are reluctant to consider using alternative network operators if this means that they have to dial extra digits or change their phone number. Absence of carrier pre-selection and number portability therefore gives the incumbent network operator a significant competitive advantage." (Arup, 2001:18)

7.3.6 Independence of the regulator

South Africa has had many difficulties in establishing credibility for an independent and transparent policy and regulatory structure. Although the legislative framework within which the regulator operates is perceived to be independent as it is separate from the Ministry and does not report to the Minister, numerous licensing and regulatory issues demonstrate the contrary. Icasa's decisions have been challenged by the Minister. The first telecoms regulator, Satra, was plagued by licensing debacles and regulatory issues. Its successor, the converged broadcasting and telecoms regulatory authority, Icasa, has also not had much success. At the heart of these issues was joint jurisdiction between the Minister and the regulator over core regulatory and licensing functions. Although Icasa theoretically complies with international best practice regarding the setting up of an

[21] Customers can change telecommunications network providers and keep the same telephone number

[22] Customers can change address and keep the same number

[23] Customers can change types of service and keep the same number

independent regulator, there have been numerous questions raised about Icasa's independence and ability to implement regulation. These questions stem from the provision in the Act that give the Minister and Icasa joint jurisdiction over two key regulatory functions: the awarding of licences and the making of regulations. The Minister awards the licence but Icasa is responsible for granting licences. The minister is also responsible for final sign-off on all regulations. As a result, discrepancies and differences in opinion have created licensing delays and the revocation of regulations by the Minister.

The third mobile operator, Cell C, was licensed almost two years after the initial process began, after costly delays and lengthy legal battles. The licensing process of the SNO was flawed from the outset. The delays in issuing an invitation for applications, ill-defined partners and a market wary of risky fixed investment resulted in a failure to attract credible bidders, despite initial interest from large operators. In the first round, two poorly qualified groups made bids but neither was able to meet the bidding criteria and so both were rejected. In the second round, after a period of stalemate and back-room negotiating, the same two consortiums, somewhat better able to meet the criteria, once again made bids but once again neither qualified for large controlling stakes. In the end, the Minister granted each consortium 13% and warehoused the remaining 25% until a strategic equity partner could be found. The Tata Group, in the form of VSNL, emerged in 2005 as the strategic equity partner, but, the controlling stakes held by 2Consortium and Communitel were reduced by half a percent each, which gave the Tata Group a controlling stake in the SNO. After protracted negotiations between the parties, a shareholders agreement was finally signed in August 2005. The licensing of both the third mobile and the SNO was marred by procedural flaws, leading to time-consuming and expensive court battles. These brought to light many differences of opinion between the Minister and Icasa, and undermined South Africa's credibility internationally.

In terms of regulatory oversight, government's dual responsibilities as a major shareholder in Telkom and as the overseer of sector development have suffered from this conflict of interest, to the detriment of the sector, resulting in ongoing regulatory

bottlenecks. In 2002, Telkom filed a price-cap proposal at variance with the price cap proposed by Icasa. This was referred to the Minister for approval but the delay in deciding on the Icasa proposal allowed Telkom to implement the new tariff. The matter was challenged in court, but the Minister's decision to settle for a slightly lower rate than that proposed by Telkom undermined Icasa's independence. Similarly, the Minister's decision to withdraw the interconnection and facilities leasing guidelines only a month after they were issued was widely perceived as a result of pressure from Telkom. More recently, this conflict of interest and constant questioning of the interpretation of current policy came to a head in the debacle about the Minister's notice (Government Gazette No. 26763, 3 September 2004) to liberalise elements of the telecoms sector with effect from 1 February 2005, as follows:

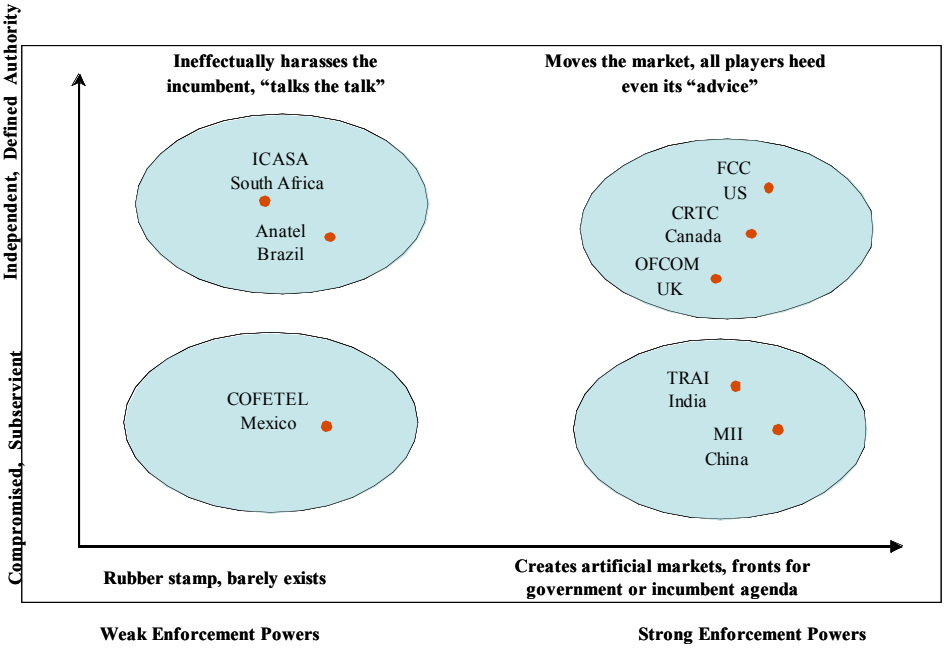
- Mobile operators and VANs may purchase leased lines from any operator including, but not limited to Telkom and the SNO;
- Private telecoms operators can resell spare capacity and facilities;
- Public payphone services are liberalised;
- VANs may carry voice using any protocol; and
- Public schools and education institutions are entitled to a 50% discount for Internet services.

Icasa[24] published its interpretation of the Minister's announcement in late November 2004, including that VANs licencees could self-provide, yet only a day before this was to come into effect, the Minister published a "clarification" explicitly stating that VANs would not be allowed to self-provide. Although a "clarification" by the Minister has no force in law, because the Minister approves Icasa's regulations, this means that its regulations cannot contradict the Minister.

24 ICASA Media Release following the Minister's earlier announcement (22 November 2004), http://www.internet.org.za/icasa-media-22112004.html

In a Gartner rating of telecoms regulators, Icasa was recognised as an independent, defined authority, though largely ineffective in managing the sector or stimulating competition within the sector.

Figure 22 — Rating telecoms regulators



Source: Gartner in ITWeb, Brainstorm, September 2003

In addition, Icasa suffers from a lack of skills at all levels of the organisation and is inadequately funded. What is required is a clear separation of powers between the Ministry and Icasa, removing joint jurisdiction over the prescribing of regulations and the granting of licences for telecoms services. Operators, especially Telkom, have exploited this situation by challenging Icasa decisions in court to delay any determinations by Icasa. These tactics have hampered development of the industry. By granting Icasa exclusive power to enforce rulings, even pending the outcome of court decisions, the risk of spurious lawsuits intended to frustrate liberalisation efforts would be removed. Investors want the regulator to deal expeditiously with the implementation of policy, regulations and industry disputes. Precedent has shown that neither the Ministry nor the regulator are up to the challenge.

But Icasa's problems are a combination of skills shortage, funding, and a weak administrative culture. These institutions are fairly new and the politics of government heavily influence the outcome of any decision.

7.4 Way forward — Attempts to reform the sector

A new director general and deputy minister seem determined to rectify past mistakes and create a competitive environment through the introduction of a credible investor in the SNO, Tata, and the introduction of the Convergence Bill. (Government Gazette No. 27294 of 16 February 2005) Although not yet promulgated, this Bill and the new Icasa Act attempt to clarify issues of jurisdiction between the Minister and Icasa, but as they are not substantially different from the Amendment Act, they are unlikely to make much difference. In addition, it is poorly drafted and leaves much room for interpretation, further taxing Icasa's skills and resources. All of these measures do not, however, go far enough to address the serious bottlenecks created by the policy and regulatory environment.

7.5 Key Issues with the reform process in South Africa

- Attempting to manage the onset of competition with widely varying philosophies. A market-based philosophy combined with a socialist implementation regime;
- Cherry-picking state assets and thus effectively excluding private-sector participation;
- Duopoly policy and exclusivity is outdated and its success questionable;
- Multiple, unstructured universal service obligations;
- Lack of a clear, strategic framework and timeframes creates confusion and uncertainty;
- Inadequate management of the dominant power of the incumbent operator and thus, unchecked anti-competitive behaviour for related services. Containing monopoly power of the incumbent operator is vital in a newly liberalizing market;
- Attempting to manage multiple processes of different state assets at the same time, creates confusion at all levels as well as the potential for competing objectives by

different government departments i.e., privatization of Telkom, liberalization of fixed sector and adding value to state assets;

- Licensing technologies as opposed to services hinders market growth and is often quickly outdated and requires further legislation at great cost e.g. fixed-mobile;
- Inconsistent application of regulation hinders market development and the onset of competition;
- Allowing for regulatory independence and a firm commitment to market reform from government is vital. A clear separation of powers between the executive and administrative arms of government is important.

7.6 Conclusion

The South African government has failed on a number of levels by its continued inability to provide a clear strategy and vision for the telecoms sector. Despite a number of efforts through the formulation of an e-Strategy task team, the Presidential National Commission on Information Society and Development and Electronic Communications Act, these have failed to deliver a coherent strategy. Further policy and regulation have failed to create an environment that can enable competition, lower prices, increase access, and introduce new technology, and enable South Africa to become globally competitive. At the simplest level, the Telecoms Act fails to address the fundamental principles of good policy with which to attract private sector investment. South Africa's history of licensing delays and legal challenges has undermined the country's ability to attract credible investors. The South African telecoms sector is characterised by incumbent operators which enjoy entrenched rights, obligations and market positions that are proving to be hard to shift. This has prevented the country and the sector from combining together to form a common vision and strategy to realize a knowledge economy.

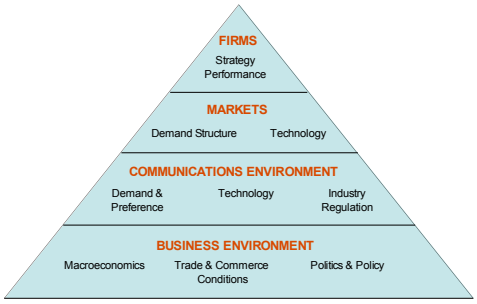
Managing telecoms sector reform is a complex and dynamic process, particularly for developing countries, as it is influenced by and in turn influences a number of elements. As a result, it requires careful balancing to meet the often conflicting interests of government objectives and private-sector investors, fulfil international commitments and continue monitoring a dynamic market sector. South Africa's reform process has been

characterised by delays, litigation and disputes. These policy and regulatory problems are increasingly reflected in the development of the sector here. As a result, South Africa has attracted little international investment in telecoms, effectively missing the telecoms boom of the late Nineties. The conflicting nature of these issues underpins the competitive dynamics that drive the development of the South African telecoms market. Through the disputes, delays and litigation, this research has demonstrated that the institutional structures as identified by Levy and Spiller (1996) are lacking. The real challenge is to develop and implement a regulatory framework that allows for the development of sustainable competition in the telecoms sector, lowers input costs, provides customer choice and develops new and innovative products to match market demand, in what can only be described as a sector currently in transition from a monopolistic fixed-line market.

8 Characteristics of the South African marketplace

Introduction

The development of the South African telecoms network market in the early 21st Century will be analysed within the following framework in order to evaluate how policy and regulatory interventions have shaped the competitive dynamics of the telecoms network market structure. This chapter seeks to analyse whether the South African telecoms market structure enables the country to achieve its ICT ambitions, as outlined by the President and Nepad.



8.1 South African economic overview

Investment decisions are driven by a number of factors. Political stability, low crime, potential for growth and overall economic stability are significant factors that drive investment decisions. South Africa has the largest economy on the African continent. "GDP generated by South Africa exceeds combined GDP of the other 13 SADC member states." (BMI, 2002:19) South Africa is often regarded as the leader on the continent and promises considerable economic potential with its natural resources, stable democracy and favourable position. The South African economy is heavily reliant on agriculture and mining as its main export products, but is a complex mix of sophisticated secondary industries and fast-growing tertiary services. The country's infrastructure mirrors this complex mix, from first world developed infrastructure in some parts of the country to poverty-stricken informal urban settlements and rural subsistence lacking even the most basic infrastructure, like electricity and water. Tertiary industries contribute over 60% to GDP, including ICT's. In an effort to stimulate the economy and create jobs, the government has embarked on an aggressive drive to grow GDP by 6% over the next few years. A key factor constraining growth that drives the government's growth strategy has been the impact of high input costs, most notably telecoms services. As a result, it has embarked on a number of measures aimed at lowering input costs.

Table 11 — Contribution to GDP by sector

Contribution to GDP by sector at current prices (%)								
Industry	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Primary	10.5	10.6	10.6	10.8	11.8	12.8	11.0	10.1
Secondary	26.2	25.4	24.2	24.2	24.0	24.4	24.3	23.8
Tertiary	63.3	64.0	65.2	64.9	64.2	62.8	64.8	66.1
Communication	3.0	3.3	3.5	3.7	3.8	3.8	3.9	4.0
GDP growth	**2.6**	**0.5**	**2.4**	**4.2**	**2.7**	**3.6**	**2.8**	**3.7**

Source: Statistics SA

8.2 The communications environment in South Africa

In the information economy, economic growth and telecoms growth are integrally linked. To illustrate the growing importance of the telecoms sector, its contribution to GDP grew from 1.9% in 1999 to over 6% today. Over a 10-year period, the revenue generated by the telecoms sector grew from R7 billion to R56 billion (Gillwald and Kane, 2003). These figures reflect the direct contribution of telecoms revenue from voice and data services. They do not measure the significant downstream activities generated as a result of a world-class telecoms infrastructure with competitive prices, which adds to the overall attractiveness of South Africa as an investment destination. Although South Africa is an attractive investment destination compared to other African countries, however, it has struggled to attract investment in telecoms because of delayed licensing processes, the uncertain regulatory environments and frequent court challenges.

8.3 Market overview

Because of the current regulatory regime, most players in the market lease infrastructure from the monopoly PSTS operator (Telkom), with the exceptions being Transtel and Eskom, which operate infrastructure for their own mission-critical private transport and electricity networks. Telkom remains the incumbent fixed operator and held the monopoly on PSTS until May 2002 because of numerous licensing wrangles and legislative impediments; however, Telkom is still the de facto monopoly, with significant market power in critical elements of the telecoms value chain. The three mobile

networks have developed some infrastructure of their own. The two main players, MTN and Vodacom, provide approximately 90% coverage nationally. The third operator, Cell C, is in the process of building its network. The large Tier-1 VANs players all have significant VPNs and provide value-added network services to corporates. In terms of international capacity, there are currently two submarine cables and three satellite earth stations. Telkom owns the international gateway, with the SNO and Sentech currently licensed to provide services.

Table 12 — Competitive status of the telecoms markets in South Africa

COMPETITIVE STATUS OF THE TELECOMS MARKETS			
FIXED LINE	**1996**	**2003**	**OPERATORS**
Local	Monopoly	Duopoly	2
National	Monopoly	Duopoly	2
International	Monopoly	3 licences	3
Pay Phones	Monopoly	Duopoly	1
VANs	Competition	Competition	25
ISPs	Competition	Competition	120+
WIRELESS OPERATORS			
Mobile	Duopoly	Competition	3
Satellite	Competition	Competition	4
Radio paging	Competition	Competition	20+
Radio trunking	Competition	Competition	3
Mobile data	Duopoly	Competition	5

Source: Adapted from BMI-T

8.4 Market analysis

The next section presents an overview of the South African telecoms market segmented into key network services: fixed voice, fixed data and mobile. The results of the research interviews and focus groups are incorporated at the end of this section. The research results summarise the key issues in the market from the perspective of customers. These have been structured in accordance with the second research sub-question – how has government's commitment to managed liberalisation affected consumers of telecoms services and thus development of the information society?

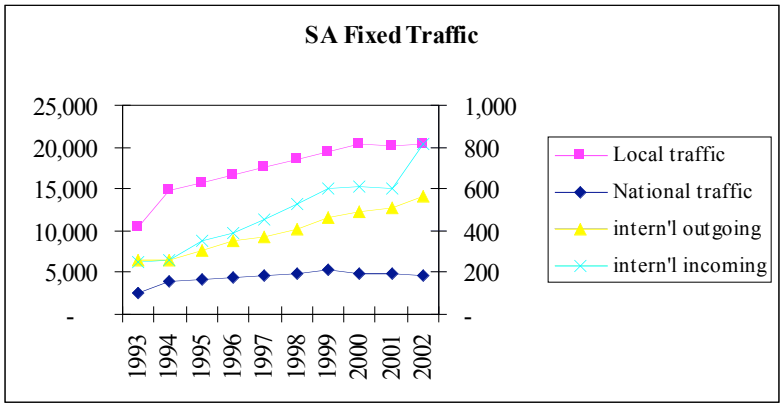
8.4.1 Fixed line services — voice

During the research period, it would seem as though Telkom has given up the battle for residential voice services to the mobile operators by choosing to concentrate on high-end residential customers and the more lucrative corporate sector.

Telkom's pre-paid services, launched to match the mobile offerings, has never been as popular, largely because of the high upfront and fixed costs. Pre-paid denominations for fixed lines are much higher than for mobile. In addition, Telkom's public payphones, though cheaper than mobiles, have not been as popular. Mobile operators have invested in containerised public phone shops, which are purchased by local entrepreneurs, who take over responsibility for these businesses and are accountable for their own profit or loss. This market-based approach has ensured that entrepreneurs are actively involved to ensure they remained profitable. Today, these containerised phone shops are highly sought after. Telkom, on the other hand, viewed public payphones as an obligation, but embarked on a mass roll-out without any clear strategy. So, despite being cheaper than mobiles, they are often vandalised, not in operation, in inappropriate areas and thus inefficiently utilised.

When analysing the total fixed traffic in SA over the years, an interesting picture emerges. Compound annual growth over a ten-year period (1.4%) illustrates marginal increases in traffic, alluding to the high cost of services in the sector. Unlike most liberalised jurisdictions where fixed traffic has escalated, users have not significantly increased their usage patterns to take advantage of the new information-technology services. Given the explosion in telecoms services internationally, South Africa's marginal increase in traffic can be ascribed to Telkom's monopoly pricing.

Figure 23 — Analysis of fixed traffic in South Africa



Source: ITU world telecommunications indicators database, 2005

8.4.2 Fixed data services

High speed customized fixed data services are primarily required by large businesses. This study has regarded business customers as particularly important because South Africa is trying to expand its services industry and become a business and trading hub for sub-Saharan Africa. Access to high-quality voice and data communications services at competitive prices both inside and outside the country will therefore determine South Africa's position as a leader on the continent. Businesses in particular have become more and more reliant on network services because these create increased business efficiency and effectiveness by improving both internal and external communications and enhance customer service.

VANs offering converged voice and data services form the foundation of new information economy services by providing enhanced functionality beyond the traditional circuit-switched voice services. VANs services typically include data communication, IP voice, network management, private networks, internet services and security solutions. The VANs sector is totally reliant on the underlying telecoms infrastructure because these services run over the telecoms infrastructure. The level of network unbundling and policy liberalisation therefore determines the level of VANs activity. Historically, the VANs sector has developed and flourished as a result of technological and market developments. Incumbent operators that focused on providing voice services were often

unable to conceive of new IP technology being able to offer specialised data services. VANs operators capitalised on this by providing specialized network management services for specific clients, mainly corporate.

VANs sector development is primarily influenced by three factors: technological advancements, government policy and regulation, and the market structure of the VANs sector (Melody, Currie and Kane, 2003). Internationally, the VANs sector is often completely liberalized, with key elements of the incumbent network being unbundled to allow for these competitive segments.

"In many countries, VANs providers have been able to manage the communication capacity they lease from the incumbent telecom operator in any way they choose, in order to provide any form of communication service, including voice. In other countries, the provision of all voice communication has been reserved to the incumbent operator for a period, and VANs have been restricted to the provision of data services and value-added network management functions. In the most restrictive cases, a few countries, such as South Africa, have required that, in addition, VANs must lease their network facilities from the incumbent operator for a period." (Melody, Currie and Kane, 2003)

In South Africa, VANs services developed in the early Nineties by harnessing the technological developments in telecoms and by addressing the lack of data services provided by Telkom which was slow to realise the importance and increasing customer demand for these services, so only started providing them much later. As a result, a vibrant and innovative sector developed despite Telkom's efforts to restrict VANs sector development. VANs players typically service a large proportion of the corporate data requirements in South Africa. The migration of managed and outsourced services such as virtual private networks, intranets and extranets to VANs operators is typical of more competitive markets but in South Africa only become common since the introduction of data services.

As a result of its entrepreneurial development without policy and regulatory hurdles, spurred on by technological innovation, competition within the VANs and ISP sector is fierce, with clear market stratification between business customers and consumers. Most large corporates use VANs providers and ISPs for their data and internet services. VANs operators and ISPs run managed services on their own virtual private networks, but, historically and legally, they are dependent on Telkom for their infrastructure. Since becoming competitors with Telkom for data services, however, this has a range of competitive issues. As analysed by Melody, Kane and Currie (2003), Telkom has frustrated the efforts of VANs players by interpreting the Telecoms Act as narrowly as possible so as to protect its monopoly rights and limit the growth of VANs operators. VANs operators, in turn, have tried to interpret the definition of services as widely as possible, to justify the business case and so be able to continue providing services.

The lucrative corporate market for both voice and data services, which provides fixed annuity revenue, has focused Telkom's attention on aggressively trying to secure a greater share of the market. According to interviews, Telkom's share of the data market has risen from 3-4% in the late Nineties to approximately 20-30% over a two- to three-year period, which illustrates Telkom's aggression in attacking this sector and also the inability of the regulator to curtail it. Over the nine-year period from 1994 to 2002, the total number of VANs operators and ISPs in South Africa has grown from seven to 210, while the number of dial-up subscribers has grown from about 15,000 in 1994 to 1,115,000 in 2002 (Goldstuck, 2002:21). Although these numbers reflect the growth in the industry, they do not reflect the significant consolidation that has occurred over the same period. "Since it controls most international bandwidth in South Africa, Telkom has the potential to drive massive growth of usage, and help boost an industry that has always been known for innovation and ingenuity, given limitations of operating in South Africa. Instead, it has seen itself as being under attack from the ISP industry, and has waged a constant legal and strategic campaign against it." (Goldstuck, 2002:47)

Table 13 — Large tier-one VANs players

	Market Share	Number of corporate customers
Internet Solution	45%	4,000
UUnet	23%	1,500
Telkom*	20%	550,000
MTN Network Solutions	4%	200

Source: Market intelligence

*Includes infrastructure customers, leased lines, etc.

Telkom's case against and attitude towards leading international operator, AT&T, illustrates Telkom's tactics in the VANs market. Telkom refused to grant AT&T new bandwidth because it deemed AT&T to be operating outside the regulatory boundaries, thus setting itself up as the enforcer of the regulatory framework. The local general manager for AT&T at the time stated: "Telkom is acting anti-competitively. As a monopoly, it cannot also be a juror. It withdrew our bandwidth without any investigation. We've had to divert investments to the neighbouring states." Telkom's pricing in the data market has long been an issue of contention. To date, there are no wholesale prices or services, including for leased lines, with the exception of mobile operators.

Despite a weak regulatory environment that has struggled to contain the power of the incumbent, the VANs sector in South Africa has survived because of the high demand for high-quality data services.

While the mobile operators are currently the key providers of voice services for the majority of the population, growth of the Internet is likely to be severely hampered as a result of high fixed-call charges and affordable broadband consumer offerings. The EIU notes that the future performance of South Africa's communications industry will be "determined by telecommunications liberalization policies – or lack thereof – more than anything else. Uptake of Internet services has been modest in South Africa at 7% of the population. The high cost and inadequate coverage of high-speed connections, which can

be blamed partly on the lack of market competition, threaten to dampen the uptake of broadband." (EIU, April 2004)

Recent statistics reveal that South Africa has regressed in terms of overall development. In 1996, South Africa was ranked 14th in the world in numbers of Internet users, but by 2003 it had dropped to 28th. The slow growth of Internet access in South Africa has been attributed to a "factor of delays in licensing a second network operator, Telkom's own uncompromising attitude towards Internet service providers and market ignorance about the continued value of the Internet in the wake of the technology market crash of 2000 and 2001." (Goldstuck, 2002:5)

8.4.3 Mobile services

Two mobile licences were granted to separate operators in 1993 and a further operator was licensed in 2001, following a long court battle to challenge the licensing process. MTN and Vodacom were required to install 7,500 and 22,500 community service telephones respectively over a period of five years, in addition to paying ongoing license fees. Both operators achieved this with ease and, in reality, provide significantly more commercial services in what were traditionally thought to be under-serviced areas. As a result, new entrant Cell C was given the target of installing 52,000 community phones over a period of seven years, together with coverage obligations. MTN and Vodacom were required to reach 60% of the population within two years and 70% within four years. Cell C had an obligation of 60% population coverage on its own network within five years but has initially roamed on the Vodacom network. Although the two incumbents remain exceptionally strong, the new entrant continues to struggle to gain a foothold. The delays in licensing it as the third mobile seriously affected its ability to penetrate the market. In addition, neither the policy framework nor its licencing terms have been friendly to a new operator. Cell C was granted minimal 900 Mhz spectrum, whereas MTN and Vodacom utilise the bulk of the 900 Mhz and 1800 Mhz spectrum. Initially, the new operator was to be given 1800 Mhz but would be able to trade this spectrum for 900 Mhz, but numerous licensing delays led to both incumbents requiring more spectrum to operate their networks. In the end, the regulator had to provide the

1800 Mhz spectrum. Technology dependent licences dictate an expensive roll-out strategy. In addition, competition-enabling legislation to enable access to infrastructure, the ability to roam and interconnect at favourable rates has not been implemented to aid the newest operator. As a result, four years later, it continues to struggle to gain profitable subscribers and become financially viable.

A relatively new player in the South African telecoms-operator landscape, the mobile market can be regarded as competitive and innovative. The failure of fixed telecoms to deliver appropriate solutions to customers and the relative ease of getting a pre-paid mobile service without a large cash outlay or fixed place of residence have contributed to the success of mobile services.

Table 14 — Market summary

Operator	Launched	Subscribers (March 2004)	Subscribers (March 2003)	Subscribers (March 2002)	Annual Growth	% Prepaid (04)
Vodacom	1993	9,222,000	7,874,000	6,557,000	20%	85%
MTN	1994	7,296,000	4,723,000	3,877,000	22%	81%
Cell C	2001	2,555,000	1,250,000	300,000	317%	88%
Total		**19,073,000**	**13,847,000**	**10,734,000**	**29%**	

Source: Yankee Group, 2003, Pyramid 2004

Competitiveness within the mobile sector

The Herfindahl-Hirshmann[25] index measures the competitiveness of a market on a scale from 0 to 10,000. A monopolistic market scores 10,000 and a perfectly competitive market 0. According to this index, the South African mobile market compares favourably against some of its peer countries.

25 Herfindahl-Hirschman Index or HHI, is a measure of the size of firms in relationship to the industry and an indicator of the amount of competition among them. It is defined as the sum of the squares of the market shares of each individual firm. As such, it can range from 0 to 1 moving from a very large amount of very small firms to a single monopolistic producer.

Table 15 — Mobile market competitiveness

Market	Number of carriers	Herfindahl-Hirshchmann Index
Mozambique	1	10,000
Saudi Arabia	2	6,791
Mexico	5	6,215
Zambia	3	6,177
Botswana	2	5,644
Egypt	2	5,042
Market	**Number of carriers**	**Herfindahl-Hirshchmann Index**
Nigeria	4	4,855
South Africa	**3**	**4,106**
Spain	3	3,958
France	3	3,907
Italy	4	3,773
Zimbabwe	3	3,404
Poland	3	3,338
Germany	4	3,322
Chile	4	2,756
United Kingdom	5	2,488
Malaysia	5	2,482

Source: Finnie, Lewis, Lonergan, Mendler and Northfield, 2003

Although this displays a degree of competitiveness within the South African market, there is still much room for improvement. South Africa is the largest and most highly penetrated mobile market in Africa, with a current penetration rate approaching 70%. More developed markets in Europe have penetration rates around 80-90%. Cell C's rapid entry into the market gaining a market share of about 14% in two years, along with the potential growth still available, illustrates that the market could possibly bear another operator. The entrance of Cell C spurred the two incumbents which were beginning to show signs of complacency towards lower prices or introducing additional new products (i.e. per second billing).

Although the introduction of a third operator in 2001 has stimulated market competition, it was not enough to affect prices. The lack of competition-enabling provisions plus

onerous obligations has prevented the third operator from competing effectively against the two incumbents.

8.4.4 Results of interviews and focus groups

How has policy and regulation affected consumers of telecoms services?

Participants in the interviews and focus groups outlined that the key service areas for their businesses to run optimally were reliability, cost, availability and bandwidth.

Reliability

Responses from the focus groups and interviews illustrate that Telkom is unable to provide for sufficient reliability or redundancy in their network. South African companies have traditionally also had no redundancy in their networks because they have had to rely solely on Telkom, yet, telecoms service providers must be able to ensure back-up and redundancy, as the "impact of network downtime is severe on the business". One interviewee noted that when the business was offline, they lost R100,000 every half hour. Currently, Telkom's reliability, particularly in rural areas, is poor. [Telkom] "does not tell us when they are going to do upgrades/changes. This leaves hundreds of our people with no dial-up." Besides its inability to provide for redundancy in its network, Telkom's response to line faults is particularly poor. "When you have a problem with the lines, it's a different story, then it just takes forever [because] the cables are zapped in Johannesburg. We run a national network and the most frustrating thing is your lines get chopped." Mixed responses were given about Telkom's ability to provide new lines. Larger corporates were able to acquire lines from Telkom quickly, while smaller businesses had to wait for service. "We've been waiting seven months for a pair of wires between two branches, 500m from each other."

Respondents defined their ideal quality of service, "When you have a breakdown and the people come out quickly and repair it efficiently, if you have a query or request, you have a help desk that you can get through to and get a person that is able to answer the technical question and an organization that has got technically clued-up sales people that can come and say to you, here is the latest in fax technology, here is the latest in voice over IP, here is the latest in, etc."

Service levels

Network reliability goes hand in hand with service-level agreements. Internationally, it is standard practice to offer service-level agreements (SLAs), which guarantee network uptime for a specified percentage of time, with punitive clauses for any network failure outside of the guaranteed uptime. SLAs are particularly important for negotiating sales especially for corporate clients. The interview and focus group research shows that Telkom does not offer this as a standard service and, where it does, it is punitively expensive and penalties are weak. VANs, on the other hand, are prepared to negotiate aggressive SLAs for their portion of the network but do not include the Telkom network as it is out of their control. "To go into the SLA agreement, we had to pay extra. I felt it was unnecessary. I didn't see why, if we had an SLA, we had to pay. We've already paid enough to go into that agreement as far as I was concerned." Telkom was also slow in delivering service: "[we] want three to seven day capacity upgrade service but Telkom offers one to two week minimum." "I went to the House and Garden Show and I put my name down and two weeks later I got a phone call and I said I'm interested in ISDN – 'Oh, we'll get somebody to phone you', and I'm still waiting." What both the interview data and the focus groups highlight is that SLAs, Telkom's response time and customer service are all dependent on the size of the customer. Customer size should not be a determinant in the quality of service received. Any business customer requires good telecoms service to be able to operate efficiently.

Telkom is slow to provide upgrade services with a one to two week minimum lead time, while corporates typically require three to seven days for capacity upgrades. The lack of skilled human resources in project management also impedes service delivery. Telkom's lack of options, innovation and ability to respond to customer needs timeously all impact on the overall quality of its service. One interviewee said that Telkom was stifling their ability to leverage telecoms with which to become a more efficient and productive business. Telkom does not appear to have an understanding of what drives business strategy, especially for large businesses, and is thus unable to respond to customer requirements.

Cost

The overall impression gained from the interviews and focus groups is that Telkom is expensive and provides poor service. Telkom also tries to lock its major customers into long term contracts by offering more value regarding management of networks. South African companies often concentrate on what they are able to afford for network/data services rather than what they need. Scale and volume make little difference in negotiating better wholesale rates with Telkom. Therefore, although costs do not decrease from aggregation of networks and services, consumers are offered a better quality of service. The costs of relocation or changes on site are particularly high, with a long waiting period for service. One interviewee, whose business is largely international, explained that about 30% of their total call costs are for international calls. Interviewees welcomed the onset of competition because they believe it will allow for reduced prices and better service. Interviewees also identified service as an important factor: "What we need is quality. Quality and continuity, because, bear in mind, with pricing, if you are a trading company, you can build the price into your cost, but you can't build quality that you can't provide."

Combined with Telkom's high prices, interviewees expressed frustration with its billing. "When the line goes down for three weeks, you are still charged the rental for the month." Numerous interviewees have had problems with incorrect billing, being charged for services they have not received or services that have been discontinued, which is compounded by very little assistance to customers. Telkom also often acts on incorrect billing information, so that clients' lines get cut through non-payment. Even if you were a reputable company with good credit rating, you end up – even getting Telkom give you a hard time through non payment. This affects the credit rating of a business. Most companies now do a monthly audit of Telkom's bills to ensure that they are correct. This additional process no doubt adds to the input cost of doing business.

High prices were a resonating issue with interviewees. As a result, corporates often purchase capacity because of affordability rather than their need. Bandwidth is not the constraining factor in the provision of high-end services but rather the cost of these

services. Telkom does not offer wholesale rates. Flat pricing structures for data connectivity have been created to capitalise on its monopoly status. As a result, bandwidth on both local and international connectivity in South Africa is over-subscribed.

VANs

The largest single input cost for VANs is for Telkom services. The VANs operators interviewed said that their ability to run their businesses was curtailed by Telkom's pricing regime. Telkom currently uses bundled pricing to be more competitive in the VANs market. VANs operators are then unable to match Telkom's prices. "The predatory leased-line pricing undermines bulk buying, predatory frame-relay service pricing undermines VANs frame-relay pricing, and backbone provisioning suspension cripples VANs service quality." Most large VANs parent companies are large IT companies and, because Telkom is a large customer for equipment, it becomes aggressive with suppliers that purchase VANs services. "VANs [sector] growth has been restrained to 20-30% from 100%. Growth has levelled off unnaturally because of Telkom's spoiling tactics."

Control over infrastructure is key for customers. VANs must have the ability to guarantee network uptime and resolve any problems, should they arise, yet they are reliant on Telkom for backbone services. Telkom also does not negotiate any meaningful back-to-back SLAs with VANs operators about network downtime, yet is prepared to negotiate SLAs with its clients putting VANs operators at a disadvantage and unable to compete by offering better quality services. Over the two-year period during which these interviews were undertaken, there was a growing tendency to view Telkom more favourably. Larger companies deliberately migrated to Telkom because it was prepared to negotiate SLAs, had some influence over the network and began to offer better prices. As a result of these improvements, some companies moved significant portions of their network management from Vans to Telkom, yet VANs operators do not enjoy the same level of service from Telkom.

This migration to managed and outsourced services, such as VPNs, intranets and extranets, is typical of more competitive markets. As a result of the skewed introduction of competition in the services sector, some larger companies have outsourced these services. In other instances, these were initially outsourced before being brought back in-house — lack of control of infrastructure was cited as a key frustration. These factors, along with an absence of policy and regulatory interventions, have resulted in many companies deciding to revert to in-house control or utilise the incumbent directly. As a result, Telkom's market share in data services has grown exponentially and it now occupies a dominant position.

Mobile

The escalating cost of calls to mobiles is a key issue of concern. Several of the interviewees were not satisfied with the level of service from mobile providers, which were unable to offer tailored solutions for corporates. Service differentiation between the incumbents was seen as important, as both "MTN and Vodacom offer the same services and prices". Key issues for mobile services were number portability and the lack of implementation. Even when users were dissatisfied with their current provider, they were reluctant to change because of the number change this would require.

Interviewees also described the impact of mobile telephony on their businesses. One interviewee estimated that the use of mobile services had improved cash flow by 30 days. By sending out bulk SMSs on slow turnover days to advertise specials, "you are getting people buying on the last trading days as opposed to a new month and it just changed our whole cash flow of our business."

Impact on business

The poor state of telecoms services has a severe impact on the way South African companies are forced to do business by comparison to their international counterparts. "We have been working for pretty much the last twelve months on an online ordering system throughout the world, and we launched with our UK division about a month and a half ago. For South Africa and Africa, we are having to take a totally different approach. We've had to develop an offline system so that orders can be captured offline, verified

offline and then connect at a later stage when you want to capture all your orders, connect to the web, download your orders and get verification online, and then disconnect, because of the costs and the unreliability of the infrastructure in Africa. Europe is not a problem; it's going very well — cheap and reliable. In Africa we've had to do it at a huge cost [and as a result] we've had to create two different solutions [to match the two different environments] — Europe is cheap and reliable and here it's expensive and very unreliable."

Interviewees understood the benefits of competition. One interviewee described his experiences in Spain at the time competition was introduced. "I'm from Spain so I can explain much better what happened there, three years ago, and the same thing that is going to happen here happened there. The change in service changed dramatically towards better service – we had a national provider like Telkom, it's called Telefonica which was horrible, absolutely horrible. And then two new contenders came into line and the amount of investment they did in services, maintenance in customer satisfaction was astonishing. Not only did they keep the market share but increased it. The new operator started – one of them competed on our service level, providing very good services and the other one went on a price-effective, cost-effective solution, very cheap access and they were quite good."

Regulatory environment

Interviewees believed that Icasa was a weak regulator which was often unable to impose restrictions on Telkom. They said that, if Telkom was to be challenged, there were three routes to take: (a) anti-competitive via the Competition Commission; (b) legal via the courts; or (c) regulatory via Icasa because Telkom makes such technical submissions to the Competition Commission or in court, cases had to be referred to Icasa, which, because of lack of capacity, was unable to deal with these queries speedily, thus crippling businesses. In addition, SBC[26] had expertise in pursuing regulatory avenues. Interviewees believed that competitors had to develop more market power with which to challenge the incumbent rather than go through the courts. VANs operators in particular

[26] Telkom's major shareholder

said that South Africa's over-loaded regulatory system, together with the lack of understanding about telecoms issues, was unlikely to lead to much improvement in the regulator for the next five to 10 years at least. Even with additional financial backing, because of practical problems such as accumulated backlog and lack of capacity, it was unlikely that Icasa's ability to regulate the sector would improve. Government had to recognise the key role of the regulator.

To test uptake of new services and product innovation from these new licence rights for fixed operators, focus groups were held throughout the country. Most customers could not see any differentiation between the fixed-mobile product and the current fixed or mobile products on offer. Ultimately, customers required a telecoms service regardless of technology. Increasingly, users were prepared to switch primarily to decrease costs if the new fixed-mobile services were cheaper than the currently available fixed or mobile solutions, even if the mobile services offered less functionality or quality of service. Users were prepared to endure minor inconveniences in service (like dropped calls) for the cheaper rate. Concerns raised as barriers to service uptake by potential customers included cost, quality of service and number portability.

A number of South African companies are key players on the African continent, particularly in sub-Saharan Africa. They suggested that regional pricing and incentives for connections should be examined, as there was no regional pricing currently. The Southern African development community (SADC) should push for regional pricing together with enhancing regional regulatory issues.

8.4.5 Competitive dynamics — overall comments on customer perspectives

Customers were frustrated by Telkom's lack of service level agreements, its inability to deliver on time, its lack of flexibility or adaptability about new products, and its lack of responsiveness to network failure. The absence of new and innovative products and services were also recognised as hindrances to business, e.g. broadband, mobile data, and converged voice and data services. Customers were keen to see these services offered to enable them to achieve business efficiency.

Over the two-year period of this study, it was noted that the anticipation of competition has had a significant impact on Telkom's customer service. Table 16 shows that although there has been a marked improvement in Telkom's service, when benchmarked internationally, its faults per line do not compare well. By the second round of interviews, this improvement in Telkom's customer service was evident, particularly among large corporate clients. Telkom had also launched an aggressive pricing strategy to ensure that VANs could not compete with it for data services.

Table 16 — Faults per 100 main lines

Faults per 100 main lines										
	Brazil	**Korea**	**UK**	**US**	**Botswana**	**Morocco**	**Turkey**	**Namibia**	**SA**	**India**
1992	3	12	16	19	38	84	64	78		218
1993	3	11	15	18	39	67	66			220
1994	3	17	15	16	35	63	61		80	215
1995	3	18	4	15	33	49	60		90	196
1996	4	15	4	13	23	55	61	76	72	206
1997	4	2	4	14	37	46	58		67	209
1998	5	2	4	14		37	56		49	203
1999	3	1	4	14		32	56		52	186
2000	3	2	5	14		25	55		52	166
2001	3	1	4	13			48	52	53	150
2002	4	1	11	12		25	37	42	48	126
2003	2	1		13		25	30	40		
Average	**3**	**7**	**8**	**15**	**34**	**46**	**55**	**58**	**63**	**190**

Source: ITU, world telecommunications database, 2005

Interviewees expressed dissatisfaction with telecom operators as they were not seen to offer customised solutions. Currently, voice services are typically separate from data services, but interviewees wanted converged voice and data services as a way to centralise costs. Although technically able to offer such services, VANs operators prohibited by policy from offering them, even though Telkom does not, because of the impact this would have in other areas of its product portfolio.

The competitive dynamic between VANs operators and Telkom in this market is typical of an entrenched incumbent that seeks to stifle the ability of other upstream players to compete for services. The VANs sector is therefore unable to compete with Telkom in a number of areas – price, service, network availability.

Opportunities for new operators

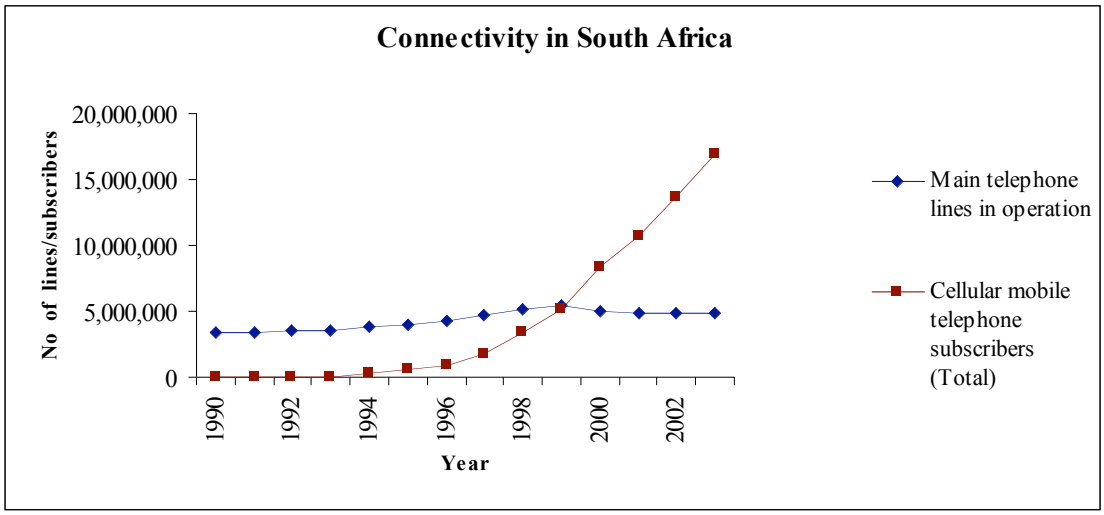
Deregulation and the emergence of competitive carriers for fixed services in liberalising markets result in intense competition, initially in the corporate sector but eventually across all market segments. Competition for market share allows operators to reduce tariffs and by using enhanced public networking technology, to offer increasingly sophisticated network services. The speed of migration of consumers is dependent on their level of sophistication as well as the ability of the incumbent to provide quality telecoms services at competitive prices. In markets in which the incumbent is competent and entrenched, it is very difficult for new, unproven entrants to penetrate. South Africa displays a mixture of both, with a sophisticated, entrenched incumbent and a consumer base that is ready for new, advanced services at competitive prices.

Most of the corporates interviewed for this study acknowledged that, while they welcomed the prospect of competition, they were unlikely to move to a new operator immediately. In addition, a single new operator was unlikely to provide any real difference in pricing, because even if new operators created an efficient, flexible and scalable network, they would still have to rely on Telkom's network, particularly in the initial network roll-out period. The extensive Telkom infrastructure could not be duplicated by newer operators, and operators would always have to rely on Telkom for access to the more remote areas of the country. It would be a waste of the country's economic resources to duplicate the incumbent's infrastructure. The challenges for new entrants are significant in the face of regulatory and market pressures. Internationally, second network operators have only been able to gain a market share of between 5% and 16%, even after several years in operation. Because of these factors, it is fairly difficult to attract investment into liberalising markets for second and subsequent network operators, especially fixed networks.

In an environment where the incumbent operator is heavily entrenched, it is difficult for new operators to penetrate the market. Even though high prices and service inefficiency suggest there is room for improvement by introducing competition, new users are often reluctant to change to a new operator until it has proven itself. But, because the cash outlay for new operators in telecoms is large, market entry must be invited through a favourable policy and regulatory environment that encourages open networks and competition.

8.4.6 Connectivity

Figure 24 — Fixed and mobile connectivity in South Africa



Source: ITU telecommunications indicators database, 2005

The number of fixed lines in operation and the number of households with a fixed phone peaked in 1998/1999, when Telkom rapidly rolled out services in order to meet its exclusivity targets prior to the introduction of competition. If Telkom was unable to meet its targets, stringent conditions were to be imposed. If the conditions were met, it would receive an extension of its exclusivity period. As a result, every effort was made to provide services.

Mobile services, on the other hand, have enjoyed phenomenal growth. Two of the largest network operators now cover 95.1% of the population and continue to build base stations

in areas that show demand for services. The third operator is still rolling out infrastructure and is required to have approximately 60% of the population covered. In terms of mobile infrastructure, the country currently has the choice of three infrastructure providers.

Although Telkom met its target of installing 2,8 million lines, however, over two million of these are no longer operational because most people cannot afford them. Like the community service telephones, these lines required more than just roll-out, they required subsidised rates. When compared against its peers, South Africa compares favourably in terms of main lines per 100 inhabitants.

Table 17 — Main lines per 100 inhabitants

Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Ave
Uganda	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.2
Nigeria	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.5
India	0.8	0.9	1.1	1.3	1.5	1.9	2.2	2.7	3.2	3.8	4.0	4.0	4.1	2.2
Sri Lanka	0.8	0.9	1.1	1.2	1.5	1.9	2.9	3.7	4.2	4.4	4.7	4.9	5.1	2.6
Morocco	2.6	3.2	3.9	4.2	4.4	4.7	5.0	5.3	5.0	4.1	3.8	4.0	4.4	3.9
Botswana	2.7	3.1	3.5	4.1	4.8	5.6	6.5	7.7	8.3	8.5	8.3	7.5	7.6	5.5
Egypt	3.7	4.0	4.3	4.7	5.1	5.7	6.5	7.5	8.6	10.4	11.5	12.7	13.5	7.0
SA	9.3	9.5	9.8	10.1	10.6	11.3	12.0	12.8	11.0	11.7	10.4	10.1	10.1	10.7
Brazil	7.3	7.5	8.0	8.5	9.6	10.7	12.1	14.9	18.2	21.8	22.3	22.2	23.5	13.3
Malaysia	11.1	12.5	14.6	16.6	17.8	19.5	20.2	20.3	19.9	19.7	19.0	18.2	17.9	16.4
Spain	35.4	36.5	37.5	38.5	39.2	40.3	41.4	41.0	42.6	43.4	42.9	41.6	43.2	39.3
Singapore	36.2	37.6	38.9	40.5	42.6	44.4	45.3	47.5	48.4	47.1	46.4	45.2	43.2	42.2
Korea	35.6	37.8	39.8	41.7	43.7	45.3	44.2	56.1	56.2	54.4	54.0	53.8	54.2	45.4
Netherlands	48.7	50.0	51.1	52.4	54.2	56.6	59.2	60.6	61.9	50.7	49.6	48.2	48.4	52.4
UK	45.7	47.0	48.6	50.2	52.2	54.0	55.4	57.2	58.9	59.4	59.1	59.5	56.7	52.8
Germany	43.7	45.5	47.6	51.3	53.8	55.1	56.7	58.7	61.1	63.5	65.0	65.9	66.1	54.8
US	56.2	57.4	58.8	60.0	61.8	63.8	65.2	67.9	68.4	67.2	65.8	62.9	59.9	61.7
Canada	58.9	59.9	59.3	59.8	60.5	62.2	63.8	64.9	66.1	66.8	64.5	63.2	0.0	61.7
Denmark	58.2	59.0	60.0	61.1	61.9	63.3	66.0	68.5	72.0	72.2	68.9	66.9	64.7	63.8

Source: ITU World Telecommunications Indicators Database, 2005

Nevertheless, a detailed analysis of the line numbers in the country reveals a different picture. South Africa remains one of the few middle-income countries with a declining

demand for lines but without a corresponding increase in broadband services or an almost equal mix of business and residential lines.

8.4.7 Telecoms sector investment and revenue

Telecoms sector investment is cyclical because most capital expenditure is upfront, with very little expenditure after the initial investment. Thus, to draw conclusions based on investment over a few years does not allow one to determine sector activity. To understand activity in this sector, an analysis of revenue per capita and investment per capita has been done. When compared to its peers, South Africa performs quite well, earning revenue per capita in line with its more advanced economy, and infrastructure.

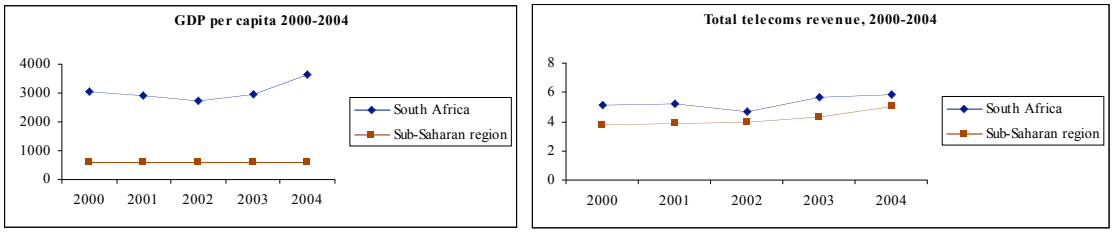
Table 18 — Telecoms revenue per capita (US$)

Telecommunications revenue per capita US$										
	India	**Morocco**	**Namibia**	**Turkey**	**Botswana**	**Brazil**	**SA**	**Korea**	**UK**	**US**
1992	$2.88	$22.07	$42.71	$51.13	$51.05	$36.36	$67.12	$151.88	$455.13	$578.23
1993	$3.11	$19.20	$46.37	$53.88	$48.74	$45.93	$67.67	$166.32	$412.15	$601.81
1994	$3.77	$21.09	$40.56	$50.25	$48.37	$46.84	$86.03	$185.95	$435.52	$631.74
1995	$4.45	$24.77	$47.05	$33.51	$49.46	$60.12	$109.68	$238.43	$471.69	$656.36
1996	$4.96	$25.60	$47.91	$52.65	$46.97	$80.11	$119.99	$313.73	$485.69	$705.29
1997	$5.75	$24.83	$49.20	$68.00	$54.08	$93.97	$144.32	$300.84	$660.23	$847.87
1998	$6.43	$27.92	$56.02	$79.62	$58.34	$120.28	$145.65	$222.34	$754.85	$893.20
1999	$6.53	$31.14	$65.10	$74.66	$74.82	$102.45	$149.40	$348.65	$853.88	$962.25
2000	$7.04	$40.71	$68.29	$82.28	$112.78	$130.85	$156.35	$451.01	$1,107.86	$1,040.30
2001	$7.44	$46.12	$65.26	$75.82	$105.03	$118.89	$139.07	$434.26	$1,097.66	$1,058.60
2002	$7.64	$52.27	$64.17	$109.58	$106.27		$128.17	$484.44	$1,232.67	$1,015.16
2003		$65.26	$102.06	$141.19	$133.49		$192.32	$510.63		$1,000.65
Average	**$5.45**	**$33.42**	**$57.89**	**$72.71**	**$74.12**	**$83.58**	**$125.48**	**$317.37**	**$724.30**	**$832.62**
CAGR	**19%**	**16%**	**16%**	**14%**	**15%**	**21%**	**15%**	**15%**	**14%**	**8%**

Source: ITU World Telecoms Indicators Database, 2005

South Africa's GDP per capita is far larger than its Sub-Saharan neighbours, however, total telecoms revenue as a percentage of GDP is similar to its neighbours.

Figure 25 — South African telecoms indicators against Sub-Saharan Africa



Source: World Bank, 2004

But for investment per capita, South Africa does not compare as favourably. Given its infrastructure shortages and low teledensities compared to developed countries, South Africa should be spending much more if it is to catapult its economy into the information society. Current levels of investment will maintain current infrastructure, and perhaps allow for marginal growth, but are unlikely to change the infrastructure dynamics or grow South Africa's ICT industries to any significant degree.

Table 19 — Telecoms investment per capita (US$)

Telecommunications investment per capita US$										
	India	**Turkey**	**Morocco**	**Namibia**	**Botswana**	**SA**	**Brazil**	**Korea**	**US**	**UK**
1992	$2.02	$16.21	$10.09	$4.76	$55.60	$13.60	$21.30	$70.00	$85.07	$83.89
1993	$2.04	$20.99	$7.43	$5.45	$39.96	$19.31	$21.64	$72.22	$90.46	$69.31
1994	$2.37	$10.62	$10.32	$12.86	$26.82	$25.52	$24.34	$82.00	$87.21	$84.47
1995	$2.73	$7.23	$11.74	$27.87	$12.21	$28.64	$28.20	$98.07	$88.52	$122.63
1996	$2.53	$6.91	$7.28	$25.79	$13.82	$27.67	$42.86	$130.26	$83.15	$160.83
1997	$2.49	$8.74	$5.20	$29.43	$24.08	$43.43	$43.35	$179.44	$84.98	$212.47
1998	$2.33	$9.51	$4.75	$29.03	$26.25	$72.13	$63.91	$98.64	$183.32	$211.05
1999	$2.92	$8.93	$8.52	$12.07	$29.60	$45.24	$39.47	$154.03	$213.49	$244.83
2000	$3.47	$9.62	$20.65	$20.24	$15.70	$39.91	$52.13	$168.89	$263.68	$278.13
2001	$3.42	$5.27	$25.18	$12.85	$14.78	$31.28	$37.98	$134.59	$252.46	$265.37
2002		$2.85	$21.73	$4.80	$7.19	$15.67	$29.94	$193.72	$120.91	$227.34
2003		$3.25	$9.23	$9.00	$10.81	$18.79		$167.88	$92.28	
Average	**$2.70**	**$9.07**	**$12.28**	**$18.04**	**$21.04**	**$34.88**	**$38.38**	**$131.19**	**$146.82**	**$187.64**
CAGR	**10%**	**-12%**	**1%**	**12%**	**-4%**	**4%**	**10%**	**10%**	**3%**	**12%**

Source: ITU World Telecoms Indicators Database, 2005

Table 20 — Annual telecommunication investment

Annual telecommunication investment										
	Botswana	**Morocco**	**US**	**UK**	**Korea**	**SA**	**India**	**Namibia**	**Turkey**	**Brazil**
1993	-16.5%	-18.1%	7.7%	-2.5%	6.7%	66.0%	21.1%	34.6%	110.8%	1920.8%
1994	-23.7%	37.5%	-2.5%	20.0%	14.3%	46.9%	22.1%	163.2%	38.9%	2170.1%
1995	-51.9%	7.8%	3.5%	41.4%	15.4%	17.1%	20.6%	127.1%	7.2%	68.8%
1996	39.0%	-35.4%	-5.0%	33.0%	39.4%	17.1%	2.4%	12.6%	72.7%	69.1%
1997	96.0%	-21.0%	3.4%	26.3%	63.9%	71.9%	2.7%	25.5%	135.1%	9.3%
1998	29.2%	-7.2%	118.3%	-1.4%	-18.5%	103.6%	9.3%	21.4%	89.8%	64.6%
1999	26.7%	84.0%	17.8%	19.6%	33.3%	-29.2%	32.6%	-52.9%	52.9%	-2.4%
2000	-40.3%	170.9%	24.6%	21.5%	5.0%	1.7%	25.9%	95.5%	63.1%	35.0%
2001	10.3%	31.7%	-3.0%	0.3%	-6.3%	-0.8%	5.0%	-19.1%	12.8%	-4.9%
	Botswana	**Morocco**	**US**	**UK**	**Korea**	**SA**	**India**	**Namibia**	**Turkey**	**Brazil**
2002	-46.0%	-14.5%	-51.6%	-18.2%	40.3%	-37.5%		-53.1%	-32.5%	-1.3%
2003	20.3%	-62.5%	-22.9%		-17.1%	-12.2%		38.1%	15.5%	
Average	3.9%	15.7%	8.2%	14.0%	16.0%	22.2%	15.8%	35.7%	51.5%	432.9%
CAGR	-5.23%	1.92%	2.15%	14.05%	14.86%	16.46%	17.36%	20.88%	48.74%	142.61%

Source: ITU World Telecommunications Indicators Database, 2005

Growth in annual telecoms investment has decreased as a result of the failure of the government to introduce more competition into the sector. Telkom's investment in infrastructure has slowed since it completed the bulk of its mandatory infrastructure targets. Its pricing policies largely match current market demand so there are no real incentives, in the form of additional competitors, for it to invest in additional infrastructure.

Table 21 — Revenue/main line in operation (US$)

Revenue/main line in operation (US$)										
	Namibia	**Brazil**	**Botswana**	**SA**	**Morocco**	**India**	**Korea**	**UK**	**US**	**Turkey**
1992	$1,000.02	$418.47	$1,848.37	$659.06	$667.98	$351.68	$339.00	$541.45	$798.12	$279.13
1993	$1,008.63	$535.95	$1,501.83	$654.45	$583.51	$336.76	$336.97	$514.41	$807.81	$260.08
1994		$494.13	$1,313.41	$751.56	$453.75	$334.97	$367.25	$514.33	$1,101.35	$195.23
1995		$542.13	$1,157.69	$853.30	$475.03	$327.45	$374.21	$552.75	$1,127.40	$132.79
1996		$630.14	$850.55	$810.35	$465.01	$294.87	$365.99	$532.32	$1,177.56	$177.34
1997	$667.85	$639.38	$853.93	$847.01	$418.47	$283.48	$286.85	$583.02	$1,138.80	$206.61
1998	$776.41	$632.48	$765.80	$687.85	$471.67	$241.27	$185.98	$616.56	$1,167.64	$227.46
1999	$889.51	$405.10	$846.80	$608.50	$482.60	$193.89	$279.71	$601.34	$1,160.99	$203.67
2000	$853.23	$398.97	$745.48	$652.25	$571.28	$169.05	$288.72	$533.32	$1,198.68	$252.22
2001	$756.06	$317.54	$569.90	$551.33	$732.45	$147.00	$248.71	$475.51	$1,184.75	$205.06
2002	$700.39		$515.90	$473.87	$785.20	$148.12	$252.48	$504.67	$1,113.15	$254.84
2003	$1,018.75		$724.38	$682.39	$821.52		$246.91	$530.79	$1,124.68	$334.49

Source: ITU World Indicators Database, 2005

South Africa's revenue per main line does, however, illustrate higher levels of pricing than in most developed markets.

8.4.8 Price

Numerous studies have been done of telecoms pricing in South Africa, including an inquiry into pricing by the Department of Communications. The next paragraph summarises key findings about pricing from various research.

Yankee Group

An international consulting company, the Yankee Group, was commissioned by the Department of Communications to conduct a market review in 2003. The Yankee Group report is very comprehensive and deals with telecom trends, convergence, the South African market and regulatory environment. Anti-competitive behaviour in the market, particularly from Telkom, in the Vans industry and the lack of wholesale service pricing were seen as constraints to growth. The report links the low levels of Internet penetration in South Africa to the high cost of connectivity and suggests that Telkom has structured the pricing of its DSL product so that it does not threaten existing products like ISDN.

The report also suggests there is a need to enforce anti-competitive conduct rules in the wholesale market and to apply existing legislation more stringently.

Nus Consulting

In March 2004, international consulting firm, Nus Consulting released a report about cost conditions in the 14 countries in which they operate. This study found that South Africa had the second most expensive local calls, and most expensive national and international calls but because the study sample included mainly developed countries this could have skewed the research.

Efficient Research

Efficient Research made a study of Telkom's charge structure and a comparative analysis of its financial statements in 2004 and found that Telkom's price structure was very high against a sample of about 30 developed and developing countries. (2004)

SA Foundation

Following a challenge from the President in 2004 to South African business leaders to help identify major business opportunities for the country, the SA Foundation commissioned a report from McKinsey and Company into business process outsourcing and off-shoring. The study found that although there were major opportunities for this in South Africa, the exorbitant cost of telecoms was a serious inhibiting factor. As a result, the South Africa Foundation commissioned a study into telecoms prices in South Africa from Genesis Analytics. The study sample included an international peer group of 15 countries (including South Africa) with similar GDP per capita, income levels and gini-coefficient, and a "best-practice" comparison group. A range of products were tested and South Africa was frequently one of the most expensive within the selected comparison group. Of the 15 countries sampled, South Africa was the most expensive for broadband services, for both business and retail products.

For international leased lines, South Africa was 31 times more expensive than the cheapest country. In terms of retail voice, both fixed and mobile calls, South African costs were still on the high side. The study also found that Telkom's pricing structure

had a negative impact on the VANs and call-centre industries, in particular, and has also affected the roll-out of the Internet and pricing of telecoms products in downstream markets, especially international bandwidth. The study concluded that Telkom's pricing structure was excessive and suggested market intervention at the regulatory level, especially between Telkom and VANs. (Genesis Analytics, 2005)

Andisa Securities

Andisa Securities is a brokering firm that specialises in investing and providing investment advice. Its report was an attempt to provide guidance to the financial community about potential legislative changes following on the Department of Communications pricing enquiry. The report made a comprehensive analysis of mobile pricing, taking into consideration handheld subsidies, connection incentives, and community phone obligations. It concluded that South African mobile prices are in line with international prices.

All the studies analysed pricing as a single input on its own. This research argues that high prices are symptomatic of a more fundamental problem in the underlying market structure which drives high prices and subsequently the unaffordability of telecoms. This study also shows that the introduction of a single competitor to Telkom will not significantly affect prices, as illustrated by the mobile industry. Only multiple competitors would have the power to take control of the marketplace, not individual firms. (Carrot, 2005)

Fixed voice pricing

As illustrated in the table below, the SA Foundation survey revealed that telecoms pricing in South Africa is excessive.

Table 22 — Overview of telecoms service prices in South Africa

Product	Rank	Countries surveyed	No of times more expensive than cheapest price	% higher than the average price
Business ADSL	1	15	9.3	148%
Domestic leased lines	1	12	14.7	102%
International leased lines	1	11	31.4	399%
Retail ADSL	1	15	8	139%
ISP fees	4	13	5.1	45%
Business — local calls	1	15	10.7 *	199%
Business — international calls	5	15	3.3	-14%
Business — mobile calls	2	15	22.7	107%
Retail — local calls	4	14	7.9 *	79%
Retail — mobile calls	5	15	10.7	37%

Source: SA Foundation, 2005

High monthly rentals, the high cost of local calls and the widespread availability of mobile prepaid at attractive prices have all contributed to the number of disconnections. Voice revenues remain a key revenue stream for Telkom and the operator is unlikely to jeopardise these revenues unnecessarily.

Figure 26 — Fixed connection charges

Year	Cost of a local 3-minute call (peak rate)	Residential monthly subscription	Residential connection charge	Business telephone monthly subscription	Business telephone connection charge
1992	0.19	29.85	195.00	29.85	195
1993	0.22	34.20	222.81	34.20	222.81
1994	0.23	38.76	241.68	38.76	241.68
1995	0.22	42.52	265.62	44.23	265.62
1996	0.24	45.60	292.98	49.59	292.98
1997	0.31	49.59	171.00	55.86	171
1998	0.39	55.54	192.38	64.24	192.38
1999	0.46	55.58	207.77	72.62	207.77
2000	0.63	62.70	207.77	83.30	207.77
2001	0.63	62.70	207.77	83.30	207.77
2002	0.99	67.72	239.00	89.97	239
2003	1.11	76.20	268.98	101.23	268.98001
CAGR	**19.39%**	**9.82%**	**3.27%**	**12.99%**	**3.27%**
CAGR (00-03)	**20.87%**	**6.72%**	**8.99%**	**6.71%**	**8.99%**

Source: ITU, World Telecoms Indicators Database, 2005

Despite almost 10 years of privatisation and liberalisation, fixed connection charges have not decreased in real terms. In fact, rates have climbed almost to 1995 peaks. A look at the tariff increases in South Africa provides another interesting perspective on the

dominance of Telkom. Over a 10-year period, peak rate local tariffs have seen a compound annual growth rate (CAGR) of 5%, where these tariffs have been decreasing in most other countries.

Mobile pricing

The introduction of the third operator in 2003 has significantly affected the connection charges and monthly subscriptions of the mobile operators. It spearheaded the introduction of innovative services aimed primarily at the lower economic segment of the population. But, given the investment required by a third operator in an entrenched market, along with limited competition-enabling legislation and delays in licensing, the new operator has not been aggressive in its pricing policy but has merely tracked the two incumbents.

Table 23 — Mobile connection charges

Mobile costs — connection fee and subscription (US$)										
	India	**SA**	**Botswana**	**Namibia**	**Korea**	**US**	**Morocco**	**UK**	**Turkey**	**Brazil**
1992					46.12	123.58	0.00	155.59	516.56	
1993					44.85	97.51	193.57	132.32	232.14	
1994					44.81	110.41	195.59	134.88	344.49	343.17
1995		62.87		96.50	46.68	105.20	193.21	139.01	267.20	389.77
1996		55.68		81.41	114.36	47.70	114.73	137.50	190.41	355.04
1997		54.51		75.96	92.51	42.78	83.97	144.28	165.77	331.17
1998		47.94	52.06	63.31	62.79	39.43	83.30	145.95	5.75	314.21
1999	27.87	43.37	47.62	57.28	74.02	41.24	38.78	142.15	33.43	13.81
2000	36.09	38.90	43.14	50.43	58.36	45.27	25.40	90.91	3.42	13.66
2001	29.71	31.36	37.67	41.23	50.35	47.37	23.89	76.09	2.94	12.54
2002	13.37	22.01	34.76	8.06	51.95	48.40	24.50	78.36		10.89
2003	13.95	19.71	44.44	11.24	53.71	49.91	26.12			7.65
Average	**24.20**	**41.82**	**43.28**	**53.94**	**61.71**	**66.57**	**83.59**	**125.18**	**176.21**	**179.19**

Source: ITU, World Telecoms Indicators Database, 2005

Analysis by Carrot of mobile pricing in the South African market revealed that the most expensive segment of the South African market is of the high-end contract customers, with tariffs 51% above Eastern Europe (2005:1). While South African prepaid and

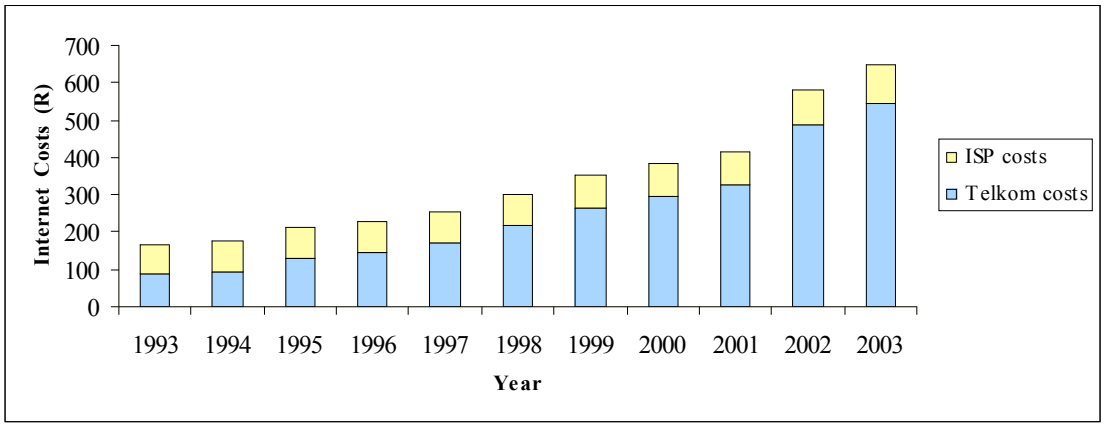
contract tariffs appear to be 21% to 23% more expensive than emerging market averages, there are two factors unique to the South African market which must be taken into consideration: subscriber acquisition costs (essentially handset subsidies) and community phone obligations. Currently, users get a free phone with new contracts and the value of the phone is amortised over the period of the contract. The network operators essentially carry the upfront costs of these phones.

Data services pricing

International telecoms union (ITU) surveys have indicated that affordability remains a key limiting factor for the further development of the Internet and the communications sector in South Africa. "Using the cost of Internet access as a percentage of monthly per capita gross national income (GNI) as an indicator, South African consumers (15.4%) are paying the equivalent of 5 times more than Malaysians (2.9%) and 15 times more than Koreans (1.2%) and Australians (1.1%)." (ITU, 2003) When compared to other countries, like Japan and Korea, that have specifically targeted mass-market broadband services, South Africa's prices are extraordinarily expensive. Thus, the high cost of services impedes development of the Internet and its related services: e-commerce, online advertising and content. It is unlikely that Telkom will aggressively sell broadband services in the near future or cannibalise its attractive narrowband revenue through dial-up call charges.

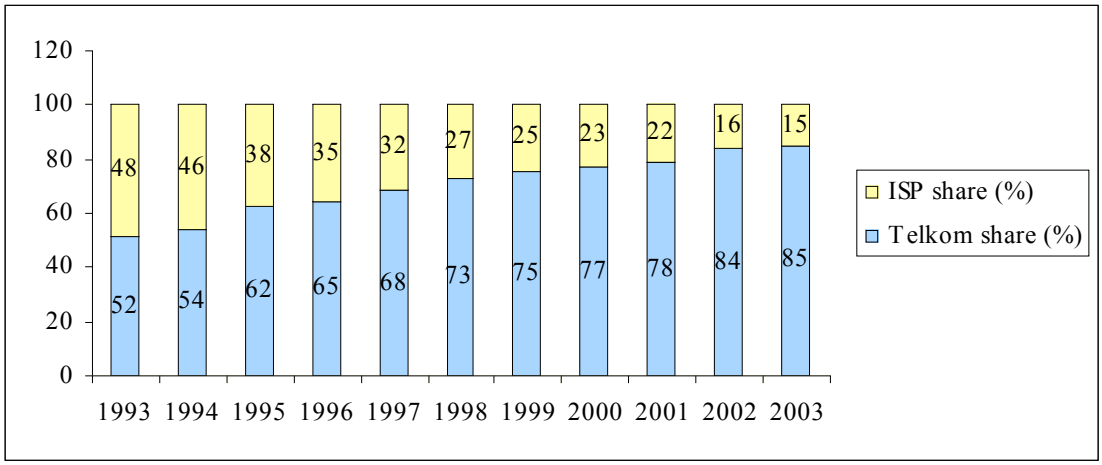
The analysis by internet.org.za below is a stark illustration of the actual costs of ISP services in South Africa. The study analysed the cost of spending 20 hours online per month for the period 1993-2003. Average costs were based on information provided by members of the Internet Organisation of South Africa and readers of its mailing list. The Telkom costs are peak local call charges and comprise line rental plus the call costs.

Figure 27 — Actual cost of Internet access over a ten-year period



Source: internet.org.za

Figure 28 — Analysis of Internet costs in South Africa



Source: internet.org.za

Telkom announced the total tariff increase for a basket of services for 2002 at 12% explaining that this increase was inflationary. Its tariff increase for 2003 clearly illustrated its strategy in the data market. Internet Solutions calculated the full impact of this increase, and revealed that its impact on data services was in fact higher.

Telkom's minimum fee for the first 89 seconds was 0,49 cents and users were thereafter charged at a rate of 0,549 cents per second. Previously, users were charged 0,58 cents for the first 189 seconds and 0.307 cents per second thereafter. "According to a sample of 150 000 connections by both unique and repeat users, connecting through various virtual Internet service providers on Internet Solutions' network, the average time per connection is 22 minutes. A small office/home office user may log onto the Internet every working day, or 20 times a month, thus incurring a charge of approximately R7,25 per connection or R145 month. Using the same analysis, previously users would have been charged approximately R87,24 per month – thus an increase of 67%. (*Bidoli, 2001*)

South Africa is one of the few countries that has not introduced flat-rate Internet pricing. As a result, Telkom receive significant revenues from consumer dial-up services. The table below provides a comparison of South African bandwidth costs against more competitive markets. South Africa is by far the most expensive.

Table 24 — Comparative international bandwidth costs

Route	Circuit	Miles	Cost p/month	Cost per mile	Cost per Mb
Joburg - Cape Town	E1 (2Mbps)	773	$9,340	$12.08	$4670
LA - Miami	T1 (1.5Mbps)	2348	$2,000	$0.85	$1333
Joburg - Cape Town	E3 (34Mbps)	773	$111,842	$144.68	$3289
London - Glasgow	E3 (34 Mbps)	409	$10,138	$24.75	$3289
London - New York	T3 (45 Mbps)	3470	$8000	$2.30	$178

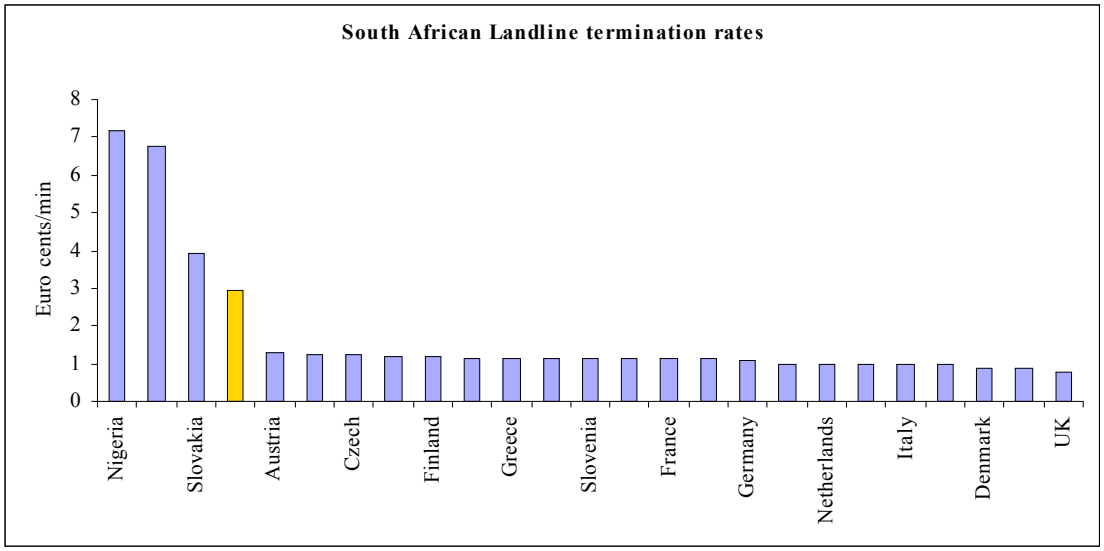
Currency in US$ per month, excluding installation costs and SLA.

Source: Finnie, Lewis, Lonergan, Mendler and Northfield, 2003:82

Interconnect

A key driver of overall market pricing is the rate of interconnect. At present, all calls need to be routed through the Telkom network, even if made from a mobile phone to another mobile phone. Even though technically these calls could bypass the Telkom network and thus alleviate the interconnect costs effectively decreasing the cost of the call. Artificial regulatory boundaries have increased the call costs. These inputs affect retail call costs. South African fixed interconnect rates are R0.24 against a European average of R0.11. The figure below illustrates Telkom's high fixed-line termination costs.

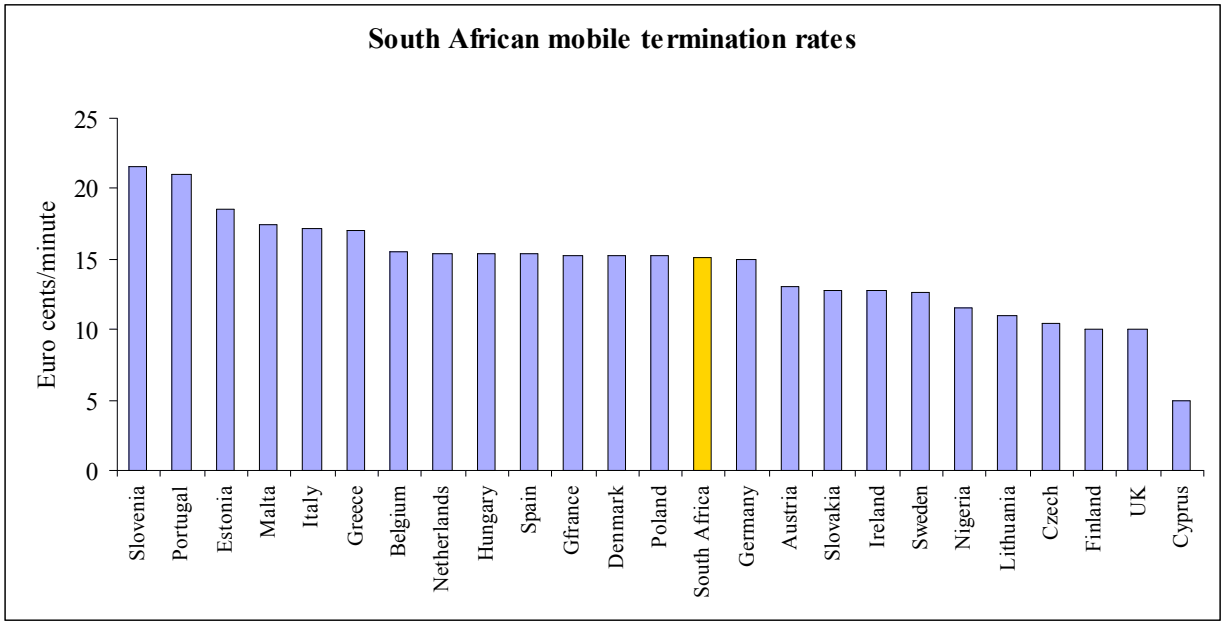
Figure 29 — South African landline termination rates



Source: Carrot, 2005

Mobile termination is largely in line with international pricing. When benchmarked against a range of countries, both developed and developing, South African mobile termination rates compare favourably.

Figure 30 — South African mobile termination rates



Source: Andisa Securities, 2005

At present, interconnect is negotiated between the operators. It is governed by the Icasa interconnection guidelines, which stipulate non-discriminatory treatment for all interconnection seekers, with maximum charges to be no higher than the equivalent retail service. To finalise these agreements without regulatory intervention requires co-operation between all parties. Given the high concentration of market power with the operators, there is significant risk of collusion between the players. Effective price regulation is necessary to prevent manipulation of prices through the interconnect rate. Internationally, call termination is now regarded as a monopoly and is thus regulated on a cost basis. (Carrot, 2005)

8.4.9 Innovation — New technologies, new services, new regulations

Broadband services for consumers are almost non-existent. Telkom launched its DSL services late in 2003, with no wholesale offering. As a result, VANs and ISPs are unable to compete with Telkom. Broadband services are also priced to prevent competition with the existing dial-up services.

Conversely, the mobile industry has had to innovate in order to meet the unique demands that characterise the South African marketplace, and to keep pace with competitors. Some of these innovations are believed to be either developed in or unique to South Africa. The introduction of pre-paid services changed the face of the South African mobile market. Subscriber uptake was unanticipated. Users who were previously unable to get bank accounts, fixed-line phones, etc because they had no credit listing, fixed address or salary slips could now get access to a mobile phone service. Thus, any user who could afford a service was able to purchase a mobile service. For the average South African user this now enabled them to leave contact details for a job, advertise to start a company, etc. Further, this changed the mobile business for operators. Other innovations include, mobile phones which are able to allow real-time access to traffic updates through mms traffic “cameras”, transfer of airtime from post-paid to pre-paid customers and to make financial transactions through the banking network, top up airtime, even do full-service banking. In addition, these innovations have allowed the export of services to other African operations.

8.5 Conclusion

The research revealed that market development has been constrained when analysed against internationally accepted competitive indicators: connectivity, investment, prices, customer services and investment. High prices for fixed services have resulted in limited consumer uptake, and almost non-existent broadband services. Mobile was able to address the gap left by Telkom through innovative packaging and pricing models, but this does not solve the fundamental issue of basic access and broadband services. When benchmarked against a range of countries, Telkom's pricing strategies clearly illustrate its significant market power and abuse of its monopoly position. The interview and focus group data showed that current infrastructure providers have been unable to deliver efficient, cost-effective services to consumers. Service levels and network reliability varies widely. The research data emphasized the market impact resulting from the lack of a competitive environment. The differences between fixed-line services and mobile services can be attributed to the levels of competition between the two services. Further, the lack of competition at the core infrastructure level has constrained growth and innovation at the upper levels of the value-chain that are dependent on access to the fixed line network. While South Africa compares with its peers in terms of key benchmark indicators, it has not attracted the levels of investment required to catapult the South African economy into the services industry. Further, activity in the services sector is constrained as a result of high prices, poor service and a lack of products to service information sector requirements. While mobile provided competition in voice services, data services has seriously lagged. The introduction of mobile virtual network operators will give much-needed impetus to the South African market, lower prices and increase consumer choice. South African consumers have borne the brunt of the government's managed-liberalisation policy. Its failure to introduce competition has had a significant impact on the ability of small, medium and large businesses to grow.

9 Company dynamics

Introduction

A range of international, large, fixed and mobile operators was selected against which to benchmark the financial and operational performance of South African operators. This section seeks to answer research sub-question three — how has government's managed liberalisation policy affected firm performance and behaviour?

Recent developments in industrial organisation theory have stressed the importance of strategic behaviour by companies. It is difficult to argue that the level of market concentration is directly related to a company's profitability because the relation between market structure and performance is dependent on the precise nature of strategic interactions between companies (Young, 2000:28). Sutton (in Wirth and Bloch, 1995:24) argued that "strategic behaviour is most effective in preventing entry and thereby affecting market structure when entry involves substantial commitments to cost that cannot easily be recovered on exit (sunk costs)." The telecoms industry is a good example of this. Strategic company behaviour affects market structure so that it can no longer be assumed to be just externally determined but is also influenced by company behaviour. As the variables of market structure, particularly in the telecoms industry, can be manipulated or changed through policy intervention to improve company conduct and in turn, market performance, there is significant room for influencing policy or company behaviour.

Drawing from the literature review of selected country experiences with market liberalisation, operator performance in these markets was analysed. Because of the unavailability of historic data and differences in financial reporting, comparisons and trends are, however, difficult to analyse, but do provide for a high-level overview. While every effort has been made to include developing-country operators to allow for a fair comparison, financial information for them is not readily available. Where data is available, it lacks detail or does not allow for historical comparisons. The data for the performance of developed-country operators, on the other hand, is useful as a benchmark

for the performance of South African firms. Detailed spreadsheets of the analysis on individual companies are provided in Appendix four.

9.1 Financial performance — fixed line services

Table 25 — Telkom Group five year financial review (includes mobile stake)

	2000	2001	2002	2003	2004	CAGR
Operating revenue	27,015	31,243	34,087	37,507	40,795	10,9
Operating profit	3,908	4,984	4,191	6,514	9,088	23,5
Earnings per share	274	291	219	293	812	31.2
Cashflow from operations	4,917	6,165	8,171	9,748	13,884	29,6
EBITDA margin (%)	29,9	33,0	29,5	43,7	40.0	7,5
Capex to revenue (%)	35.0	31.7	26.4	15.2	13.0	(21.9)
Return on assets	10.0	10.2	6.6	10.5	17.8	15.5

(in R millions except %)

Source: Telkom (www.telkom.co.za)

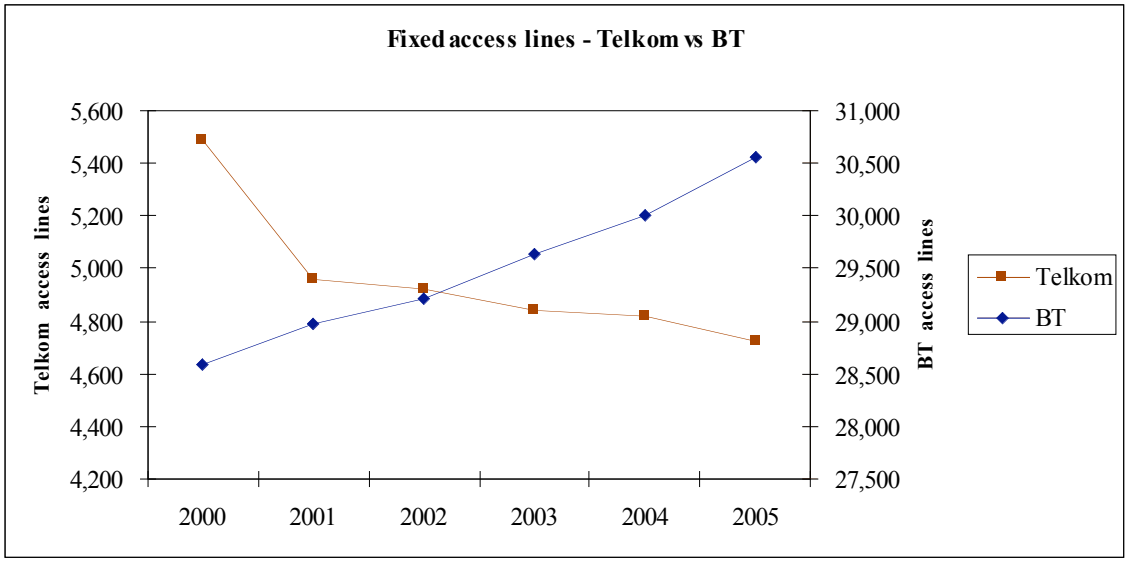
Telkom has performed strongly by capitalising on its monopoly status and government's inability to manage or regulate the sector. A key indicator of telecoms operator performance is EBITDA[27]. At 40%, Telkom's EBITDA margin is above most fixed-line operators in liberalised countries. Internationally, mobile operator EBITDA margins in liberalised markets are generally higher than fixed. Over the four-year period, revenues have increased and profitability has been impressive (23%). Profitability has been driven by improved operating efficiencies and maintaining above inflationary increases in prices. Improved operational efficiency has been a key focus for the strategic equity partner but, given Telkom's large inefficiencies, there is still room for improvement.

The tables below provide comparative financial and operational data for a range of international fixed and mobile operators similar to the incumbent operators in South Africa.

[27] EBITDA - *earnings before interest, tax, depreciation, amortisation*

Telkom outperforms its international counterparts in more developed markets on a number of performance indicators. A comparison with British Telecom's total number of lines and revenue per line over a five-year period illustrates Telkom's superior financial performance.

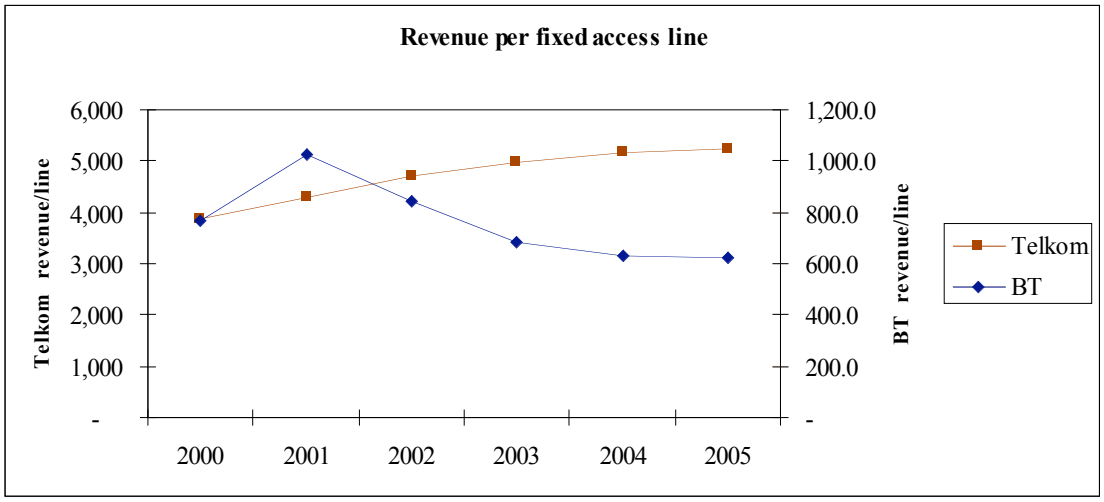
Figure 31 — Fixed access lines Telkom versus British Telecom



Source: Annual reports

Even in a market with high fixed-line penetration, British Telecom has had to increase its fixed access lines and broadband products in an effort to meet market demand and remain competitive. Telkom, however, has not had similar impetus in the form of additional competitors to increase its capital expenditure and thus increase its lines, even though South Africa only has 10% fixed-line penetration.

Figure 32 — Revenue per fixed access line Telkom versus British Telecom



Source: Annual reports

Telkom's revenue per line has increased dramatically as a result of more operational efficiency and higher revenues. This increase in revenue is particularly evident in the period after Telkom's exclusivity ended but before a competitor was licensed between 2002-2004.

Figure 33 — International comparison of key operational data

Operational Data						
Entity	**Country**	**Service**	**Period**	**Customers (000)**	**Fixed Lines per Employee - CAGR**	**Revenue per Employee - CAGR**
BTC	Botswana	Fixed	2001-2004	131.8	16.7%	16.3%
Telecom Namibia Limited	Namibia	Fixed	2002-2004			7.6%
Telkom SA	SA	Fixed	2000-2005	4,726.0	8.2%	12.5%
British Telecom	UK	Fixed	1999-2005	30,567.0		
AT&T/SBC	US	Fixed	1999-2004			

Source: Annual reports

Figure 34 — International comparison of fixed and mobile operators

Financial Data							
Entity	**Country**	**Service**	**Period**	**Revenue - CAGR**	**EBITDA - CAGR**	**EBITDA Margins - CAGR**	**Operating Profit Margins - CAGR**
France telecom	France	Fixed & Mobile	1999-2004	9.6%	11.3%	1.6%	5.7%
Deutsche Telekom Group	Germany	Fixed & Mobile	1999-2004	8.5%	7.4%	1.2%	
Telkom Group	Pan African	Fixed & Mobile	2000-2004	8.6%	15.1%	6.0%	9.0%
Telefonica S.A	Spain	Fixed & Mobile	1999-2004	4.7%	3.3%	(1.4%)	

Source: Annual reports

Compared against both fixed and mobile operators, Telkom Group's EBITDA and profit margins surpass its counterparts.

9.2 Financial performance — mobile services

Fixed operators' low service levels, its lack of penetration into all regions, the high market demand for services and high prices were some of the factors that stimulated the massive uptake of mobile services and enabled the superior returns that mobile operators have been able to enjoy. Company performance has matched the huge market demand. This enabled mobile operators to earn good profits over a short period of time.

Table 26 — Mobile operators financial review: South Africa

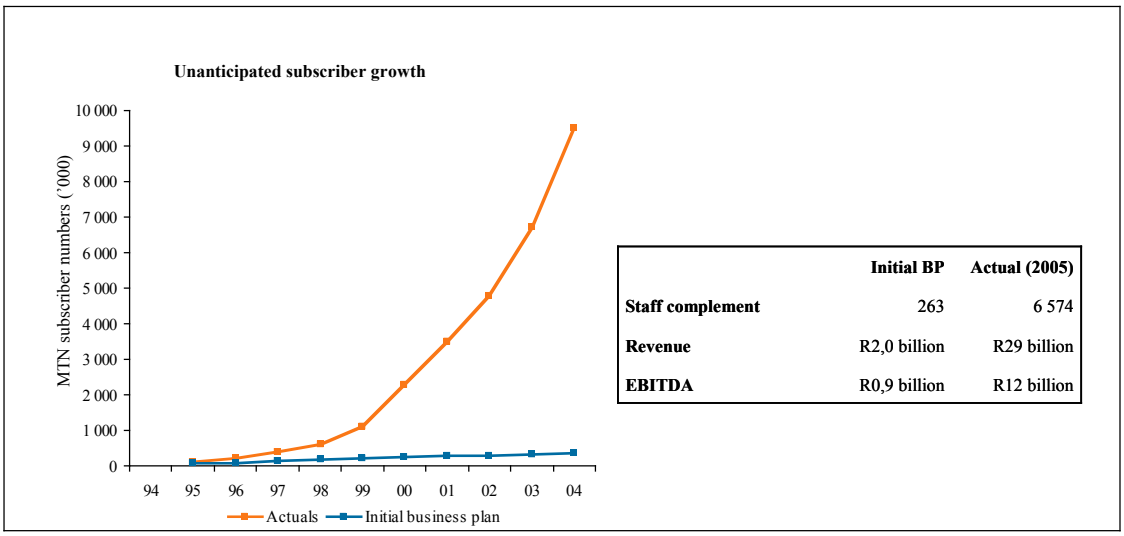
	Cell C		**MTN**		**Vodacom**	
	2003	**2004**	**2000**	**2004**	**2000**	**2004**
Operating revenue	2463.07	4029.58	12298	15098	18544	21981
Operating Profit (Loss)	(1599.12)	(621.38)	2336	2339	4476	5466
Operating Profit (Loss) margin	(64.92%)	(15.52%)	18.99	15.49	24.87	24.14

(Figures quoted in R millions except %);

Source: Icasa

MTN, a South African company formed in 1994, now has a market capitalisation of some US$15 billion. Because of an aggressive expansion strategy, it now operates in 11 countries. Given the huge demand for services in the South African market, mobile operators were able to exceed their business-plan expectations very early in the investment.

Figure 35 — MTN mobile subscribers against initial business plan



	Initial BP	Actual (2005)
Staff complement	263	6 574
Revenue	R2,0 billion	R29 billion
EBITDA	R0,9 billion	R12 billion

Conservative estimates based on industry knowledge indicate that a large proportion of Vodacom's revenues and profitability are from within South Africa. For both Vodacom and MTN, the success and profitability of their South African operations have enabled both to become strong regional players. Both launched aggressive expansion strategies into Africa and the Middle East which offered high-growth areas. As a result, their efforts have attracted significant investor attention.

Figure 36 — International comparison of mobile operators

Financial Data							
Entity	**Country**	**Service**	**Period**	**Revenue - CAGR**	**EBITDA - CAGR**	**EBITDA margins - CAGR**	**Operating profit margins - CAGR**
MTN Group	Pan African	Mobile	1999-2004	29.4%	36.8%	5.7%	0.0%
Celtel	Pan African	Mobile	1999-2003	87.2%	(257.2%)	(183.9%)	0.0%
Orascom	Pan African	Mobile	2002-2004	45.4%	61.1%	10.8%	0.6%
MTN SA	South Africa	Mobile	1999-2004	22.9%	25.2%	1.9%	0.0%
Turkcell	Turkey	Mobile	1999-2004	14.0%	12.9%	(0.9%)	(9.1%)
Vodafone	UK	Mobile	1999-2003	55.3%	59.8%	2.9%	0.0%
Vodacom	South Africa	Mobile	2000-2004	18.2%	16.8%	(1.1%)	0.0%

Source: Annual reports

When benchmarking a more competitive sector like mobile, South African operators are in line with international firms and, in most instances, could do better, which is indicative of a more competitive market.

Figure 37 — International comparison of mobile operators' operational data

Operational Data						
Entity	**Country**	**Service**	**Period**	**Customers (000)**	**ARPU - CAGR**	**Revenue per Employee - CAGR**
MTN Group	Pan African	Mobile	1999-2004	9,543.0	(11.0%)	3.0%
Celtel	Pan African	Mobile	1999-2003	1,700.0	(13.5%)	42.8%
Orascom	Pan African	Mobile	2002-2004	14,499.8		
MTN SA	South Africa	Mobile	1999-2004	8,000.0	(9.8%)	4.9%
Turkcell	Turkey	Mobile	1999-2004	23,400.0	(14.8%)	9.4%
Vodafone	UK	Mobile	1999-2003	119,709.0	-	
Vodacom	SA	Mobile	1999-2004	-	(7.8%)	19.4%

Source: Annual reports

Both mobile operators in South Africa are in line with international comparisons when benchmarked over a five-year period for key operational data.

Internationally, regulators in most developing markets have been slow to introduce competition in mobile once the initial two or three licences were granted. Entrenched incumbent operators have often convinced regulators and policymakers that a third or fourth operator would be unviable. Research shows that considerable opportunity still exists to gain new subscribers and make profits, and that even small markets are able to absorb more competition. When penetration increases rapidly, with new operators competing for market share, the focus shifts to improving customer service and lowering prices.

The financial analysis below indicates that third entrants have been profitable and have also spurred further market penetration by targeting low-end subscribers using lower prices and better deals. This in turn, impels the rest of the industry towards with greater efficiency, while at the same time maintaining service levels, prices and continuous network investment.

Table 27 — Financial analysis of third entrant mobile operators

Entity	Country	ARPU	ARPU @ 3rd Operator launch	EBITDA margin	Market EBITDA Margin
Partner	Israel	$37	$61	31%	32%
Amena	Spain	$33	$43	30.60%	41%
Aria	Turkey	$6	$20	Negative	38.50%
Globul	Bulgaria	$13	$32	10.20%	50%
Bouygues	France	$37	$65	26%	41%
Cosmote	Greece	$28	$55	41%	35%
Cell C	SA	$22	$27.5	6.8%	33%

Source: Pyramid 2005, researcher estimates

9.3 Conclusion

This analysis across both fixed and mobile has illustrated that South African operators are able to perform either in line with or above international averages in terms of key financial indicators. The absence or lack of competition in both fixed and mobile has allowed incumbents to extract value from the South African market. Although this allowed investors and shareholders to recoup investments quite quickly, as the market analysis demonstrates, this has been to the detriment of consumers and the overall development of the ICT sector. The South African government's managed liberalisation policy has allowed Telkom to make super-profits and abuse its monopoly power, entrenched its status and hampered the attainment of South Africa's ICT goals. The introduction of competition in both fixed and mobile highlighted that it spurred operator performance, increased penetration and market efficiencies. Further, the introduction of additional operators did not devalue the overall market revenues as more subscribers were added to the network. However, a lack of competition highlighted limited investment in an effort to maintain profits.

10 Conclusion

The purpose of this research was to analyse the changing configuration and structure of the South African telecoms network market during the transition from monopoly to competition within the framework of competition rules to determine how government's managed-liberalisation policy has shaped the competitive dynamics of the South African market.

This chapter will draw together the analysis of the preceding chapters, based on the literature review, the international case studies, the policy and regulatory analysis and how these affect market structure.

The British experience shows that limiting reform by allowing a single entrant does not stimulate market competition, nor create rapid network roll-out. The strategy of gradual implementation of reform in developed countries was adopted amid different social and market dynamics: the cost of network deployment was higher and customer demand differed, among other factors. New technologies led to changes in cost structures, and shifted market dynamics. The trends from developed countries demonstrate how incumbent operators continue to dominate the market for many years after liberalisation. British Telecom remains the largest player in the UK's telecoms sector, many years after liberalisation. British Telecom's market shares have declined, though it still has monopoly power over local loops and basic phone services. There is probably more competition in the UK than any other country. All of this was achieved by the aggressive stance taken by the regulator towards British Telecom in introducing competition and strong institutional structures which assisted in creating an increasingly competitive, deregulated telecoms market. Reform models based on developed country experiences, like the UK and the USA, while useful for gaining insight into market development, are inappropriate for direct implementation in developing markets. Further, network investment, customer choice and lower tariffs are some of the key issues driving market reform.

The example of developing countries shows the necessity of making telecoms policy decisions part of an overall macro-economic strategy for outlining clear objectives at the outset and developing a path for reform. The research also shows that, although these strategies work at the start of reform, new technologies, market developments and the rise of increasingly powerful new mobile players, these decisions must be re-examined often in the transitional phases of market liberalisation. Driven by rapidly changing technology, developed markets have continued to reassess the level of competition and make necessary policy and regulatory amendments as appropriate.

The entrance of multiple competitors during the stages of reform into various sectors of the telecoms value-chain allows for the development of rapid competition. This in turn forces competition on the incumbent operator, especially, if it is unable to compete in a liberalised environment. In the cases of Nigeria and India, competition lowered prices and enabled technological and service innovation, creating customer choice. In both countries, market development at the peripheries, in what are regarded as non-threatening technologies like CDMA and fixed-wireless, drove competition for telecoms services and thus forced policy liberalisation. Creating the rules of entry and operating early in operator licences prior to licensing, as in the case of Uganda, clarifies the investment environment.

The international benchmarking analysis has demonstrated that attracting infrastructure investment and enabling competition in telecoms is a complex issue. The key lessons from both developed and developing countries are outlined below:

Developed country experience

- Reliance on underlying administrative structures to regulate the industry;
- Strong administrative structures, independent judiciary;
- Well-developed, highly resourced policy and regulatory capability;
- Developed market system that allows for technology and innovation to force reform;
- High consumer activism and mechanisms for consumer activism;

- Duopoly policies are unlikely to significantly stimulate competition or massive infrastructure investment;
- Even in highly developed market systems, the power of the incumbent can be significant;
- Privatisation and increased competition have increased overall industry revenues, sector contribution to GDP and increased consumer benefits;
- Liberalising the licensing regime will allow market forces to enable convergence of services and thus stimulate competition and innovation;
- Complicated implementation regimes can hamper progress and allow incumbents time to ward of competition.

Developing country experience

- Government reluctance to follow through on sector vision, particularly jeopardising revenues from incumbent fixed operators;
- Often structural components of reform have been broadly followed according to international best practice, however, there have been problems in implementation;
- Weak, under-resourced regulators, combined with weak administrative traditions have difficulty in implementing policy, particularly anti-competitive behaviour;
- Increasing convergence of services have pushed unified licensing regimes;
- The success of mobile technology as a result of allowing competition to develop;
- Privatisation, before liberalisation, often results in stronger incumbents;
- Competition can be accelerated through licensing a number of operators;
- High license fees is often unlikely to result in increased spending by newly licensed operators;
- Clear separation of powers between government departments, regulators and operators assist in enabling a competitive market, particularly in countries lacking a strong administrative tradition;
- Technological and market changes sometimes demand new approaches to policy and regulation;
- A flexible regulatory framework is required to allow for new technologies eg wi-max, wi-fi, cdma;

- Reform is most successful when backed by overall macro-economic reform, including a more liberal tax regime, lower customs and excise duties, etc.

A key research objective was to examine the extent to which the managed liberalisation process demonstrates the South African government's commitment to the creation of effective competition in telecoms services, driven by private sector investment.

South Africa made a number of fundamental errors in its approach to market liberalisation. The reform model focused on privatisation rather than on market liberalisation. The short-term goal was to optimise revenues from the sale of state assets, but this was at the expense of longer term sector development. Without clearly defined objectives at the beginning, the process became a morass of political manoeuvring to please diverse stakeholders during South Africa's transition to democracy. The government's muddled state philosophy of managed-liberalisation reflects conflicting objectives, sending mixed signals to the investment community and creating confusion around the implementation of policy. From the start, managed-liberalisation was not conceived. None of the literature on the telecoms reform process has alluded to a concept of managed liberalisation. It became current around the time of the introduction of the SNO, and appears to be a delaying tactic to retain government control of the market. Complex policy choices like managed liberalisation will always be problematic if they are not backed by a strong democratic tradition with a strong institutional history, neither of which are South Africa's strengths. Policy and regulatory enforcement of sometimes unpalatable solutions requires a strong administrative tradition with the "ability to undertake commitment that can endure any political interference backed by an independent judiciary that is able to make enforceable decisions." (Malik, 2004:27) South Africa's political, administrative and judicial powers have not yet developed this independence from interference and these conflicts of interests and interference have manifested themselves in various forms in the South African environment.

Policy development process should determine priorities, identify the constraints and then devise a market structure to achieve these priorities. In South Africa, both the Telecoms

Amendment policy and the Convergence Legislation have short-circuited this debate. They focus directly on the intended market structure, without building consensus on the key priorities and constraints. At its simplest level, the Telecoms Act fails to address the fundamental principles of good policy that will attract private sector investment because it cherry-picks state assets and favours these to the exclusion of the private sector. Government's shareholding in the incumbent and the sector as a whole holds the potential for abuse and favouritism in the regulatory environment. Government is currently the largest single stakeholder in the sector, through its varied shareholdings in telecoms. It is the largest shareholder in Telkom, controls almost a third of the SNO through its ownership of Transtel and Esitel, and has a 100% stake in Sentech. "There is no example of [state] ownership in telecoms that has not proved to be more trouble that it's worth. Government's shareholding in SA telecom providers have complicated every move it has made to liberalise the market." (*Financial Mail*, South Africa, 2005)

The failure to implement the Act's key provisions has not created competition to enable price decreases, innovation or service quality with which to meet the needs of corporate business and SMEs. As a result, potential investors remain uncertain about government's expectations and plans for the sector.

The proposed Convergence Bill attempts to rectify errors in the Amendment Act and introduce competition among existing market players, but these measures do not go far enough to address the serious bottlenecks created by the current policy and regulatory environment. Serious process, conceptual and drafting flaws render the Bill problematic at best and meaningless at worst. The Bill sets no liberalisation plan or timescale match the Act's objectives. The Convergence policy is simply an amalgamation of the objectives for broadcasting and telecoms and makes no attempt to converge these sectors. It is unlikely that the final framework will be coherent or consistent with other parts of government policy.

The literature review highlighted a number of areas where the emerging policy and regulatory framework is incongruent with international best practice or the expectations

of potential private investors. Both the Amendment Act and the proposed Electronic Communications Bill lack an overall defining vision that would form the framework within which the appropriate policy could be informed. In the absence of an overarching framework, simply debate the pros and cons of each area of regulation in isolation, creating a policy framework that is incoherent and inconsistent with other areas of government policy. The poor execution of policy processes, indecision, frequent changes and failure to adhere to timeframes, has also undermined the stability of the policy framework.

It is also doubtful whether government is truly committed to effective competition, given the dominant role of state entities in the transition to full liberalisation. Although government's rhetoric is in line with market reform, its actions contradict this.

Technological changes and market realities demand a rethinking of initial policy choices. Mobile operators have developed widespread networks and increased subscribers since licensing, while fixed subscribers have declined. Fixed telecoms services are undergoing a fundamental shift because the majority of the population cannot afford them. Corporates are increasingly demanding faster speeds, better services and increased choice. Technological changes are enabling convergence of voice and data networks to enable cheaper, faster and better access to services. Given these changes in the market environment, South Africa should have reassessed its policy priorities at the start of the Amendment Act process to determine the progress against objectives set at the inception, understand the new environment and delineate new objectives, targets and policy based on the new competitive dynamics instead of viewing this phase simply as a continuation of the original liberalisation process. This process would have informed the debate on the optimal market structure while also clearly signalling government's intentions to investors.

The analysis illustrates that South Africa's policy and regulatory problems are due to a failure to define the vision and objectives of the sector and create a policy framework to support this. The current framework is the result of a haphazard process cobbled together

from many adhoc initiatives. The South African government undoubtedly faces a difficult task in determining the optimal path to liberalisation of the hybrid South African market. Government has to balance the requirements of enabling infrastructure investment in previously under-serviced areas, while also creating a market structure that encourages innovation and competition in the provision of advanced communications services. This would improve the competitiveness of the business sector and provide affordable services for consumers, and thus fuel economic growth. The presence of powerful incumbent operators in both fixed and mobile, the level of investment required and the operational risks of doing business in Africa make it difficult to achieve all of these objectives immediately. With careful planning, clearly defined objectives, and continuous market assessment, however, these objectives could be met in the medium to long term.

Another research objective was to evaluate how government's commitment to managed liberalisation has affected consumers of telecoms services and thus development of the information society.

The South African policy and regulatory environment has struggled to facilitate competition or develop a market structure that enables competition. It can be argued that the telecoms market has developed despite an enabling environment rather than because of it. Market realities, customer sophistication and market demand have gone ahead of the current policy and regulatory framework, and have driven telecoms service development.

Fixed Line

The research has illustrated that a policy and regulatory vacuum, ineffective competition and inadequate regulatory oversight have allowed Telkom to entrench its monopoly position. This has led to high prices, abuse of its monopoly status through cross-subsidisation, and bullying tactics. The regulatory system has been unable to cope with this powerful privatised incumbent. Any challenges to its status have been dragged out in court, which most small operators cannot afford, or operators have been bullied into

settling by the threat of suspension of services. Overall revenue growth in the industry has been driven by massive market demand, but masks the lack of market competition and has led to high prices for services. Failure to introduce a competitor to Telkom early has hampered the development of the market, particularly broadband services.

Fixed data

The key inhibiting factor in the data services market is that Telkom is currently the only service provider of key inputs for VANs services like leased lines and bandwidth, and is also a competitor to VANs operators. Entry into the data services market is not difficult because VANs licences are easily obtained from the regulator. There are currently more than 200 VANs operators. Ineffective regulatory policing of Telkom's monopoly power has led to anti-competitive behaviour, as previously outlined. Telkom has also passed on its high input costs to clients, further hindering development of the data services sector. Telkom inputs for leased lines and international bandwidth account for some 70% of the total costs of VANs operators. (Gillwald and Kane, 2003) ISPs also do not have direct access to their clients but are reliant on Telkom for the last mile. The absence of a wholesale price strategy allows Telkom to control the input costs of data services. The Vans sector itself is fairly competitive and is often regarded as a leader on the continent. So, although VANs operators do give Telkom some competition in the data services market, especially for higher value-added services to corporate clients they are unable to challenge Telkom's power, in particular for broadband services. It is unlikely that broadband services will be widely adopted in South Africa until Telkom is compelled to provide wholesale pricing, unbundle the local loop and is monitored for cross-subsidisation, predatory pricing and anti-competitive behaviour.

Mobile

In the absence of fixed line competition, particularly on the consumer side, mobile services have capitalised on an unprecedented increase in subscribers and profits. Mobile operators have rapidly become the de facto providers of communications services. "They have brought much-needed business expertise and created new employment with very few failures over ten years." (Southwood, 2005) Although mobile providers were able to meet the demand for services and provide access, they are beginning to resemble the

fixed provider by locking consumers into contracts, charge high prices. There is little differentiation between services and products.

New entrant Cell C has struggled to compete against the incumbents, gaining only a 10% market share since it entered the market in 2001. Its small market share can be attributed to the delay in licensing the third entrant, strongly entrenched incumbents and the ineffective policy and regulatory regime. High interconnection costs, difficulties in switching and the current mandatory minimum two-year contract period has inhibited consumer switching to the new licensee.

The absence of number portability has made users reluctant to switch to the new operator. Cell C also had to pay a higher licence fee and take on obligations, despite having a smaller market opportunity. The incumbent operators had already exploited access to the best high sites and key areas. Key incentives had not been determined upfront, such as access to infrastructure, wholesale price regulation, and access to spectrum. Thus, apart from the licencing delays that would have affected Cell C's business strategy, the policy and regulatory environment also did not assist in creating an enabling environment. These factors ensure that Cell C's focus is on coverage, brand building and, to a certain extent, customer service rather than price. (SA Foundation, 2005)

As the South African market has shown, introducing new mobile operators into a market with entrenched incumbents makes it difficult for the new entrant to gain a foothold and compete effectively, so that consumers can enjoy the benefits of competition. Policy and regulatory mechanisms must stimulate competition by creating attractive licence conditions and regulatory mechanisms aimed at reducing the power of established operators.

The research has also shown significant potential for growth of new subscribers and for more service-based competitors, especially if it became mandatory for the three existing operators to share infrastructure. Adding further service-based competitors would ensure vigorous competition based on price, service and increased innovation.

This research has illustrated that government's managed liberalisation policy has increased the power of incumbents and hampered the development of the ICT sector by limiting sector investment, to the detriment of consumers.

A third research objective was to examine how government's managed liberalisation policy affected company performance and behaviour.

A weak policy and regulatory environment has led to unchecked company behaviour in both fixed and mobile. Superior financial performance alongside inadequate customer services, high prices and a lack of innovation illustrates that consumers have been unable to benefit from competition. For change to come about, a fundamental rethinking of the policy and regulatory framework is required, to enable market forces to create competition and thus force the currently complacent, highly profitable incumbents to respond to market demand. This approach is likely to stimulate further investment in network development, encourage service innovation and bring down prices.

Finally, this research has sought to examine how policy and regulation have shaped the structure of the market in South Africa during the transition from monopoly to competition.

Because of the huge disparities in income and availability of infrastructure, the telecoms market is highly stratified and presents challenges to both regulators and investors. Some areas of the market are open to a high degree of competition and are relatively sophisticated by First-World standards, while others lack the most basic services. Typically, the business segments are well serviced, even though prices remain high and levels of service differ depending on the size of the client. The VANs and ISP segments have low margins yet offer low prices with high levels of service. The range of mobile products on offer at competitive prices reflects a maturing industry, but in other parts of the market, such as PSTS, the market is still regulated and immature. The high cost of basic telephony for the majority of the residential market, lack of product choice and

differing levels of customer service are symptoms of an ineffective monopoly market. A serious hurdle is the lack of broadband services in any sector. Compared to other jurisdictions internationally, in terms of industry size and growth since liberalisation, the South African market has grown very slowly.

Table 28 — International industry growth since liberalisation

Country	Principal convergence regulatory and policy reforms	Year	Industry size before reform	Industry size 2004*	Annual growth
India	Telecommunications Policy • Fixed-mobile convergence	1999	3,650.2	7,959.2	23.6%
Korea	e-Korea Plan • Cross platform competition	1998	10,703.3	21,737.2	17.2%
Malaysia	Communications and Multimedia Act • Technology neutral licensing	1998	2492.1	4,791.8	15.4%
South Africa	Telecommunications Act • Awaiting further reform	1996	3675.0	5338.8	5.6%

Industry size quoted in (USD Million)

Source: ITU, 2004

This extract from the 2001 Report on African Telecommunication Indicators summarises the performance of South Africa's telecoms sector:

> *South Africa was once the envy of the African telecom sector. In 1991, it had the highest fixed-line teledensity on the continent (behind Réunion and Seychelles). It was also among the first to introduce competition in the mobile segment (in 1994) and to partially privatise its incumbent telecom operator Telkom (in 1997). The results were impressive, with the GSM network becoming one of the largest among developing countries.*[28]

However, very little has changed since this ITU assessment and is unlikely to show major growth unless there are fundamental changes in the policy and regulatory framework. The following section provides recommendations to increase competition in South Africa.

---

[28] ITU (2001) *African Telecommunication Indicators 2001*. Geneva, ITU, in Melody, W, 2002, Link Centre, Policy Research Paper, No 2, *Assessing Telkom's 2003 Price Increase Proposal: Price Cap Regulation as a Test of Progress in South African Telecom Reform, and E-economy Development*

11 Recommendations for creating an enabling environment to encourage ICT investment

South Africa has a sophisticated business IT environment, superb infrastructure in key parts of the country, a large, low-cost English-speaking workforce and is well-positioned geographically to position itself as an international location for ICT services such as call-centres, support services, and business process outsourcing, and could thus attract further investment. Nevertheless, the current state of telecoms hampers efforts to increase ICT investment here. Developing South Africa as an ICT-friendly destination would require, among other things, a more liberalised telecoms environment with a clear, simple licensing process to encourage market entry by network innovators, as well as stringent enforcement of general competition principles, especially for operators with a large share of market power. The high demand for telecoms services, high prices and the large profits made by incumbent operators, both fixed and mobile, highlight the necessity for further market reform in most of South Africa. The next section suggests the key reform initiatives needed in the telecoms sector.

11.1 Recommendations to increase investment in the South African ICT sector

11.1.1 Clarify national policy objectives and review current licensing framework

The South African telecoms policy environment is currently plagued by unclear and ever-changing liberalisation policy, uncertain timeframes and the multiple, unprioritised and often conflicting objectives contained in disparate legislation governing the sector. The 1996 Telecommunications Act, the Amendment Act and the proposed Convergence Bill are examples of the unco-ordinated efforts to create legislation. All of the existing legislation should be consolidated and clarified prior to any major legislative and policy overhaul. An over-arching, long-term vision must be articulated to set out clear objectives for the sector. Conflicting objectives must be reconciled and government should make its expectations clear. All stakeholders must be involved in the process. This would enable the continuation of market reform after a period of stalemate.

Further, policy and regulation must focus on increasing customer choice and lowering the cost of communications services. A liberalised, unified licensing regime that lets the economics of market demand determine infrastructure roll-out is recommended. Restrictions on licensing should be minimised to minimise barriers to entry. Geographic-area licensing for under-serviced areas should be abolished to stimulate market competition. As it now stands, the proposed Convergence Bill is unlikely to be able to address these objectives.

11.1.2 Implement widespread market reform

The delays in the licensing of the SNO have hampered the onset of competition and created uncertainty which hindered the efforts of the SNO to get established. The failure to licence an SNO timeously can be attributed to a number of factors, primarily investor uncertainty over the commitment of government to implement real competition in the sector, allow for greater independence and strengthen the regulator to enforce policy and regulation. Technology and customer demand have grown far beyond the capacity of two national operators to deliver. Given the serious constraints on telecoms services, it is unlikely that an SNO with many small shareholders and limited funding can be a serious threat to Telkom's hegemony. But South Africa's vibrant VANS sector has adequate infrastructure, particularly in the urban areas. Thus, it is recommended that the current restrictions on VANS are lifted. VANS should be licenced to set up their own international gateways and have unrestricted access to customers. This approach would introduce multiple broadband data providers and allow market demand to determine infrastructure roll-out.

11.2 Institute proper market and competition review processes periodically

As competition is introduced, mechanisms to ensure the continuing exercise of market power are necessary. The establishment and implementation of thorough market and competition review processes, together with more stringent enforcement of existing anti-competitive conduct provisions, are fundamental to the success of any liberalisation initiative, especially given the power of the incumbent in South Africa.

Processes to identify dominant operators with strong market power, preferably on a case-by-case and market-by-market basis must be established, to force a more granular analysis of designated markets rather than limiting it to a single monopoly operator. South Africa must address the designation and enforcement of dominant operator rules, and regulatory intervention should be based on the market-power status of each competitor on a market-by-market basis. This approach will ensure that abuse of power and anti-competitive conduct can be detected in any market segment. This will further inform the remedies necessary to create competition within a particular market.

Additional pro-competitive regulatory measures are required to enhance market development and curb the excessive power of the incumbent operator. Key regulatory provisions should include:

- The introduction of wholesale price regulation, particularly for key market segments like ISDN, ADSL, etc, for the VANs and ISP sectors;
- Development of clear processes to facilitate timely resolution of disputes with competitors;
- Determine rights of way access for new entrants and the extent to which other operators, e.g. Vans are also granted rights of way;
- Immediate implementation of carrier selection, pre-selection and number portability;
- Ensuring access to facilities at cost. Set favourable terms and conditions for co-location, including processes and time-frames for dispute resolution;
- Immediately unbundle the local loop to ensure that Telkom no longer controls last-mile access and increase broadband connectivity; and
- Stringent enforcement of Telkom's accounting separation policies.

The implementation of these measures requires effective regulation and an effective regulator. Thus, the policy and regulation must be changed to reflect these provisions. Further, this also requires an effective regulator to implement. Strategies for this are discussed in the next section.

11.3 Strengthen Icasa by allowing for increased independence and accountability

The independence of Icasa has been repeatedly questioned. The dual responsibilities shared by the Minister and Icasa must be clarified as well as the requirements for ministerial approval of regulations. Structural issues about the demarcation of roles between the Minister and the regulator must be addressed and a firm political commitment to maintaining the independence of the regulator must be made. The independence of Icasa and clear demarcation of roles are of paramount importance if the sector is to gain credibility.

Because the Telecoms Act was enacted prior to the Competition Act, the oversight roles of the Competition Commission and Icasa overlap, creating confusion. As a result, it has created the opportunity for forum shopping and inconsistent treatment of anti-competitive conduct by the two regulatory bodies. This jurisdictional ambiguity must be clarified. Because of the highly technical nature of telecoms internationally, telecoms issues have been left to telecoms regulators. In South Africa, Icasa deals with technical and economic regulation although the Competition Commission is better equipped to deal with anti-competitive behaviour. The Commission to date, has a better history of ruling independently without political and corporate interference. At the very least, the conflicting definitions, scope and ability to impose fines should be aligned with the Competition Act, which is in line with internationally recognised standards. To counter the problem of forum shopping, one solution would be to compel parties to choose either the Competition Commission or Icasa at the outset of an arbitration process. Choice of one regulator would mean giving up the right to pursue the matter with the other regulator at a later point, thus avoiding jurisdictional disputes once a ruling has been made. In addition, the Competition Commission should be able to seek advice and support from Icasa, particularly on technical issues.

All of these measures are intended to create a competitive market environment to enable South Africa to become an ICT-friendly destination. This approach would create an environment of robust competition, which would enable the use of new and innovative

technologies that take full advantage of existing infrastructure and remove the artificially created boundaries between services.

11.4 A framework for policy-makers and regulators in shaping telecoms network markets in transition

South Africa is not unique in its attempts to institute further market reform. Many developing countries are struggling through the same process. The recommendations of this study should serve as a useful guide to developing countries seeking further market reform. Capital markets significantly influence private-sector investment. At the time of the Telecoms Amendment policy process, after the dot.com sector bust, the market did not view telecoms investment favourably and so much of the policy framework was influenced by the downturn in investor sentiment. Subsequently, however, the good performance of mobile operators in the developing world restored the attraction of telecoms as an investment, and private-sector investors now increasingly look for opportunities in the sector. On the other hand, policy and regulation cannot be led by the fickle nature of capital markets. Provided there is credible market opportunity for investment, however, private-sector investment will be willing to enter a stable, well-managed policy and regulatory environment.

Developing countries have very distinctive characteristics and requirements that demand a different approach to policy and regulation. Network development is particularly important in developing countries as a result of the infrastructure shortages. As a result of the need for network development, weak administrative traditions and under-resourced policy-makers and regulators, competition is likely to be less effective. Therefore, more proactive regulatory monitoring is needed on a continuous basis to ensure progress. Low GDP's and high rates of poverty in most developing countries make issues like price and access particularly important. Thus, greater focus and attention on public issues like access for the poor and lowering prices must be made.

As the South African example illustrates, it is difficult to continue liberalising a market once its incumbent operators are entrenched, whether fixed and mobile. This impedes the

introduction of new entrants and hampers their ability to compete. High prices, substantial latent demand, entrenched incumbents and the high profit margins of incumbents are sufficient justification for further liberalisation. It is recommended that a comprehensive market review be conducted once the initial stages of market reform are concluded. This should determine the level of demand and potential for new licences, create processes to gain stakeholder consensus and develop a vision and objectives for the sector in line with the development of the market.

Key issues to consider for the licensing of new entrants, in a market where reform has already begun and the initial exclusivity period ends are outlined below:

11.4.1 Ensure political commitment to market liberalisation

Broader commitment to liberalisation and telecoms development must be enshrined in policy and regulatory mechanisms. Potential investors investigate the overall policy environment to assess the degree of its alignment with their own strategic positioning. Investor requirements are implicit in the definition of market structure, but these must be balanced against the needs of the entire population and the economy. There is little merit in a policy that delivers what investors desire but leaves the majority of consumers dissatisfied. Commitment must be made to timeframes, methods and processes for disposing of state assets. Government must demonstrate its commitment to independence and market reform by creating a stable regulatory environment and separating judicial and administrative processes. Once investors are satisfied that government is truly committed to competition driven by the private sector, private-sector investment will follow.

11.4.2 Institute market-driven macro-economic policies

Attracting private-sector investment for telecoms is not limited to telecoms-related policy. Market-driven policies throughout the economy enhance the attractiveness of licences including implementing import duty exemptions or lowered import duties, a favourable taxation regime and a focus on maintaining currency and interest rate stability. Creating a favourable investment climate so that investors are convinced that their

investments will be safe from "de facto expropriation through arbitrary changes in prices, taxes and service obligations." (Private sector, 1999)

License fees and license conditions can also play a key role in enhancing the attractiveness of a license. Low start-up license fees or even deferment for a set period will allow for investment in network development. The obligation of providing for universal service must be taken into account when deciding the overall cost of a license. All additional costs are eventually added to the cost of a license from the operator's perspective. High acquisition costs are likely to lead to operator's demanding special favours or renegotiation. In South Africa, these obligations range from providing payphones to fixed lines for computer labs, and have resulted in inappropriate and ineffective services that have led to high costs for consumers. Policy options must clearly determine these requirements and be flexible instruments to accommodate changes in technology and consumer demand. Licencing policy should favour those operators that are able to provide services at the lowest cost. Effective planning and centralized oversight is required, as this cannot be done by a single operator. In South Africa, the Universal service fund was created to do this but failed for a number of reasons including implementation, lack of skills, inadequate resources, among others. Thus, this study argues for a commercial approach to extending access to rural and low-income urban areas as in the case of Uganda - reverse subsidy auctions to operators who are willing to provide the service. Overall co-ordination and monitoring can be done by the regulator.

11.4.3 Focus on licensing the major operators

Focus time and resources on the investment intensive licenses. Many services can be provided without a license. The international trend is for licensing, subject only to declaration for the public record and for statistical purposes. Class licences can be automatically granted to any applicant meeting set criteria. Network operators should be free to establish prices and conditions for service but must grant access to essential services on a non-discriminatory basis. These can be defined in law as: interconnection, signaling, caller identification, billing data, number portability and directory databases.

This strategy reduces the regulatory burden and allows the focus on major licenses and allows market forces to operate. Many countries are implementing or planning to convert to unified licenses as in the case of India. This strategy allows any operator to utilise any technology to provide a service. While this strategy reduces the regulatory burden on licensing, it does require stringent enforcement of anti-competitive laws to enforce incumbent operator behaviour. It does, however, ensure that the technology decisions are left to those best equipped to make those decisions ie operators.

11.4.4 Institute technology-neutral licensing

Technology-neutral licenses are an important lever for attracting investment because they allow investors to determine the optimal technology required to deliver a service. As in the case of India, optical fibre will continue to be deployed where it makes economic sense. Broadband mobile technologies will continue to service the needs of the rural poor until the economic situation changes. In larger markets with high latent demand as in Nigeria and India, policy and regulatory flaws mean investors are often prepared to take on the regulatory and political risk because of the possibility of high returns, but, smaller markets offering fewer opportunities are unlikely to attract the same interest. Policy-makers must understand the potential value and size of the market if they wish to attract investors.

Liberalisation, deregulation and privatisation in the mobile sector, have increased competition and demand for mobile services and, consequently, have increased the demand for more spectrum. In a market like South Africa, in which incumbents have operated for a long period, much of the available bands in 1800 Mhz[29] and 900[30] Mhz spectrum has been allocated. Access to these spectrum ranges influences the cost of network roll-out and is therefore critical to the success of third or fourth operators. The licensing process must address this issue.

[29] 1800 MHz is more suited to denser traffic constrained areas like city centres and busy roads

[30] 900 MHz spectrum is ideally more suited to covering rural areas as it is able to cover larger areas

Regarding the demand gaps created by scarcity of spectrum, regulatory authorities have begun to consider new market-led approaches towards spectrum liberalisation and spectrum trading, rather than the traditional centralised administration of spectrum which is slow to react to market changes and results in inefficiency of usage and allocation. (Ofcom, 2004)

Besides the inherent weaknesses of a centralised approach, it is increasingly acknowledged that an administrative body cannot know as much as market players, like operators and equipment manufacturers, about the spectrum required, which technologies are appropriate or what consumers prefer. Market forces must be allowed to decide the best way to allocate new spectrum, even trade spectrum in the open market, in line with the development of new technologies and services. This should increase the amount of licence-exempt spectrum.

11.4.5 Consider mobile a communications services platform option

Developing countries have shown far more demand for telecoms services than either regulators or operators have anticipated. Markets have therefore grown faster than policy and regulation have been able to keep pace with. This rapid development has come at a price, often at the expense of consumers. Although mobile has alleviated the serious bottle-necks created by fixed-line and provides much needed telecoms services, there is surprisingly little price competition in much of Africa. Prices for local mobile calls are between five to 10 times higher than fixed, even though the costs of connecting subscribers and operating a GSM network are lower than for fixed networks (Southwood, 2005). Policy-makers and regulators should therefore conduct regular market reviews to keep pace with market development and regulate accordingly.

Mobile operator networks can service most existing voice demand but may be less able to meet medium to long-term data demands unless they can upgrade the capacity of their entire networks. The unprecedented growth of mobile has created new problems of monopoly power. This dominance by the initial mobile licensees presents an additional challenge to policy-makers and regulators as they strive to lower prices, open access to

networks and enable further sector innovation. Thus, for most markets in transition, mobile cannot be left to its own devices under the guise of competitive markets, but must also be regularly reviewed in terms of competition legislation to prevent abuse, and regulated where there is monopoly power accordingly.

11.4.6 Create competition-enabling mechanisms for new entrants

Fundamental to market reform, particularly in the transitional phase, is regulatory protection from abuse of dominant position by incumbent operators, because they have the power to frustrate the efforts of new entrants. New licences should include competition enablers such as international gateway licenses and the right to self-provide own transmission and link facilities, with the right to resell these to third parties. Other enablers include access to government facilities. Interconnect prices should also promote competition. High interconnect rates is likely to result in high retail prices. Ideally, conditions must be as equal as possible for the market to work.

11.5 Reduce the need for regulatory decisions by accelerating competition

Best practice suggests developing regulatory agencies modelled on the concept of the American public utility commissions. The developing countries case study has highlighted that in theory most countries have set up independent regulators, but in practice, these regulators are under-resourced, and unable to govern effectively. Levy and Spiller (1996) outline that for this model of regulation to work, certain conditions are required: a strong administrative tradition, the ability to undertake commitments that endure from one government to the next and a judiciary that is impartial, immune to government and political pressures and able to make enforceable decisions. Developing countries display very few of these characteristics. Thus, for developing countries, the regulatory strategy should also focus on reducing the need for regulatory decisions by accelerating the introduction of competition. Allowing competition early in network markets ie fixed-line and mobile, especially before or at the same time as the incumbent is privatised. This allows both incumbents and new entrants to grow while there is still large, unmet demand. Pre-packaging regulatory rules by preparing licences for operators

prior to licensing reduces the burden on the regulator and reduces regulatory uncertainty for investors. Further, it eliminates the potential for lobbying during the policy process.

11.5.1 Pool resources by enhancing regional cooperation

Regulators in each country have access to operator and market information. Pooling all of this information to create a regional skills base and research capacity will enhance the strength of regulators. It will also create best-practice guidelines to implement in their respective markets.

Developing markets, particularly, have seen the emergence of large, multi-national mobile operators. Often mobile operators have a number of licences in the same region eg MTN in Sub-Saharan, West and East Africa and Orascom in North Africa and Middle East. These operators have significant resources and research capability. They are often well versed in key telecoms issues including pricing trends and technology innovation. Regulators can utilise this capacity by introducing regional forums where operators can present cross market information. All of these resources can be utilised to ensure regulatory best practice as well as comparative pricing and services across regions.

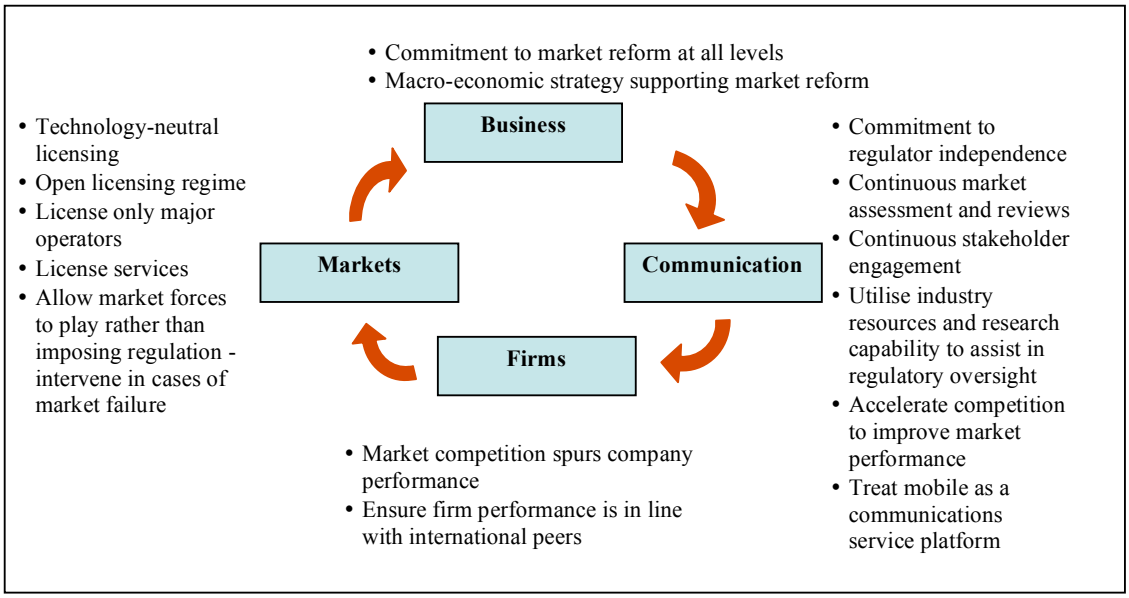
11.6 Contribution to knowledge and linking the theoretical basis

ICT market development and policy is rooted in and influenced by many factors and disciplines, including economics, law and communications. The technological, economic and political factors that has driven the development of the sector over the past 30 years has implications for the governance of the sector and must inform the theoretical foundations including the formation and implementation of policy.

Where the Pyramid model emphasised the importance of a holistic framework and the creation of proper structures at the outset, this research demonstrates that often developed markets do not have the sophisticated structures to implement and support market reform. Although simplistic policy instruments were able to facilitate good market performance during the monopoly era, they are no longer adequate because they work indirectly and are often counter-productive. Sector performance can only emerge from decentralised

market decisions. This research suggests a greater focus on utilising market indicators and company performance to guide the reform path throughout the transitional period. The model below summarises the research findings and suggests a more integrated and holistic approach for analysing network markets in transition. It suggests that, although overall objectives are necessary at the outset to create a road map for reform, market performance is the final arbitrator. Intervention at any level will influence every level of market performance.

Figure 38 — Recommended model of reform for markets in transition



11.7 Areas for further research

The liberalisation of telecoms network markets is a relatively new concept in developing countries and offers a range of possibilities for extending the scope and depth of this study, including:

- Evaluation of the impact of policy and regulatory factors on other liberalisation processes in South Africa to test whether the issues raised in this research are specific to the telecoms sector, or whether they also arise in other privatisation processes.

- A detailed evaluation of mobile sector development and the potential for further liberalisation, driven by private-sector reform.
- An assessment of options for the regulation of scarce resources in competitive markets, particularly the issuing and usage of spectrum. For instance, how do new operators gain access to spectrum in the high-demand bands already allocated to incumbents.

It is hoped that regulators will find the conclusions of this research useful for understanding how to regulate the telecoms sector, both fixed and mobile, to allow for healthy competition and sectoral growth that will be of real benefit to consumers, the economy and society.

12 References

Abdala, M. (2000) Institutional roots of post-privatisation regulatory outcomes. Telecommunications Policy, Volume 24, pp645-668.

Analysys Report, (2003) Roadmaps for success in telecoms liberalisation: issues and best practice. OECD.

Armstrong, M., Cowan, S and Vickers, J. (1994) Regulatory Reform: Economic analysis and British experience. MIT Press, Boston.

Arup Communications, (2001) Contributions to M-Cell's response to draft Telecommunications Policy Directions.

Bagchi, P. (2000) Telecommunications Reform and the State in India: The contradiction of private control and government competition. Centre for the Advanced Study of India, University of Pennsylvania, Occasional Paper #13.

Bain & Company, SA Inc, (2001) The South African Telecommunications Industry – Structure and regulation. How to destroy value – lessons from the global perspective. Johannesburg, South Africa.

Barnes, B. (1985) Thomas Kuhn in Skinner, Q (Ed) The return of grand theory in the human sciences. Cambridge University Press, Cambridge, pp 83-100.

Beesley, M.E. (1997) Privatisation, regulation and deregulation. Routledge, London second edition.

Beesley, M.E. (April 1981) Liberalisation of the use of British Telecommunications network. An economic study for the Department of Industry, HMSO.

Beesley, M.E. (October 1981) The liberalisation of British Telecoms. The Journal of Economic Affairs, Volume 2, No 1.

Beesley, M.E. Laidlaw, B. and Gist, P. (September 1987) Price competition and voice telephony in the UK. Telecommunication Policy.

Berg, B. (1995) Qualitative Research Methods for the Social Sciences. London: Allyn and Bacon.

Berridge, L. Chihota, T. and Gibney, O. (2001) Africa and the Middle East: mobile, fixed telecoms and internet opportunities. Baskerville Strategic Research. Sherman Oaks.

Bidoli, M. (2004, April 2) Hope springs eternal. *Financial Mail*.

Bidoli, M. and Sikhakhane, J. (2001, January 26) Where angels fear to tread. *Financial Mail,* pp40-41.

Bishop, M, Kay J, and Mayer, C. (1995) The regulatory challenge. New York: Oxford University Press.

Bitran and Serra (1998) Regulation of privatised utilised: The Chilean experience. World development. Volume 26, No 6, pp 945-962.

BMI-TechKnowledge, (2002) Communications Technology Handbook 2002, Johannesburg, South Africa.

Boyland, O. and Nicoletti, G. (April 2000) Regulation, market structure and performance in telecommunications. OECD, Economics Department working papers No. 237.

Brady, G. and Jenkins, O. (2001) M-Cell's mobile phone license. Standard Equities Research Report, Johannesburg, South Africa.

Bridges.org, (2001) South Africa policy brief: telecommunications overview, commentary, and statistics. accessed 25 February 2005, http://www.bridges.org/e-policy/sa/articles/telcom_report.html#annex4

Bridges.org, Telecommunication liberalization — what does it mean for the average citizen? accessed 25 February 2005, http://www.bridges.org/epolicy/sa/articles/telcom_liberal.html

Brock, G. (1981). The Telecommunications Industry - The dynamics of Market Structure. Cambridge, Harvard University Press.

Bryman, A and Burgess, R.G. (1994) "Developments in qualitative data analysis: an introduction". In A. Bryman and R.G Burgess (eds) Analysing qualitative data. London and New York, Routledge.

Bryman, A. (1988): Quantity and Quality in Social Research. London: Unwin Hyman Ltd.

Business Day. (2003, December 10) Challenges of expanding in Africa.

Carpentier, M., Farnoux-Toporkoff, S. and Garric, C. (1992) Telecommunications in Transition. John Wiley & Sons, Chichester, England.

Carrot, S. (2005) MTN, Vodacom – Regulatory threat assessment. Andisa Securities. Johannesburg, South Africa.

Castells, M. (2000) The rise of the network society. Oxford; Malden, MA. Blackwell Publishers.

Castells, M. (1999) "Flows, Networks, and Identities: A Critical Theory of the Informational Society". in Castells M, F. R., Freire P., Giroux H.A., Macedo D. and Willis P. (Eds) Critical education in the new information age. Rowan and Littlefield, Boston, pp37-64.

Chihota, T. (5 May 2005) Exploding into Africa, Telecom Africa Online News. accessed 12 December 2005. http://www.itp.net/itudaily/features/details.php?id=2668&category

Claasen, L. (2005, October 14) Guns drawn over prices. *Financial Mail*.

Clark III, PC. (2002) Hundt slashes 'Jurassic' Telecom policy. Net Economy. Ziff Davis Media.

Clark, D, Gillespie, N. and Walker, J. (December 2004) The reluctant planner. http://www.reasononline.com. Accessed 21 February, 2006.

Clarke, R. (1985) Industrial Economics. Oxford, Basil Blackwell.

Cohen, T. (2001, January 17) Mental calculations size up cell bid. *Business Day*, First Edition.

Communications Portfolio Committee, Telecommunications Amendment Bill: Deliberations – 9 October 2001-17 October 2001.

Communications Portfolio Committee, Telecommunications policy directions: hearings – 3 April 2001.

Convergence Bill, Government Gazette No. 27294 of 16 February 2005)

Cooper, M.N. (2002) US Capitalism and the public enterprise: Restoring the balance in electricity and telecommunications. Consumer Federation of America.

Cowles, R., Delcroix, J.C. and Hahn, W.L. (29 April 2002) The Shepherd's Choice: The Middle East and Africa need a new regulatory model. Gartner Research Brief

Curwen, P. (1997) Restructuring Telecommunications, Macmillan Press, Ltd, London.

De Jong, J. and Leyten, J. (1992) "Telecom Policy: From Regulation Towards Innovation" in F. Klaver and P. Slaa (Eds). Telecommunication New Signposts to old roads. Amsterdam, IOS Press, Inc: pp 65-74.

Department of Communications, Government Gazette No. 26763, 3 September 2004, General Notice, NOTICE 1924 of 2004, Determinations of dates in terms of the Telecommunications Act, (Act no. 103 of 1996)

Duggal, P. (2001) Indian Convergence Law. Cyberlaw India.

Duvenage, C. et al. (March 2004) 2003-2004 International Telecommunications Report & Cost Survey. NUS Consulting Group.

Economist Intelligence Unit. (April, 2004) The 2004 E-readiness rankings. London.

Efficient Research Pty (Ltd). (September 2004) An International Comparison of South African Telecommunications Costs and the possible effect of Telecommunications on Economic Performance, *and* A Report on Telkom's Financial Statements and Comparisons with Selected Local and International Companies.

European Commission. (1993) White Paper on growth, competitiveness, and employment: The challenges and ways forward into the 21st century. COM(93) 700 final. Brussels.

European Union, July 2001, Study on market entry issues in European Telecoms Market.

European Union, March 2000, The Lisbon European Council – An agenda of economic and social renewal for Europe. Contribution of the European Commission to the Special European Council in Lisbon.

Everatt, D. and Samuels, T. (1995) 'Listening to the Audience': a Qualitative Study of Public Attitudes to Key Issues Facing The Independent Broadcasting Authority. CASE.

Falch, M. (2003) Cost based interconnection charges, competition and investments. WDR Discussion Paper 0308. World Dialogue on Regulation for Network Economies. http://www.regulateonline.org/content/view/212/31/

Falch, M. (1997) "Cost and demand characteristics of telecom networks," in Melody, W. (Ed) Telecom Reform: Principles, Policies and regulatory practices. Den Private Ingeniorford, Technical University of Denmark, Lyngby.

Faulhaber, G.R. (2003) Policy-induced competition: The Telecommunications experiments. University of Pennsylvania, Wharton School Business and public policy Department.
http://assets.wharton.upenn.edu/~faulhabe/987/Policy-Induced%20Competition.pdf

Fielding, N. (1993) "Qualitative Interviewing," in Gilbert, N. (Ed) Researching social life. Sage.

Finnie, G., Lewis, C., Lonergan, D., Mendler, C., and Northfield, D., 2003. South African Communications Market Study, Prepared for the Department of Communications, South Africa. The Yankee Group, Boston.

Formby, H. (2005, November 6) Venfin's Rupert signs deal of his life. Sunday Times, Business Times.

Genesis Analytics (Pty) Ltd, Reforming telecommunications in South Africa, Twelve proposals for lowering costs and improving access. South Africa Foundation, Occasional Paper, No 2, October 2005. Accessed 9 October 2005
http://www.safoundation.org.za/documents/ReformingTele.pdf

Genesis Analytics (Pty) Ltd, Telecommunications prices in South Africa. South Africa Foundation, Occasional Paper, No 1, April 2005. Accessed 9 October 2005 http://www.safoundation.org.za/documents/ReformingTele.pdf

Gentzoglanis, A., Sundberg, N. and Schorr, S. (2001) Effective regulation case study: Morocco. ITU.

Gillwald, A. (April 2004) Stimulating Investment in Network Development: The case of South Africa. WDR Discussion Paper 0310. World Dialogue on Regulation for Network Economies. http://www.regulateonline.org/content/view/214/31/

Gillwald, A. and Esselaar, S. (2004) South African 2004 ICT Sector Performance Review. LINK Centre Public Policy Research Paper No 7, University of Witwatersrand, Johannesburg.

Gillwald, A. and Kane, S. (2003). South African Telecommunications Sector Performance Review 2003. Link Centre, Research Paper No 5, University of the Witwatersrand, Johannesburg.

Glaser, B and Strauss, A.L. (1967) The discovery of grounded theory: Strategies for qualitative research. Chicago: Aldine.

Goldstuck, A. (2002) Internet Access in South Africa. World Wide Worx, Johannesburg, South Africa.

Greene, T. (02/16/05) Reed Hundt's take on carrier mergers. NetworkWorld.com

Hay, D. and Morris, D. (1991) Industrial Economics - Theory and Evidence. Oxford, Oxford University Press.

Hazlett, T., Rutledge, J. and Hewiit, D.A. (2004) Sending the right signals: Promoting competition through telecommunications reform. US Chamber of Commerce.

Heracleous, L. (1999): "Privatisation: Global trends and implications of the Singapore experience". The International Journal of Public Sector Management, Vol 12 No 5, pp432-444.

Hodge, J. (2001) Promoting competitive outcomes in the fixed line telecommunications sector in South Africa. Trade and Industrial Policy secretariat working paper 6.

Hodge, J. (2003) Extending telecoms ownership in South Africa, Policy Performance and Future Options, Trade and Industrial Policy Strategies. University of Cape Town, Johannesburg, South Africa.

Horwitz, R.B. (2001) Communication and democratic reform in South Africa. Cambridge University Press, Cambridge, UK.

http://www.trai.gov.in/Default.asp

Hundt, R. (April 1996) Liberalising global telecommunications trade. (Chairman of the Federal Communications Commission) USIS – Economic Perspectives.

Ibahrine, M. Towards a national telecommunications strategy in Morocco. First Monday, volume 9, number 1, January 2004. Accessed 07/07/2005 - www.firstmonday.org/issues/issue9_1/ibahrine/

ICASA Media Release following the Minister's earlier announcement (22 November 2004), http://www.internet.org.za/icasa-media-22112004.html

Independent communications authority of South Africa, (Icasa) (25 September 2001). Submission to the Parliamentary Portfolio Committee on Communications, Johannesburg, Icasa.

International telecommunications union (ITU). (2005) World telecommunications indicators database.

Internet Service Providers Association, submission to the Parliamentary Portfolio Committee on Communications, 28 September 2001.

Intven, H. Oliver, J and Sepulveda,E. (2000) Telecommunications Regulation Handbook. The World Bank. Washington, DC.

ITU (2004) Licensing in the era of liberalisation and convergence. The case study of the Republic of Uganda.

ITU. (2004) Licensing in the era of liberalisation and convergence. The case study of the Federal Republic of Nigeria.

ITU. (2001) Effective regulation case study: Morocco 2001.

ITU. (December 2003) World Telecommunications Development Report: Access Indicators for the Information Society. Geneva.

ITWeb. (2005) Converging communications. ITWeb Informatica Reference series. Cape Town, South Africa.

Jacquemin, A. (2000) Theories of Industrial organisation and competition policy What are the Links? European Commission Forward Studies Unit.

Koselka, R. (Autumn 2001) Weathering telecom's dark and stormy night. *The Mckinsey Quarterly.* pp 118.

Krairit, D. (2001) Liberalizing Development: Effects of Telecommunications Liberalization in Thailand and the Philippines, Doctor of Philosophy Thesis, Massachusetts: Massachusetts Institute of Technology.

Laffont, J. and Tirole, J. (2000) Competition in telecommunications. MIT Press: Cambridge , MA.

Levy, B and Spiller, P.T. (1996) "A framework for resolving the regulatory problem" in Levy, B and Spiller, P.T. (Eds) Regulations, Institutions and Commitment: Comparative studies of telecommunications. Cambridge University Press, New York.

Lyon, D. (1995) "The Roots of the Information society idea," in Heap, N. T. R., Einon, G., Mason, R. and Mackay, H. (Ed) Information Technology and Society. Sage, London.

Mackay, H., Maples, W. and Reynolds, P. (2001) Investigating the information society. Routledge, London.

Makhaya, G. (2002) The determinants of regulatory effectiveness in liberalised markets: Developing country experiences. Trade and industrial policy secretariat working paper 4. University of the Witwatersrand.

Makowski, L. and Ostroy, J.M. (June 2001) Perfect Competition and the creativity of the market. Journal of Economic Literature Vol. XXXIX pp. 479-535.

Malik, P. (2004) Indian telecommunications policy and regulation: Impact on investment and market structure. WDR Discussion Paper 0304. World Dialogue on regulation for network economies. Accessed 12 February 2005. http://www.regulateonline.org/content/view/208/31/

Manuel, T. (24 September 2002.) Speech by Minister of Finance, Republic of South Africa to Commonwealth Business Council. Mobilising international investment flows: The new global outlook.

Marcelo, R. (30 July 2003) India licensing plan alarms mobile groups. *Financial Times*.

Masango, G. (2003, June, 18) The African train is ready to leave. *Business Report*.

Matsepe-Casaburi, I. Speech by the Minister of Communication at the opening of the 2nd National Telecommunications Colloquium, Midrand, February 2001.

M-Cell submission to the Parliamentary Portfolio Committee on Communications, 28 September 2001.

M-Cell submission to the Telecoms Colloquium, January 2001.

McLoed, D. (2004, 8 October) Fit for Freedom. *Financial Mail*.

Mcloed, D. (2004, 8 October) UK Telecom firm outlines SA Plans. *Financial Mail*.

McLoed, D. (2005, 6 May) No clear lines. *Financial Mail*.

McLoed, D. and Bidoli, M. (2004, 19 November) Pass the hammer. *Financial Mail*.

Megginson, W.L. and Netter, J.M. (2001) From state to market: A survey of Empirical studies on privatisation. Journal of economic literature. Vol XXXIX, pp321-389.

Melody, W. (1997) in Telecom Reform: Principles, Policies and regulatory practices (ed, Melody, W.) Den Private Ingeniorfond, Technical University of Denmark, Lyngby.

Melody, W. (2003) Stimulating Investment in Network Development. WDR Discussion Paper 0301. World Dialogue on Regulation for Network Economies. http://www.regulateonline.org/content/view/205/31/

Melody, W.H. Designing Utility Regulation for 21st Century Markets. Delft University of Technology, Netherlands.

Melody, W.H. Developing the information infrastructure for South Africa's Information Society: How markets and Regulation are shaping network development and access opportunities. Wiser/p&dm series "the state we're in," 27 March 2003

Melody, W.H. (2002) Assessing Telkom's 2003 price increase proposal. LINK Public Policy Research Paper, No 2, LINK Centre, Graduate School of Public & Development Management, University of the Witwatersrand, Johannesburg, http://link.wits.ac.za/research/wm20021130.htm.

Melody, W.H., Currie, W. and Kane, S. (2003) Preparing the Foundation for New Information Society 'E-Services': The VANS Sector in South Africa. The Southern African Journal of Information and Communication, Issue 4, 2003, Link Centre, Witwatersrand University.

Milne, C., Wirzenius, A., Young, S., and Jokinen, J. (1998) Case study of the impact of the changing international telecommunications environment in Sri Lanka. A study by Antelope Consulting for the Commonwealth Telecomunications Organisation, the World Bank Infodev and the ITU.

Msomi, S. (2001, September 23) Telecoms coalition, state on collision course over Bill. *Sunday Times*.

Mund, V. and Wolf, R. (1971) Industrial organization and public policy. New York, Appleton-Century-Crofts.

Murray, R. (16 February 2005) With Ma gone, Baby Bells get new clout. *The Wall Street Journal Online*.

Ndlangisa, S. (2004, March 14) Massive demand has the switchboard flashing at MTN Nigeria. *Sunday Times*.

Nelson, R.R. and Sampat, B.N. (2001) Making sense of institutions as a factor shaping economic performance. *Journal of Economic Behaviour and Organisation*. Vol 44, pp31-54.

Nepad Strategic Framework document, (2001) 37th Summit of the OAU http://www.nepad.org

Noll, R.G. (1999) Telecommunications reform in developing countries. AEI-Brookings Joint Centre for Regulatory Studies, Working Paper 99-10.

NUS Consulting Group International Telecommunications Report. and Cost Survey March 2004

OECD (1995) Telecommunication infrastructure: the benefits of competition. OECD Publication and Information Centre (distributor), Paris.

OECD conference, (1982) Changing market structures in telecommunications. Elsevier Science Publishing Company, Amsterdam.

OECD, (1988) The telecommunications industry : the challenges of structural change. Paris.

OECD, (2004) Regulatory reform as a tool for bridging the digital divide. Paris, France.

Ofcom - The Communications Market 2004 - Telecoms Appendix - http://www.ofcom.org.uk/research/telecoms/data/

Ofcom's Strategic Review of Telecommunications, (2005) http://www.ofcom.org.uk/static/telecoms_review/index.htm

Organisation for economic co-operation and development OECD (1988) The Telecommunication Industry – The Challenges of structural change. North-Holland Publishing co, Paris.

Oxford Business Group. Fixing the line Morocco. Publishers of Emerging markets intelligence reports. Volume 70, 13/07/05. Accessed 18/07/2005. http://www.oxfordbusinessgroup.com/weekly/weekly01.asp?id=1462

Paton, C. and Bisseker, C. (25 February 2005) Trevor Manuel Numbers and Nous.

Pienaar, H. (1999, November 30) Getting the message through is MTN's tough task in Nigeria. *Business Report*.

Pisciotta, A. (1997) in Telecom Reform: Principles, Policies and regulatory practices (ed, Melody, W). Den Private Ingeniorfond, Technical University of Denmark, Lyngby.

Policy announcement by the Minister of Communications, Dr Ivy Matsepe-Casaburri, regarding deregulation (2 September 2004), http://www.internet.org.za/doc-min-announce-2-sept.html

Politt, M. and Summanen, T. (2002) Case study: British telecom: Searching for a winning strategy. Judge Institute of Management. http://msl/mit.edu/CMI/FURD_2002_a/btcase.pdf

Proceedings of an OECD conference, 13-15 December 1982**,** Changing market structures in telecommunications, Amsterdam, New York : North-Holland New York, NY, USA, sole distributors for the USA. and Canada, Elsevier Science Pub. Co.

Public policy correspondent, (29 May 2004) High Telkom rates take the edge off SA firms. *Business Day*.

Pyramid Research, The Economist Intelligence Unit. (April 2001) Communications markets in West Africa — Analysis of data, voice and convergence opportunities. Cambridge, Massachusetts.

Radebe, J. Minister of Public Enterprises, (2000), An accelerated agenda towards the restructuring of state owned enterprises – A policy framework. South Africa.

Ramanadham, V.V. (1994) Privatisation and after: monitoring and regulation. Routledge: London.

Reekie, W.D. (2000) Monopoly and competition policy, Free Market Foundation. Johannesburg.

Republic of South Africa (RSA) (1996a) White Paper on Telecommunications, Government Printers, Pretoria.

Rochdi, N. Morocco uses the web to get into global economy. Balancing Act News Update, Issue No 64. http://www.balancingact-africa.com/news/back/balancing-act_64.html accessed 18/07/2005

Rosenzweig, P.M. (2000) MTN: Investing in Africa. International Institute for Management Development. Lausanne, Switzerland.

Rosenzweig, P.M. (2000) MTN: Managing in Africa. International Institute for Management Development. Lausanne, Switzerland.

RSA (1996b) Telecommunications Act, Government Printers, Pretoria, http://www.polity.org.za/html/govdocs/legislation/1996/act96-103.html.

Samarajiva, R. (August 2004) "Sri Lanka's telecom reforms of 2002/03", in South Asia Forum for Infrastructure Regulation, Issue 17.

Samarajiva, R. "The role of competition in institutional reform of telecommunications: Lessons from Sri Lanka,". in *Telecommunications Policy*, September 2000, Volume 24, Issues 8-9, pages 699-711. Accessed 27/07/2005, http://ww.communica.org/samarajiva.html

Samarajiva, R. Communicating Legitimacy: Key to effective regulation. Policy and development summit. Asian Markets: From regional competition to globalisation.

Samarajiva, R. and Dokeniya, A. (September 2004) Regulation and Investment: Sri Lanka Case Study, including a pilot assessment of the Telecom Regulatory Environment. WDR Discussion Paper 0303b, World Dialogue on Regulation for Network Economies. http://www.regulateonline.org/content/category/5/71/31/

Sanatan, R. and Melody, W. (1997) in Telecom Reform: Principles, Policies and Regulatory Practices (Ed, Melody, W.) Den Private Ingeniorfond, Technical University of Denmark, Lyngby.

Saunders, R., Warford, J. and Wellenius, B. (1994) Telecommunications and Economic Development. The Johns Hopkins University Press, Baltimore.

Scherer, F. and Ross, D. (1990) Industrial Market Structure and Economic Performance. Boston, Houghton Mifflin Company.

Shanker, B. (23 May 2002) Shaping public policy for the global information economy Gartner Group.

Shosteck Group White Paper, (September, 2004) The Indian Telecommunications Experience: Its Relevance for the World, Wheaton, Maryland.

South African Value-added Network Services Association, submission to the Parliamentary Portfolio Committee on Communications, September 2001

Southwood, R. "Africa's mobile operators – are they the new incumbents?" Balancing Act News Update – African Internet Developments, Issue No 254.

Southwood, R. (2004, January 28) "Halfway proposition – A strategy for reducing Africa's international internet costs". Balancing Act news update. Issue No 130.

Srivastava, L. and Sinha, S. (2000) Fixed-mobile interconnection: The case of India. ITU.

Stones, L. (21 April 2005) Study says Telkom fees hold back SA growth. *Business Day*.

Sukazi, N. (2001, January 23) M-Cell slides after Nigerian payout. *Business Report*.

Sukazi, N. (2001, January, 22) MTN to invest $1,4bn in Nigeria. *Business Report*.

Sunday Times. (2002, November 24) World queues to get a piece of Africa.

Sunday Times. (2003, May 18) Mobile industry finds home in Africa.

Sussman, G. (1997) Communication, Technology and Politics in the Information Age, Sage, London.

Sutherland, E. Mobile telecommunications competition or cartel? Paper delivered at Tel.com Africa, 23-25 October 2002. www.intug.net

Tehranian, M. and Tehranian, K. (1997) "Taming modernity: towards a new paradigm" in Mohammadi, A (Ed) International communication and globalisation. Sage, London and New Delhi, pp. 119 -167.

Telecommunications Act, 1996, No. 103 of 1996 (As amended by: Telecommunications Amendment Act, No. 12 of 1997, Public Service Laws Amendment Act, No. 47 of 1997, Skills Development Act, No. 97 of 1998, Independent Communications Authority of South Africa Act, No. 13 of 2000, Telecommunications Amendment Act, No. 64 of 2001).

Teligen Report for European Commission (2000) Study on Market Entry Issues In EU telecommunications Markets After 1st January 1998. Surrey, United Kingdom.

Telkom (2002) 2002 Annual Report, Pretoria, South Africa. http://www.telkom.co.za/annualreports/annual_report2002/Telkom%20AR%2026370.pdf

Telkom (2003) Initial Public Offering Prospectus, Pretoria, South Africa, http://www.telkom.co.za/IR/docs/JSE%20Prospectus-Telkom-2901.pdf.

The Economist (1998): The Economics of Antitrust, 2 May, pp 72-74

The Economist. (June 27, 2002) Another cowboy bites the dust.

The New Partnership for Africa's Development (Nepad) framework document, (October 2001).

The Shosteck Group, (September 2004) The Indian telecommunications Experience: Its relevance for the world. Maryland, USA.

The Wall Street Journal, (15 February 2005) India's telecom rule change may not bring investment rush.

Trebing, H.M. (1997) Emerging market structures and options for regulatory reform in public utility industries in Melody, W. (Ed) Telecom Reform: Principles, Policies and regulatory practices. Den Private Ingeniorford, Technical University of Denmark, Lyngby.

Ure, J. (2-4 March 2004) FDI in telecommunications services in Asia. High level policy seminar on services FDI and competitiveness in Asia UNCTD and ASEAN, Ritsumeikan University, Kyoto.

Ure, J. Telecommunications Privatisation: evidence and some lessons. Telecommunications Research Project, University of Hong Kong.

Uunet SA (Proprietary) Limited, submission to the Parliamentary Portfolio Committee on Communications, 28 September 2001.

Vecchiatto, P. (2005, November 2) A tale of two Bills. *ITWeb*.

Vegter, I. (September 2003) Confusing clarity. *ITWeb Brainstorm*. Pp 34-40.

Vietor, R. (1994) Contrived Competition Regulation and Deregulation in America. Cambridge, Harvard University Press.

Wallsten, S.J. (2003) Privatising monopolies in developing countries: The real effects of exclusivity periods in telecommunications. AEI-Brookings Joint Centre for regulatory studies, Washington, DC.

Wallsten, S.J., Clarke, G., Haggarty, L., Kaneshiro, R., Noll, R., Shirley, M., and Xu, L.C. (2004) New tools for studying network industry reforms in developing countries: The telecommunications and electricity regulation database. AEI-Brookings Joint Centre for Regulatory Studies, Washington, DC.

Waverman, L., Meschi, M. and Fuss, M. (2005) The impact of telecoms on economic growth in developing countries. The Vodafone Policy Paper Series.

Webster, F. (2002). Theories of the Information Society. London, Routledge.

Weidemann, R. (4 October 2004) Data applications will drive SA market. ITWeb.

Wellenuis, B. (2002) Closing the gap in access to rural communication: Chile 1995-2002. infor 4,3, pp 29-41. http://www.emeraldinsight.com/1463-6697.htm

Wilson, K. (2000) Deregulating Telecommunications US and Canadian Telecommunications, 1840-1997. Oxford, Rowman & Littlefield Publishers, Inc.

Wirth, M.O. and Bloch,H. (1995) Industrial organisation theory and media industry analysis. *The Journal of Media Economics*, 8(2), pp 15-26.

World facts and figures database. accessed 27 July 2005, http://www.worldfactsandfigures.com/gdp_country_desc.php.

Young, D.T.P. (2000) Modeling media markets: How important is market structure? The Journal of Media Economics, 13(1), pp27-44.

Ypsilanti, D. (2002) Regulatory reform in the telecommunications industry - Regulatory reform in UK. OECD reviews of regulatory reform. OECD, Paris.

Zibi, G. (2005) MVNO's in emerging markets. Pyramid Research, Cambridge, Massachusetts.

Zita, K. and Kapur, A. (April 21-23, 2004). Sri Lanka Telecom Brief. USTDA South Asia Communications Infrastructure Conference, New Delhi, India. accessed 26 July

2005. - http://www.ndaventures.com/Sri%20Lanka%20Telecom%20Brief%20April%202004.pdf

Zita, K. and Kapur, A. (April 21-23, 2004.) India Telecom Brief. USTDA South Asia Communications Infrastructure Conference, New Delhi, India. accessed 27 July 2005. http://www.ndaventures.com/India%20Telecom%20Brief%20April%202004.pdf

13 Appendix 1

13.1 Semi-structured interview guidelines — Categories of questions

Company overview/Profile

- Industry sector, key services, high-level overview of current telecoms usage

Mobile

- Current supplier, range of services purchased and description, quality of service

Data

- Current supplier, range of services purchased and description — new capacity, satellite, internal network (VPN, intranet), remote access – ISDN or dial-up

Voice

- Current supplier, range of services purchased and description, convergence plan – voice/data, voice/mobile

Quality of service

- Current satisfaction/dissatisfaction with suppliers
- Has service from Telkom changed?
- Has perception of Telkom changed over last year?
- Quality of service and service-level agreements/compensation
- Customer service/support — provisioning, billing, flexibility in providing solutions to customers

Switching dynamics

- Propensity to change – triggers/drivers and barriers
- Price sensitivity – trade off between price and service/technology/QoS
- Products, service integration, SLAs

14 Appendix 2

14.1 Focus group discussion guide — medium and large business

Background - Current and future voice and data strategies

Benefits and/or frustrations experienced with these issues

- Service delivery and support of current telecom providers (cover repair, response, flexibility)
- Current service level agreements — are they meeting expectations?
- Telkom — aspects respondents were most satisfied with or least satisfied with?
- Other providers — aspects respondents were most satisfied with or least satisfied with?
- Costs and charges for services (reductions, special offers, increases in charges) – pay too much, about right or is it good value for money?

Awareness of the current and future telecoms events in SA

- How aware are the respondents of Telkom's exclusivity period along with related issues?
- Brief strengths and weaknesses analysis of Telkom as an operator, plus Cell C, MTN and Vodacom. What has each done well or badly?

Second Network Operator

- What kind of time period would respondents need to assess a SNO before switching?
- What would be the drivers and/or inhibitors to switching?
- Comments on the trade-off between service, products and costs — Are respondents willing to pay more for better service and/or technology?

Testing the concept of fixed-mobile

- What do respondents understand by the term fixed-mobile?
- Do the benefits outweigh the extra cost? E.g. convenience, flexibility and mobility.

15 Appendix 3

15.1 Focus group discussion guide — consumers

Background — historical information of the current telecoms infrastructure

- Current and future voice usage – major investments or changes.
- Discussion about the drivers of telecoms usage:
  - Internal and external needs?
  - Number of users in the home and propensity for fixed vs mobile usage?
  - Range of Telkom products and services respondents are aware of/currently using?
  - What telecom needs are currently not being met?

Benefits and/or frustrations experienced with these issues

- Service delivery and support (repair, response, flexibility, etc,) of current telecom providers.
- The costs and charges for services (reductions, special offers, increases in charges) –pay too much, about right or is it good value for money?

Awareness of the current and future telecoms events in SA?

- How aware are the respondents of Telkom's exclusivity period, with all the related issues?

Levels of change and why? Switching strategies

- What kind of time period would respondents need to assess an SNO before switching?
- What products and services in home usage would respondents switch?

Testing the concept of fixed-mobile

- What do respondents understand by the term fixed-mobile?
- Do the benefits outweigh the extra cost? E.g. convenience, flexibility and mobility.

16 Appendix 4

16.1 Detailed company analysis

Firm Analysis											
Country	:	**Botswana**									
Company	:	**Botswana Telecommunications Corporation**									
Focus	:	**Fixed**									
Ownership	:	**State Owned**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In Pula millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	P			610.7	605.0	615.4	621.3	636.9	0.8%
		- Revenue growth (%)					(0.9%)	1.7%	1.0%	2.5%	
		Operating expenditure	P					492.2	511.3	534.7	2.8%
		EBITDA	P								
		- EBITDA growth (%)									
		Operating Profit	P					7.9	62.9	100.2	133.6%
		Profit/(Loss) before tax	P								
		Net Profit/(Loss)	P			2.2	(24.2)	(39.1)	90.3	139.1	129.2%
		Capex	P			131.6	145.1	78.3	94.2	167.4	4.9%
Cash Flow Data											
		Cash flow from operating activities	P					162.2	124.4	226.1	11.7%
		Cash flow used in investing activities	P					(82.9)	(92.8)	(156.3)	23.6%
		Cash flow from/(used in) financing activities	P					(7.6)	332.7	(9.4)	7.0%
		Cash and cash equivalents at the end of period	P					10.4	374.7	435.1	247.2%
Financial Ratio											
		EBITDA margins (%)									
		Operating profit margins (%)									
		Net profit margin (%)									
		Capital expenditure to revenue (%)									
		Return on assets (%)									
		Asset Turnover									
Operational Data - Fixed-line											
		Fixed access lines (thousands)				135.9	142.6	142.3	131.8		(0.8%)
		Revenue per fixed access line	P			4,494	4,243	4,324	4,715		1.2%
		Total fixed-line traffic (millions of minutes)									
		Fixed-line employees				1,771	1,724	1,694	985		(13.6%)
		Fixed-lines per fixed-line employee				77	83	84	143		16.7%
		Revenue per employees	P			344.83	350.93	363.30	630.74		16.3%

Firm Analysis											
Country	:	**South Africa**									
Company	:	**Telkom Group**									
Focus	:	**Fixed-Mobile**									
Ownership	:	**Public and State-Owned**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In ZAR millions, except where otherwise indicated)							*%*
Income Statement Data											
		Operating revenue	ZAR		27,015	31,243	34,087	37,507	40,795		8.6%
		Operating expenditure (Including depreciation)	ZAR		23,728	26,451	30,039	31,226	31,805		6.0%
		EBITDA	ZAR		8,082	10,315	10,044	13,012	16,337		15.1%
		Operating Profit	ZAR		3,908	4,984	4,191	6,514	9,088		18.4%
		Profit before tax	ZAR		2,041	2,405	2,153	2,784	6,303		25.3%
		Net Profit	ZAR		1,527	1,622	1,221	1,630	4,523		24.3%
Balance Sheet Data											
		Total assets	ZAR		47,276	53,537	55,316	53,229	52,984		2.3%
		Current assets	ZAR		11,010	12,674	10,997	9,921	11,061		0.1%
		Non-current assets	ZAR		36,266	40,863	44,319	43,308	41,923		2.9%
		Total liabilities	ZAR		33,879	38,449	38,351	34,687	30,726		(1.9%)
		Current liabilities	ZAR		14,382	15,314	12,765	14,197	14,443		0.1%
		Non-current liabilities	ZAR		19,497	23,135	25,586	20,490	16,283		(3.5%)
		Shareholders' equity	ZAR		13,350	14,972	16,832	18,348	22,058		10.6%
		Total debt	ZAR		21,974	26,268	2,509	22,492	17,176		(4.8%)
		Net debt	ZAR		18,837	21,601	21,966	20,171	13,362		(6.6%)
Cash Flow Data											
		Cash flow from operating activities	ZAR		4,917	6,165	8,171	9,748	13,884		23.1%
		Cash flow used in investing activities	ZAR		(9,107)	(9,964)	(9,250)	(5,731)	(5,423)		(9.8%)
		Cash flow from/(used in) financing activities	ZAR		5,051	3,439	66	(3,026)	(6,481)		(205.1%)
		Capital expenditure excluding intangibles	ZAR		9,461	9,889	9,004	5,712	5,307		(10.9%)
		Operating free cash flow	ZAR		(3,810)	(3,799)	(1,079)	4,042	9,009		(218.8%)
Financial Ratio											
		EBITDA margins (%)			29.9	33.0	29.5	34.7	40.0		6.0%
		Operating profit margins (%)			14.5	16.0	12.3	17.4	22.3		9.0%
		EBITDA / Finance charges (number of times)			3.3	3.3	3.9	3.1	5.0		8.7%
		Net profit margin (%)			5.7	5.2	3.6	4.3	11.1		14.3%
		Capital expenditure to revenue (%)			35.0	31.7	26.4	15.2	13.0		(18.0%)
		Return on assets (%)			10.0	10.2	6.6	10.5	17.8		12.2%
		Net debt to equity (%)			141.1	144.3	130.5	109.9	60.6		(15.6%)
Operational Data - Fixed-line											
		Fixed access lines (thousands)			5,493	4,962	4,924	4,844	4,821		(2.6%)
		Revenue per fixed access line	ZAR		3,859	4,287	4,722	4,987	5,169		6.0%
		Total fixed-line traffic (millions of minutes)			31,127	32,863	33,084	32,868	32,942		1.1%
		Fixed-line employees			49,128	43,758	39,444	35,361	32,358		(8.0%)
		Fixed lines per fixed-line employee			112	113	125	137	149		5.9%
		Revenue per employee	ZAR		550	714	864	1,061	1,261		18.1%

Firm Analysis											
Country	:	**South Africa**									
Company	:	**Telkom SA**									
Focus	:	**Fixed**									
Ownership	:	**Public and State-Owned**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In ZAR millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	ZAR		23,740	26,330	27,866	29,542	30,906	31,414	4.8%
		- Revenue growth (%)				10.9%	5.8%	6.0%	4.6%	1.6%	
		Operating expenditure	ZAR		21,185	22,571	25,441	25,392	24,510	23,690	1.9%
		EBITDA	ZAR		6,180	7,993	7,233	9,658	12,454	12,711	12.8%
		- EBITDA growth (%)				29.3%	-9.5%	33.5%	29.0%	2.1%	
		Operating Profit	ZAR		2,555	3,759	2,425	4,348	6,471	7,979	20.9%
		Profit before tax	ZAR								
		Net Profit	ZAR								
		Capex	ZAR		8,468	8,297	6,962	4,013	3,862		
Cash Flow Data											
		Cash flow from operating activities	ZAR								
		Cash flow used in investing activities	ZAR								
		Cash flow from/(used in) financing activities	ZAR								
		Capital expenditure excluding intangibles	ZAR								
		Operating free cash flow	ZAR								
Financial Ratio											
		EBITDA margins (%)			26.0%	30.4%	26.0%	32.7%	40.3%	40.5%	7.6%
		Operating profit margins (%)			10.8%	14.3%	8.7%	14.7%	20.9%	25.4%	15.4%
		Net profit margin (%)									
		Capital expenditure to revenue (%)			35.7%	31.5%	25.0%	13.6%	12.5%		(18.9%)
		Return on assets (%)									
		Asset Turnover									
Operational Data - Fixed-line											
		Fixed access lines (thousands)			5,493	4,962	4,924	4,844	4,821	4,726	(2.5%)
		Revenue per fixed access line	ZAR		3,859	4,287	4,722	4,987	5,169	5,236	5.2%
		Total fixed-line traffic (millions of minutes)				32,863	33,084	32,868	32,942	31,706	(0.7%)
		Fixed-line employees				43,758	39,444	35,361	32,358	28,972	(7.9%)
		Fixed lines per fixed-line employee				110	121	133	145	163	8.2%
		Revenue per employee	ZAR			602	706	835	955	1,084	12.5%

Firm Analysis											
Country	:	**South Africa**									
Company	:	**Vodacom**									
Focus	:	**Mobile**									
Ownership	:	**Private and State-Owned**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In ZAR millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	ZAR		9,534	13,092	15,410	18,544	21,981		18.2%
		- Revenue growth (%)				37%	18%	20%	19%		
		Operating expenditure	ZAR		6,072	8,902	9,843	12,121	14,445		18.9%
		EBITDA	ZAR		3,462	4,190	5,567	6,423	7,536		16.8%
		- EBITDA growth (%)				21%	33%	15%	17%		
		Operating Profit	ZAR								
		Profit before tax	ZAR								
		Net Profit	ZAR								
		Capex	ZAR								
Cash Flow Data											
		Cash flow from operating activities	ZAR								
		Cash flow used in investing activities	ZAR								
		Cash flow from/(used in) financing activities	ZAR								
		Capital expenditure excluding intangibles	ZAR								
		Operating free cash flow	ZAR								
Financial Ratio											
		EBITDA margins (%)		-	36%	32%	36%	35%	34%		(1.1%)
		Operating profit margins (%)									
		Net profit margin (%)		-	14%	10%	15%	-	-		3.7%
		Capital expenditure to revenue (%)									
		Return on assets (%)		-	14%	11%	18%	-	-		9.8%
		Asset Turnover		-	99%	114%	117%	-	-		5.8%
Operational Data - Mobile											
		Mobile customers (thousands)									
		Mobile market share - Subscribers (%)		60%	59%	61%	60%	57%	54%		(1.7%)
		Total mobile traffic (millions of minutes)		-	5,256	7,579	8,896	10,172	12,300		18.5%
		Mobile ARPU	ZAR	-	266	208	182	183	177		(7.8%)
		Mobile employees		3,446	4,048	4,102	3,859	3,904	3,848		1.9%
		Mobile customers per mobile employee		454	625	997	1,511	1,848	2,287		30.9%
		Revenue per employee		-	2,355	3,192	3,993	4,750	5,712		19.4%

Firm Analysis											
Country	:	**South Africa**									
Company	:	**MTN SA**									
Focus	:	**Mobile**									
Ownership	:	**Public**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In XXX millions, except with otherwise indicated)							*%*
Key Financial Data											
		Revenue	ZAR	4,388	5,797	7,870	9,982	12,298	15,098		22.9%
		- Revenue growth (%)			32%	36%	27%	23%	23%		
		Operating expenditure	ZAR	3,218	3,807	5,199	6,791	8,909	10,584		21.9%
		EBITDA	ZAR	1,170	1,990	2,671	3,191	3,389	4,514		25.2%
		- EBITDA growth (%)			70%	34%	19%	6%	33%		
		Operating Profit									
		Profit before tax									
		Net Profit	ZAR	376	615	1,194	1,451	1,485	2,245		34.7%
		Capex	ZAR	3,732	5,046	6,787	7,102	7,934	9,004		15.8%
		Employees									
Cash Flow Data											
		Cash flow from operating activities	ZAR								
		Cash flow used in investing activities	ZAR								
		Cash flow from/(used in) financing activities	ZAR								
		Capital expenditure excluding intangibles	ZAR								
		Operating free cash flow	ZAR								
Financial Ratio											
		EBITDA margins (%)		27%	34%	34%	32%	28%	30%		1.9%
		Operating profit margins (%)									
		Net profit margin (%)		9%	11%	15%	15%	12%	15%		9.6%
		Capital expenditure to revenue (%)									
		Return on assets (%)		-	11%	16%	20%	8%	0%		
		Asset Turnover		-	104%	109%	135%	68%	0%		
Operational Data - Mobile											
		Mobile customers (thousands)		1,070	2,160	3,214	3,877	4,723	6,270	8,000	34.3%
		Mobile market share - Subscribers (%)		41%	49%	49%	42%	38%	36%		
		Total mobile traffic (millions of minutes)		2,786	4,283	5,546	7,148	8,462	10,223		24.2%
		Mobile ARPU	ZAR	378	302	229	208	206	203	184	(9.8%)
		Mobile employees		947	2,225	2,561	2,442	2,442	2,442		17.1%
		Mobile customers per mobile employee		908	726	1,049	1,452	1,761	2,251		16.3%
		Revenue per employee	ZAR	4,634	2,605	3,073	4,088	5,036	6,183		4.9%

Firm Analysis											
Country	:	**Turkey**									
Company	:	**Turkcell**									
Focus	:	**Mobile**									
Ownership	:	**Public**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In US$ millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	US$	1,457.0	2,063.9	1,702.2	1,973.9	2,219.2	3,200.8		14.0%
		- Revenue growth (%)			41.7%	(17.5%)	16.0%	12.4%	44.2%		1.2%
		Operating expenditure	US$	679.4	1,197	1,174	1,366.9	1,613.2	2,001.2		19.7%
		EBITDA	US$	644.9	822.4	503.4	761.3	643.0	1,338.8		12.9%
		- EBITDA growth (%)			27.5%	(38.8%)	51.2%	(15.5%)	108.2%		31.5%
		Operating Profit	US$	574.0	425.6	217.2	278.9	174.3	713.0		3.7%
		Profit/(Loss) before tax	US$	360.8	271.6	(195.6)	47.4	(262.1)	793.2		14.0%
		Net Profit/(Loss)	US$	369.1	227.9	(186.8)	47.4	215.2	511.8		5.6%
		Capex	US$	973.5	976.8	108.3	71.2	172.9	486.7		(10.9%)
Cash Flow Data											
		Cash flow from operating activities	US$	389.6	348.0	288.7	608.8	1,041.3	603.9		7.6%
		Cash flow used in investing activities	US$	(984.4)	(981.5)	(159.9)	(141.9)	(198.9)	(542.3)		(9.5%)
		Cash flow from/(used in) financing activities	US$	749.6	748.2	(249.0)	(315.9)	(653.8)	119.5		(26.4%)
		Cash and cash equivalents at the end of period	US$	248.7	363.4	243.1	394.1	582.7	763.8		20.6%
Financial Ratio											
		EBITDA margins (%)		44.3%	39.8%	29.6%	38.6%	29.0%	41.8%		(0.9%)
		Operating profit margins (%)		39.4%	20.6%	12.8%	14.1%	7.9%	22.3%		(9.1%)
		Net profit margin (%)		25.3%	11.0%	(11.0%)	2.4%	9.7%	16.0%		(7.4%)
		Capital expenditure to revenue (%)		66.8%	47.3%	6.4%	3.6%	7.8%	15.2%		(21.9%)
		Return on assets (%)									
		Asset Turnover									
Operational Data - Mobile											
		Mobile customers (millions)	US$	5.5	10.1	12.2	15.7	19.0	23.4		27.4%
		Mobile market share (%)									
		Total mobile traffic (millions of minutes)	US$				884.0	1,111.5	1,518.7		19.8%
		Monthly average minutes per user					56.2	58.5	64.9		4.9%
		Mobile ARPU (per month)	US$	32.2	21.3	12.6	11.7	10.6	12.3		(14.8%)
		Mobile employees		1,909	2,523	2,241	2,163	2,148	2,440		4.2%
		Revenue per employees	US$	763	818	760	913	1,033	1,312		9.4%
		Mobile customers per mobile employee		2,860	3,991	5,457	7,272	8,845	9,590		22.3%

Firm Analysis											
Country	:	**Spain**									
Company	:	**Telefonica S.A**									
Focus	:	**Fixed-Mobile**									
Ownership	:	**Public**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In Euros millions, except where otherwise indicated)							%
Key Financial Data											
		Revenue	€	22,957.0	28,484.9	31,052.6	28,411.3	28,399.8	30,321.9		4.7%
		- Revenue growth		31.4%	24.1%	9.0%	-8.5%	0.0%	6.8%		(22.6%)
		Operating expenditure	€								
		EBITDA	€	10,885.4	11,918.2	12,804.3	11,724.2	12,602.1	13,215.4		3.3%
		- EBITDA growth		17.6%	9.5%	7.4%	-8.4%	7.5%	4.9%		(19.3%)
		Operating Profit	€								
		Profit/(Loss) before tax	€								
		Net Profit/(Loss)	€	1,804.7	2,504.7	2,106.8	(5,576.8)	2,203.6	2,877.3		8.1%
		Capex	€								
Cash Flow Data											
		Cash flow from operating activities	€								
		Cash flow used in investing activities	€								
		Cash flow from/(used in) financing activities	€								
		Cash and cash equivalents at the end of period	€								
Financial Ratio											
		EBITDA margins (%)		47.4%	41.8%	41.2%	41.3%	44.4%	43.6%		(1.4%)
		Operating profit margins (%)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
		Net profit margin (%)		7.9%	8.8%	6.8%	(19.6%)	7.8%	9.5%		3.2%
		Capital expenditure to revenue (%)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
		Return on assets (%)									
		Asset Turnover									
Operational Data - Fixed-line											
		Fixed access lines (thousands)		40,199.1	42,263.5	44,955.8	43,145.4	41,128.4	43,249.5		1.2%
		Revenue per fixed access line	€								
		Total fixed-line traffic (millions of minutes)									
		Fixed-line employees									
		Fixed lines per fixed-line employee									
Operational Data - Mobile											
		Mobile customers (thousands)		19,581.1	24,919.0	32,255.6	43,943.3	51,848.6	74,442.5		24.9%
		Mobile market share (%)									
		Total mobile traffic (millions of minutes)									
		Mobile ARPU (local currency)	€								
		Mobile employees									
		Mobile customers per mobile employee									
Operational Data - Combined											
		Total customers		59,780.20	67,182.50	77,211.40	87,088.70	92,977.00	117,692.00		
		Total Employees (Thousands)		118,778	148,707	161,526	152,845	148,288	173,554		6.5%
		Total revenue per employee	€	193	192	192	186	192	175		(1.7%)
		Toal customers per employee		503	452	478	570	627	678		5.1%

Firm Analysis											
Country	:	**Germany**									
Company	:	**Deutsche Telekom Group**									
Focus	:	**Fixed-Mobile**									
Ownership	:	**Public and State-owned**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In Euro billions, except where otherwise indicated)							%
Key Financial Data											
		Revenue	€	35.5	40.9	48.3	53.7	55.8	57.9		8.5%
		- Revenue growth		1.1%	15.2%	18.1%	11.2%	3.9%	3.8%		22.0%
		Operating expenditure	€								
		EBITDA	€	14.5	20.7	18.1	16.1	18.5	22.3		7.4%
		- EBITDA growth			42.8%	-12.6%	-11.0%	14.9%	20.5%		(13.6%)
		Operating Profit	€								
		Profit/(Loss) before tax	€								
		Net Profit/(Loss)	€								
		Capex	€								
Cash Flow Data											
		Cash flow from operating activities	€	9.6	10.0	11.9	12.5	14.3	16.3		9.2%
		Cash flow used in investing activities	€	(18.7)	(27.7)	(5.4)	(10.0)	(2.1)	(4.3)		(21.7%)
		Cash flow from/(used in) financing activities	€	8.0	17.9	(4.8)	(3.4)	(5.2)	(12.7)		#NUM!
		Cash and cash equivalents at the end of period	€								
Financial Ratio											
		EBITDA margins (%)			31.6	31.3	30.4	32.8	33.5		1.2%
		Operating profit margins (%)									
		Net profit margin (%)									
		Capital expenditure to revenue (%)									
		Return on assets (%)									
		Asset Turnover									
Operational Data - Fixed-line											
		Fixed access lines (thousands)									
		Revenue per fixed access line									
		Total fixed-line traffic (millions of minutes)									
		Fixed-line employees									
		Fixed lines per fixed-line employee									
Operational Data - Mobile											
		Mobile customers (thousands)									
		Mobile market share (%)									
		Total mobile traffic (millions of minutes)									
		Mobile ARPU (local currency)									
		Mobile employees									
		Mobile customers per mobile employee									
Operational Data - Combined											
		Total Employees		196	205	242	256	251	248		4.0%
		Revenue per employee		181	200	200	210	222	233		4.3%

Firm Analysis											
Country	:	**France**									
Company	:	**France Telecom**									
Focus	:	**Fixed-Mobile**									
Ownership	:	**Public and State-owned**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In Euro millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	€	27,233	33,674	43,026	46,630	46,121	47,157		9.6%
		- Revenue growth (%)			23.7%	27.8%	8.4%	-1.1%	2.2%		(37.6%)
		Operating expenditure	€								
		EBITDA	€	9,613	10,807	12,320	14,917	17,303	18,261		11.3%
		- EBITDA growth (%)			12.4%	14.0%	21.1%	16.0%	5.5%		(14.9%)
		Operating Profit	€	4,490	4,856	5,200	6,808	9,554	10,824		15.8%
		Profit/(Loss) before tax	€								
		Net Profit/(Loss)	€	2,768	3,660	(8,280)	(20,736.0)	3,206	2,784		0.1%
		Capex	€								
Cash Flow Data											
		Cash flow from operating activities	€	8,109	6,613	7,076	11,839	11,322	12,818		7.9%
		Cash flow used in investing activities	€	(6,647)	(46,888)	(10,824)	(11,514)	(3,737)	(5,564)		(2.9%)
		Cash flow from/(used in) financing activities	€	(1,106)	39,910	4,726	(194)	(6,868)	(7,423)		37.3%
		Cash and cash equivalents at the end of period	€	2,424	2,040	2,943	2,819	3,350	3,203		4.8%
Financial Ratio											
		EBITDA margins (%)		35.3%	32.1%	28.6%	32.0%	37.5%	38.7%		1.6%
		Operating profit margins (%)		16.5%	14.4%	12.1%	14.6%	20.7%	23.0%		5.7%
		Net profit margin (%)		10.2%	10.9%	(19.2%)	(44.5%)	7.0%	5.9%		(8.7%)
		Capital expenditure to revenue (%)									
		Return on assets (%)									
		Asset Turnover									
Operational Data - Fixed-line											
		Fixed access lines (thousands)					49,467	49,265	49,701		0.2%
		Revenue per fixed access line	€				943	936	949		0.2%
		Total fixed-line traffic (millions of minutes)									
		Fixed-line employees									
		Fixed-lines per fixed-line employee									
Operational Data - Mobile											
		Mobile customers (thousands)					49,880	56,167	63,316		8.3%
		Mobile market share (%)									
		Total mobile traffic (millions of minutes)									
		Mobile ARPU (local currency)	€								
		Mobile employees									
		Mobile customers per mobile employee									
Operational Data - Combined											
		Total Customers					99,347	105,432	113,017		
		Total Employees					206,524	218,523	243,573		5.7%
		Revenue per employee	€				226	211	194		(5.0%)

Firm Analysis											
Country	:	**United Kingdom**									
Company	:	**Vodafone**									
Focus	:	**Mobile**									
Ownership	:	**Public**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In British Pound millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	£	3,360	7,873	15,004	22,845	30,375	33,559	34,133	39.3%
		- Revenue growth (%)			134%	91%	52%	33%	10%	2%	
		Operating expenditure	£								
		EBITDA	£	1,218	3,375	6,955	10,093	12,679	15,846	15,101	43.3%
		- EBITDA growth (%)			177%	106%	45%	26%	25%	-5%	
		Operating Profit	£	972	2,538	5,204	7,044	9,181	10,749	10,904	41.3%
		Profit before tax	£	935	1,351	(8,086)	(13,539)	(6,208)	(5,047)	(4,702)	(226.0%)
		Net Profit	£	640	719	(9,512)	(15,679)	(9,164)	(8,201)	(6,938)	(240.6%)
		Capex	£								
Cash Flow Data											
		Cash flow from operating activities	£	1,045	2,510	4,587	8,102	11,142	12,317	12,713	42.9%
		Cash flow used in investing activities	£			(18,988)	(4,441)	(4,267)	(4,267)	(4,768)	(24.1%)
		Cash flow from/(used in) financing activities	£			(13,278)	2,365	8,521	8,521	7,847	(190.0%)
		Cash and cash equivalents at the end of period									
Financial Ratio											
		EBITDA margins (%)		36.3%	42.9%	46.4%	44.2%	41.7%	47.2%	44.2%	2.9%
		Operating profit margins (%)		28.9%	32.2%	34.7%	30.8%	30.2%	32.0%	31.9%	1.4%
		Net profit margin (%)		19.0%	9.1%	(63.4%)	(68.6%)	(30.2%)	(24.4%)	(20.3%)	(200.9%)
		Capital expenditure to revenue (%)									
		Return on assets (%)									
		Asset Turnover									
Operational Data - Mobile											
		Mobile customers (millions)		10.455	39.139	82.997	101.136	119.709	133.400	154.800	47.0%
		Mobile market share (%)									
		Total mobile traffic (millions of minutes)									
		Mobile ARPU	£								
		Mobile employees									
		Mobile customers per mobile employee									

Firm Analysis											
Country	:	**United Kingdom**									
Company	:	**British Telecoms**									
Focus	:	**Fixed**									
Ownership	:	**Public-State Owned**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In British Pound millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	£	18,223	21,903	29,666	24,642	20,182	18,914	19,031	(2.3%)
		- Revenue growth (%)			20%	35%	-17%	-18%	-6%	1%	(44.1%)
		Operating expenditure	£	13,305	15,359	20,764	21,387	16,366	15,826	16,005	0.7%
		EBITDA	£			6,315	5,982	5,809	5,813	5,704	(2.0%)
		- EBITDA growth (%)					-5%	-3%	0%	-2%	
		Operating Profit	£	3,463	3,172	(375)	(1,847)	2,905	2,836	2,764	(2.3%)
		Profit before tax	£	4,295	2,942	(1,036)	1,474	3,173	1,945	2,343	(3.7%)
		Net Profit	£	2,953	1,995	(1,875)	1,008	2,702	1,414	1,821	(11.6%)
		Capex	£					2,445	2,673	3,011	
Cash Flow Data											
		Free cash flow	£					1,708	2,071	2,282	10.1%
Financial Ratio											
		EBITDA margins (%)				21%	24%	29%	31%	30%	7.1%
		Operating profit margins (%)									
		Net profit margin (%)									
		Capital expenditure to revenue (%)									
		Return on assets (%)									
		Asset Turnover									
Operational Data - Fixed-line											
		Fixed access lines (thousands)		28,049	28,580	28,966	29,221	29,646	29,998	30,567	1.1%
		Revenue per fixed access line		649.7	766.4	1,024.2	843.3	680.8	630.5	622.6	(3.4%)
		Total fixed-line traffic (millions of minutes)									
		Growth/(decline) in call volumes (minutes) (%)		6.0%	12.0%	18.0%	19.0%	13.0%	2.0%	-18.0%	(16.7%)
		Fixed-line employees (thousands)		124.7	136.8	137.0	108.6	104.7	99.9	102.1	(3.6%)
		Fixed lines per fixed-line employee		225	209	211	269	283	300	299	4.9%

Firm Analysis											
Country	:	**United States of America**									
Company	:	**AT&T / SBC**									
Focus	:	**Fixed-Mobile**									
Ownership	:	**Public**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In US Dollar millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	US$	49,609	46,850	42,197	37,827	34,529	40,787		**-3.21%**
		- Revenue growth (%)			(5.6%)	(9.9%)	(10.4%)	(8.7%)	18.1%		**-226.65%**
		Operating expenditure	US$					34,214	34,886		
		EBITDA	US$								
		- EBITDA growth (%)									
		Operating Profit	US$	12,544	12,793	7,832	4,361	3,657	5,901		**-11.81%**
		Profit before tax	US$						7,165		
		Net Profit	US$						5,887		
		Capex	US$								
Cash Flow Data											
		Cash flow from operating activities	US$					13,357	10,955		
		Cash flow used in investing activities	US$					(3,105)	(20,747)		
		Cash flow from/(used in) financing activities	US$					(9,173)	4,605		
		Cash and cash equivalents at the end of period	US$					4,806	760		
Financial Ratio											
		EBITDA margins (%)									
		Operating profit margins (%)		25.3%	27.3%	18.6%	11.5%	10.6%	14.5%		**-8.89%**
		Net profit margin (%)									
		Capital expenditure to revenue (%)									
		Return on assets (%)									
		Asset Turnover									
Operational Data - Fixed-line											
		Fixed access lines (thousands)									
		Revenue per fixed access line	US$								
		Total fixed-line traffic (millions of minutes)									
		Fixed-line employees		96.5	84.8	77.7	71.0	61.6			
		Fixed lines per fixed-line employee							162		
Operational Data - Mobile											
		Mobile customers (thousands)									
		Mobile market share (%)									
		Total mobile traffic (millions of minutes)									
		Mobile ARPU	US$						50.69	53.24	
		Mobile employees									
		Mobile customers per mobile employee									

Firm Analysis											
Country	:	**PanAfrican Operator**									
Company	:	**Celtel**									
Focus	:	**Mobile**									
Ownership	:	**Private**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In US Dollar millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	US$	19	58	152	314	446			87.2%
		- Revenue growth (%)			200%	161%	107%	42%			(32.3%)
		Operating expenditure	US$	35	75	126	234	295			53.0%
		EBITDA	US$	(16)	(17)	26	80	151			(257.2%)
		- EBITDA growth (%)			6%	-253%	212%	89%			94.7%
		Operating Profit	US$								
		Profit before tax	US$								
		Net Profit	US$	(1)	(40)	(38)	(24)	74			(318.9%)
		Capex	US$	37	104	82	73	105			22.9%
Cash Flow Data											
		Cash flow from operating activities	US$								
		Cash flow used in investing activities	US$								
		Cash flow from/(used in) financing activities	US$								
		Cash and cash equivalents at the end of period	US$								
Financial Ratio											
		EBITDA margins (%)		-81.2%	-28.8%	16.9%	25.5%	33.9%			(183.9%)
		Operating profit margins (%)									
		Net profit margin (%)		-7.6%	-69.0%	-24.9%	-7.6%	16.6%			(216.9%)
		Capital expenditure to revenue (%)									
		Return on assets (%)		-1.2%	-14.1%	-8.3%	-4.9%				42.6%
		Asset Turnover		15.6%	20.5%	33.1%	64.3%				42.6%
Operational Data - Mobile											
		Mobile customers (thousands)				500.0	1,000.0	1,700.0			
		Mobile market share (%)									
		Total mobile traffic (millions of minutes)									
		Mobile ARPU	US$	39	41	35	27	19			(13.5%)
		Mobile employees		336	910	1,400	1,300	1,300			31.1%
		Revenue per employee	US$	57.72	63.87	108.44	241.54	343.08			42.8%
		Mobile customers per mobile employee		122	131	256	738	1,499			65.1%

Firm Analysis											
Country	:	**PanAfrican Operator**									
Company	:	**Orascom**									
Focus	:	**Mobile**									
Ownership	:	**Private**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In Egyptian Lira millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	LE				4,064.07	6,476.0	12,502.0		45.4%
		- Revenue growth (%)									
		Operating expenditure	LE					1,603.0	3,007.5		
		EBITDA	LE				1,519.1	2,863.9	6,350.7		61.1%
		- EBITDA growth (%)						108.0%	122.0%		
		Operating Profit	LE								
		Profit before tax	LE				1,205.7	1,446.6	3,781.4		46.4%
		Net Profit	LE				1,086.1	1,153.1	2,980.4		40.0%
		Capex	LE					4.2	6.7		
Cash Flow Data											
		Cash flow from operating activities	LE					5,933.9	981.2		
		Cash flow used in investing activities	LE					(6,223.0)	(1,467.7)		
		Cash flow from/(used in) financing activities	LE					3,026.7	1,140.4		
		Cash and cash equivalents at the end of period	LE					3,977.8	1,240.3		
Financial Ratio											
		EBITDA margins (%)					37.4%	44.2%	50.8%		10.8%
		Operating profit margins (%)					29.7%	22.3%	30.2%		0.6%
		Net profit margin (%)					26.7%	17.8%	23.8%		(3.7%)
		Capital expenditure to revenue (%)									
		Return on assets (%)									
		Asset Turnover									
Operational Data - Mobile											
		Mobile customers (thousands)					4,343.3	7,660.2	14,499.8		49.5%
		Mobile market share (%)									
		- Alegeria (Djezzy)						88.9	73.0		
		- Pakistan (MobiLink)						61.0	63.8		
		- Egypt (MoboNil)						52.7	53.5		
		- Iraq (Iraqna)						100.0	100.0		
		- Tunisia (Tunisiana)						27.0	29.4		
		- Congo Brazzaville (Libertis)						36.9	36.8		
		- Bangladesh (Banglalink)							1.0		
		- Zimbabwe (Tel Zim)							31.0		
		- Democratic Republic of Congo (Oasis Telecom)							5.1		
		Total mobile traffic (millions of minutes)									
		Mobile ARPU									
		- Alegeria (Djezzy)	US$				44.0	29.6	25.2		
		- Pakistan (MobiLink)	US$				16.5	13.9	11.6		
		- Egypt (MoboNil)	US$				19.0	16.8	15.8		
		- Iraq (Iraqna)	US$					-	45.0		
		- Tunisia (Tunisiana)	US$					26.6	22.3		
		- Congo Brazzaville (Libertis)	US$				28.8	30.0	21.3		
		- Bangladesh (Banglalink)	US$								
		- Zimbabwe (Tel Zim)	US$								
		- Democratic Republic of Congo (Oasis Telecom)	US$								
		Mobile employees									
		Mobile customers per mobile employee									
Company	:	**MTN Group**									
Focus	:	**Mobile**									

Firm Analysis											
Country	:	**PanAfrican Operator**									
Ownership	:	**Public**									
Source	:	**Annual Reports**									
		Years	**Currency**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**CAGR**
				(In US Dollar millions, except where otherwise indicated)							*%*
Key Financial Data											
		Revenue	US$	721.0	853.3	956.1	1,172.3	1,986.6	3,390.8		29.4%
		Revenue	ZAR	4,410.4	5,928.0	8,247.1	12,331.0	19,270.0	23,871.0		32.5%
		- Revenue growth (%)			34.4%	39.1%	49.5%	56.3%	23.9%		(7.0%)
		Operating expenditure	US$	529.7	563.4	633.3	827.2	1,344.2	2,136.9		26.2%
		EBITDA	US$	191.3	289.9	322.8	345.1	642.4	1,253.8		36.8%
		- EBITDA growth (%)			51.6%	11.4%	6.9%	86.1%	95.2%		13.0%
		Operating Profit									
		Profit before tax									
		Net Profit	US$	21.9	84.7	130.4	112.6	212.6	580.4		72.7%
		Capex	US$	290.9	217.9	254.5	318.2	436.6	717.0		16.2%
Cash Flow Data											
		Cash flow from operating activities	US$								
		Cash flow used in investing activities	US$								
		Cash flow from/(used in) financing activities	US$								
		Cash and cash equivalents at the end of period	US$								
Financial Ratio											
		EBITDA margins (%)		26.5%	34.0%	33.8%	29.4%	32.3%	37.0%		5.7%
		Operating profit margins (%)									
		Net profit margin (%)		3.0%	9.9%	13.6%	9.6%	10.7%	17.1%		33.4%
		Capital expenditure to revenue (%)		40.4%	25.5%	26.6%	27.1%	22.0%	21.1%		(10.2%)
		Return on assets (%)		2.9%	9.3%	5.1%	4.3%	7.3%	12.8%		27.9%
		Asset Turnover		96.2%	94.0%	37.2%	45.0%	68.4%	74.6%		(4.2%)
Operational Data - Mobile											
		Mobile customers (thousands)		1,070	2,308	3,502	4,774	6,727	9,543		44.0%
		Mobile market share (%)									
		Total mobile traffic (millions of minutes)									
		Mobile ARPU	US$	69.9	42.1	27.4	23.6	28.8	34.7		(11.0%)
		Mobile employees		947	2,562	3,072	4,020	4,200	4,300		28.7%
		Mobile customers per mobile employee		908	659	946	1,029	1,369	1,892		13.0%
		Revenue per employee	US$	761	333	311	292	473	789		0.6%
		Revenue per employee	ZAR	4,657	2,314	2,685	3,067	4,588	5,551		3.0%