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Processes for regulating interconnection rates in India and South Africa

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PROCESSES FOR REGULATING INTERCONNECTION RATES IN INDIA AND SOUTH AFRICA

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A research report submitted to the Faculty of Commerce and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management (in the field of Information and Communications Technology, Policy and Regulation).

November 2011

ABSTRACT

South Africa's high telecommunication costs are attributed partly to high interconnection rates. High costs negatively impact developmental objectives. This paper analyses the processes engaged in by ICASA in regulating interconnection rates, using a qualitative case study methodology. Enabling legislation, regulatory administration and rules and the bringing to bear of regulatory rules on institutions are stages of regulatory processes that are examined. Perspectives are taken from processes executed by TRAI, India's regulatory authority. South Africa followed a market review process which contrasts with India's cost-based process. South Africa's process although arduous did not achieve the desired result of establishing cost based rates. The root cause is attributed to a combination of factors that include an onerous market review process prescribed by the ECA, institutional problems at ICASA and a politically driven process that ran alongside and engulfed the process managed by ICASA. India's process meanwhile has yielded some of the cheapest telecoms retail rates in the world. Gaps exist between processes in the two countries and lessons learnt provide an improved understanding of South African shortcomings.

DECLARATION

I declare that this report is my own, unaided work. It is submitted in partial fulfilment of the requirements of the degree of Master of Management (in the field of ICT, PR). It has not been submitted before for any degree or examination in any other University.



Sagadhevan Chetty

2011-11-11

Date

DEDICATION

This research report is dedicated to my parents Sarojini and Kanabathy Chetty who instilled in us the importance of education and encouraged us when we faltered.

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LIST OF ABBREVIATIONS

No	Abbreviation	Meaning
1	ADSL	Asymmetric Digital Subscriber Line
2	3D	Three Dimensional
3	3G	Third Generation
4	ADC	Access Deficit Charge
5	AIDS	Acquired Immune Deficiency Syndrome
6	ARPU	Average Revenue Per User
7	AT&T	American Telephone and Telegraph Company
8	ATT	Advanced Transport Telematics
9	BSNL	Bharat Sanchar Nigam Limited
10	CCC	Complaints and Compliance Committee
11	CEO	Chief Executive Officer
12	COA/CAM	Chart of Accounts and Cost Allocation Manual
13	CODESA	Convention for a Democratic South Africa
14	COSATU	Congress of South African Trade Unions
15	CPI	Consumer Price Index
16	CPP	Calling Party Pays
17	CRS	Computerised Reservation System
18	CUASA	Communications User Association of South Africa
19	DD	Discussion Document
20	DOC	Department of Communications
21	DOT	Department of Telecommunications
22	EASSy	The Eastern Africa Submarine Cable System
23	EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
24	ECA	Electronic Communications Act
25	ECN	Electronic Communications Network
26	ECNS	Electronic Communications Network Services
27	ECPR	Efficient Component Pricing Rule
28	EU	European Union
29	FAC	Fully Allocated Costs
30	FCC	Federal Communications Commission
31	FTC	Fixed Termination Charge
32	GDP	Gross Domestic Product
33	GG	Government Gazette
34	GIS	Geographic Information Systems
35	GNI	Gross National Income
36	HHI	Herfindahl-Hirschmann Index
37	IBA	Independent Broadcasting Authority
38	ICASA	Independent Communications Authority of South Africa

No	Abbreviation	Meaning
39	ICT	Information and Communication Technology
40	IIT	Indian Institutes of Technology
41	IP	Internet Protocol
42	IPO	Initial Public Offering
43	IR	Independent Regulator
44	ISP	Internet Service Provider
45	ITU	International Telecommunication Union
46	ITU-D	International Telecommunication Union-Development
47	IUC	Interconnection Usage Charge
48	LCD	Liquid Crystal Display
49	LLU	Local Loop Unbundling
50	LMS	Land Management Systems
51	LRIC	Long Run Incremental Costs
52	Mbyte	Mega-byte
53	MRTP	Monopolies and Restrictive Trade Practices
54	MTNL	Mahanagar Telephone Nigam Limited
55	NRA	National Regulatory Authority
56	NTP	New Telecom Policy
57	OECD	Organisation for Economic Co-operation and Development
58	OFCOM	Office of Communications
59	OFTEL	Office of Telecommunications
60	PAJA	Promotion of Administrative Justice Act
61	PPC	Parliamentary Portfolio Committee
62	PSTN	Public Switched Telephone Network
63	QOS	Quality of Service
64	RIO	Reference Interconnection Offer
65	SABC	South African Broadcasting Corporation
66	SADC	Southern African Development Community
67	SATRA	South Africa Telecommunication Regulatory Authority
68	SC	Senior Council
69	SDCA	Short Distance Charging Area
70	SKA	Sender Keeps All
71	SME	Small and Medium Enterprises
72	SMP	Significant Market Power
73	SMS	Short Message Service
74	SSNIP	Small but Significant Non-transitory Increase in Price
75	TAX	Trunk Automatic Exchange
76	TDSAT	Telecom Dispute Settlement and Appellate Tribunal
77	TELRIC	Total Element Long Run Incremental Costs
78	TRAI	Telecom Regulatory Authority of India
79	TSLRIC	Total Service Long Run Incremental Costs

No	Abbreviation	Meaning
80	URL	Uniform Resource Locator
81	USA	United States of America
82	USO	Universal Service Obligation
83	VAT	Value Added Tax
84	VSNL	Videsh Sanchar Nigam Limited
85	WACS	West Africa Cable System
86	WTO	World Trade Organisation
87	ZAR	South African Rand

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CHAPTER 1

BACKGROUND TO THE RESEARCH PROBLEM

> "In a global economy where the most valuable skill you can sell is your knowledge..." (Obama, 2009).

1.1 Affordable telecommunications access is a developmental issue

This research report focuses broadly on telecommunications pricing but more specifically on processes engaged in by the South African telecommunications regulatory authority in regulating interconnection or call termination rates. The report explores processes for regulating call termination rates in South Africa and gives perspectives of similar processes in India. Telecoms access and affordability is influenced by policy and regulatory processes and decision making. Cardilli and Spiller confirm that "policy decisions concerning telecommunications deregulation do affect competitive outcomes" (Cardilli and Spiller, 1997, p.137).

Accordingly, the impact of policy and regulatory processes and decisions are experienced in the way information and communications technologies (ICTs) are utilized for socio-economic development. We live in a global economy that is characterised by information flows and that is organised through a "network of linkages by economic agents, leading to a networked, deeply interdependent economy" (Castells, 1996, p. 66-67). In a similar vein, the metaphor of a flattened world is used to describe how knowledge pools and resources have linked up throughout the globalized world in the 21st century; where Indian call centres can service clients in the United States and Chinese workers can collaborate with workers in other countries as if they were in offices next door. Telecoms policy changes increased competition and enabled telecommunications companies to spend $1 trillion in wiring the world (Friedman, 2005). The laying of the global optical fibre highways flattened the world and allowed the "breakdown of global regionalism thus creating a more seamless global commercial network" (Friedman, 2005, p. 67-69).

ICTs can be used in developing countries for sustainable development in the area of public administration by making information available to firms and households. Mansell points out how kiosks can serve as electronic delivery points for access to government benefits such as pensions and grants (Mansell, 1998, p. 82). Information can also be made accessible to small and medium enterprises (SMEs) for administrative procedures for export and import, for tax filings, value added tax claims (VAT) and for other business opportunities (Mansell, 1998, p. 82). ICTs are used by local government authorities for urban and rural development programs by making available databases, drawing facilities, simulation and modelling tools for decision making for planning, management and development processes. Mansell adds that in the transport sector, “advanced transport telematics (ATT) is used for improved road safety, increasing transport efficiencies, solving environmental problems related to congestion, pollution and resource consumption” (Mansell, 1998, p. 88).

In health care, scarce resources are used more efficiently by using ICT systems to exchange important patient data between health care professionals. Tele-medicine can provide support to people in remote locations, during emergencies or in their homes. Tele-radiology is used to store, retrieve and transmit medical images, thus enabling distant specialists to make remote diagnostics which is extremely important for developing economies. Furthermore, ICT applications used by the disabled and elderly can “increase opportunities for independent living” (Mansell, 1998, p. 88). For example, innovative applications can assist with “interpersonal communication, mobility, computerised braille and acoustical displays” (Mansell, 1998, p. 89). Other examples cited include “smart homes, multimedia medical files, graphical user interfaces, computerised drug prescription systems, smart prostheses, networks of organ donor banks, more accessible telecommunications terminals, biological signals, personal communicators, tele-diagnosis systems, alarm systems, remote expert consultation, and intensive care networks” (Mansell, 1998, p. 90).

Mansell expands that in the environmental field, the use of ICTs has improved accessibility to information for households, firms, and local and national governments (Mansell, 1998). Information flow for general environmental issues and emergencies

is critical for the efficient management of the environment. ICT applications help collate environmental information in a form that can be used for particular users and can be made available through mobile services (Mansell, 1998, p.94). Applications such as geographical information systems (GIS), air and water quality monitoring systems, multi-media public information kiosks, emergency warning and management systems for floods, forest fires and industrial risks, amongst others, are ICT applications increasingly used in the environmental field (Mansell, 1998, p. 94).

Sustainable growth for developing countries relies also on the efficient use of resources for food production. Farmers require information on planting date selection, efficient use of water resources, pest and disease monitoring, and harvest management (Mansell, 1998, p. 94). The use of this information is facilitated by expert ICT systems. Agriculturists also need access to road infrastructure information and markets. At the land resources planning and administration levels, information is required about markets, land usage, over production and under production, food movements, import and export pricing, and tariffs and quotas. The use of Land Management Systems (LMS) that have databases that are spatially referenced are being increasingly used for this type of information and this is disseminated to agriculturists, industry and local and national governments through ICT systems (Mansell, 1998, p. 94). Sheep farmers in the remote Welsh countryside find advice and guidance for various farming related activities using home asymmetric digital subscriber lines (ADSL) connecting to the internet. Farmers can diagnose and treat certain sheep ailments without the immediate need for veterinary doctors especially when weather does not permit. Other assistance could be found during lambing season (P. Smolas, personal communication, 26th December 2010).

Despite all of these benefits, education and training is one of the key beneficiaries of the advancement in ICTs. Mansell describes the use of ICTs for educational purposes as a “paradigm shift due to a change in approach to education” (Mansell, 1998, p.94). In the past, the focus was on teaching and this has shifted to a focus on learning. It also recognised that people learn throughout their lives (Mansell, 1998, p.94).This emphasis on the learner means that a “tailored learner plan can be developed for individual learners” (Mansell, 1998, p. 94). The use of artificial intelligence, multi-media applications, smart-boards, high speed and WiFi networks,

video conferencing, computer conferencing, new programming languages such as Java, digital satellite radio, digital satellite and terrestrial television are all contributing to making this “paradigm shift in delivering education and training to people in urban and rural areas” (Mansell, 1998, p. 94).

ICT systems provide new tools for the dissemination of information that can be used to develop new products. Knowledge is the new factor of production in the 21st century and knowledge workers in developing countries can collaborate with researchers in the industrialised world to develop new marketable products through the use of work-flow software, e-mail, video conferencing, Skype, YouTube and internet browsing.

> *In developing countries however the technical networks supporting research activities have been developed piecemeal, resulting in a patchwork of technically diverse networks. A major challenge will be to create a regional research environment based on higher capacity networks which interconnect national networks and support state-of-the-art software based applications. (Mansell, 1998, p. 91).*

Social networks using applications such as Facebook, MySpace, Flickr, Twitter, Mixit and forms of blogging have changed the way that people communicate with each other and share information. Websites such as Wikileaks expose secret and confidential communications between high ranking government officials impacting on the fine balance of global détente on one hand and providing the public with rare insights into global politics on the other. Equally, communication through Facebook and Twitter in early 2011 is purported to having assisted protesters in organising themselves, leading to the toppling of so called dictatorships in the Arab world.

ICTs have a major impact on the business sector for planning, production and monitoring of business processes. In manufacturing, production processes are controlled by ICT systems. Entire supply chains are run across geographical boundaries by ICT applications. This allows countries that have comparative advantage in certain economic sectors to specialise. The ‘just-in-time’ based supply chain operations have become the norm in the 21st century business models of

production and supply. Systems are used for automation, planning and control and general business management.

Businesses across the world are implementing electronic commerce systems. “Electronic commerce is widely recognised as an essential pre-requisite for knowledge societies of the future” (Mansell, 1998, p. 94). Mansell (1998) suggests that developing countries that do not embrace this new electronic form of conducting business will lag behind similar countries that do (Mansell, 1998, p. 97). Internet banking and mobile banking applications have profoundly changed the way the people engage with banking institutions by allowing clients to conclude virtually all banking transactions without seeing the inside of a banking hall.

The tourism sector too can benefit from the advancement in ICT systems as well. “Frequent flyer programs, flexible holidays, electronic ticketing, video brochures, web sites for holiday destinations and travel agencies are some of the inroads made in the tourism industry” (Mansell, 1998, p. 94) Furthermore, since ICTs cuts out intermediaries, bookings can be made directly with service providers online. Computerised Reservation Systems (CRS) have reduced cost to an airline of making a reservation from $7.5 to just $0.5 (Mansell, 1998, p. 95).

1.2 Chapter layout and outline

Chapter 1 sets the policy and regulatory imperative for interconnection rate regulation. It explains why and how telecom is important for development and puts into perspective the interconnection issues in South Africa. Chapter 2 discusses the literature on regulatory processes for interconnection regulation and builds the conceptual framework for later analysis of the data that is gathered. The research methodology and methods are set out in chapter 3.

Chapter 4 and Chapter 5 show the themes that have emerged from the data gathered in South Africa and India respectively. This is followed by Chapter 6 where analysis of the data is carried out. The research report concludes in Chapter 7 with lessons learnt and recommendations.

1.3 South African telecommunications policy gives prominence to developmental imperatives

In 1996, the Minister for Posts, Telecommunications and Broadcasting, Mr Pallo Jordan presented a White Paper on Telecommunications Policy that set the tone for the reform of the telecoms sector in South Africa. The vision that was articulated coupled affordable telecoms access to the achievement of government's socio-economic goals. The concept of universal access for all citizens is a central theme of the White Paper but it also does not separate universal access from the provision of advanced technologies and services that will meet the requirements of modern era. To reconcile these seemingly contradictory objectives, the Paper suggests that this must be accomplished within an integrated framework, which allows for a "dynamic definition of universal service and facilitates the co-ordination of all available infrastructure behind this goal" (Republic of South Africa, 1996a). The White Paper further recognises other important roles that telecoms access will play for example in the advancement of critical sectors of health and education. Furthermore, the White Paper emphasises that telecoms access facilitates participation by citizens in democratic processes at all levels of government including community, local and at national levels. The White Paper affirms that telecoms is the "essential backbone for development and offers the only opportunity for leapfrogging its relatively slow sequential processes" (Republic of South Africa, 1996a).

Other policy directions given by the White Paper and pertinent to this research report include the establishment of an independent telecommunications regulatory authority whose "independence is necessary in order to ensure its impartiality" (Republic of South Africa, 1996a). The White Paper pays particular attention to the independence that is required of a regulatory body for the telecoms sector. Independence is further clarified in the White Paper to mean absence of undue influence by operators, government and other interested parties. The objectives of such a regulatory body would be to protect the interest of the public by ensuring that there is competition in the sector and to ensure that there is investment in the public telecoms networks. The functions of the regulatory body will be within the framework of the government's

competition policy though but will be specific in promoting competition in the telecoms sector.

The White Paper emphasises that affordable access to telecoms is important in supporting the implementation of government policy and the manner in which costs and quality of service is regulated therefore is fundamental to the successful implementation of government policy (Republic of South Africa , 1996a). This task of regulating competition in the telecoms sector and the regulation of costs and quality of service is given to the independent telecoms regulatory authority. However the vision articulated in the White Paper is that although the desire in the long run is for tariff regulation to fall away as competition is entrenched in the sector there will be an on-going requirement to regulate tariffs to prevent collusion and predatory pricing (Republic of South Africa, 1996a). Cross-subsidies between different services offerings are also not supported by the goals articulated in the White Paper but may be permitted for the attainment of specified social goals (Republic of South Africa , 1996a).

Other policy settings relevant to this research report is the direction given in particular to the development of human resources and skills in the telecommunications sector. The White Paper recognises that there has to be adequate skills development across the sector to ensure that the sector is sustainable in the long term. It makes provision for a fund drawn from licence fees paid by operators for skills development for artisans and technicians and for undergraduate and postgraduate studies in the field (Republic of South Africa, 1996a).

The requirement for participation by South Africa in the regional and international telecommunications structures is also set out in the White Paper. On the international level South Africa will participate in relevant telecoms organisations such as the International Telecommunication Union (ITU) amongst others. Regional co-operation with for example the African Union and the Southern African Development Community (SADC) for integration of economies for sustainable development is supported.

In particular the White Paper recognises the importance of interconnection and how interconnection agreements will become more important as the sector becomes more liberalised and participation by more providers increases. Thus it sets a role for the Regulator to oversee interconnection agreements between the various players.

1.4 High telecommunications costs impact on developmental goals

South African telecom prices are amongst the highest in the world, as can be seen in Table 1 below.

Table 1: South African telecommunications costs in comparison with that of other countries

Telecommunications cost comparison								
	Local call cost		National call cost		International call cost		Mobile call cost	
Country	Rank	USc/3 mins	Rank	USc/3 mins	Rank	USc/3 mins	Rank	USc/3 mins
Australia	9	8,1	4	24,4	12	18,2	10	30,2
Belgium	1	18,2	7	18,2	3	58,7	6	42,0
Canada	14	0	10	12,7	9	22,9	4	50,1
Denmark	4	13,5	9	13,5	4	57,5	8	39,3
Finland	7	8,8	5	22,0	5	44,9	13	18,9
France	6	11,4	8	15,0	8	28,3	5	45,6
Germany	12	6,6	13	8,4	14	12,8	12	25,9
Italy	13	6,1	11	10,9	10	20,3	7	41,7
Netherlands	2	14,2	6	20,1	7	29,9	9	36,6
South Africa	**3**	**14,0**	**3**	**26,5**	**6**	**44,0**	**3**	**63,6**
Spain	5	13,0	2	32,3	2	60,1	2	65,8
Sweden	10	7,9	14	7,9	11	19,7	11	28,0
UK	8	8,4	12	8,7	13	13,6	1	75,9
US	11	7,2	1	37,5	1	74,7	14	16,8

SOURCE: Kohler, 2008, p. 18

Table 1 shows that South African telecoms costs are third most expensive from fourteen countries surveyed for local, national and mobile call costs. For the same fourteen (14) countries SA is rated sixth most expensive for international calls

making achievement of developmental goals as articulated in the White Paper more difficult to attain.

Research has shown that access to information and communication technologies (ICTs) contribute to economic and social well-being (Chabossou, Stork, Stork, Zahonogo, 2008, p. 17). Chabossou et al (2008) also affirm that costs of telecoms in Africa are the main reason behind low levels of access (Chabossou *et al,* 2008, p. 20). Chabossou maintains that ICT penetration in developing countries has an impact on health and education amongst others (Chabossou *et al,* 2008, p. 20). The study expresses that inhabitants of developing countries need easier and cheaper access to ICTs (Chabossou *et al,* 2008, p. 20).

1.4.1 High telecoms costs are attributed in part to high interconnection rates

High telecommunications costs are attributed, in part to high interconnection rates, the rates that telecoms operators charge for terminating calls on their networks. When the then Minister of Communications, Siphiwe Nyanda instructed the Independent Communications Authority of South Africa (ICASA) to issue regulations to reduce interconnection rates by November 2009, he requested that a previous study be taken into account that had shown that SA's average interconnection rates in 2007 for mobile calls was 17.06 US cents compared to India's 1.97, Malaysia's 4.56 and Korea's 5.02 US cents. He made plain that high interconnection costs "had contributed to SA's excessively high telecommunications costs" (Ensor, 2009, p. 1). Further studies by Growitsch et al (2010) have also shown that lower interconnection prices lead to lower retail rates (Growitsch, Marcus, Wernick, 2010, p.110).

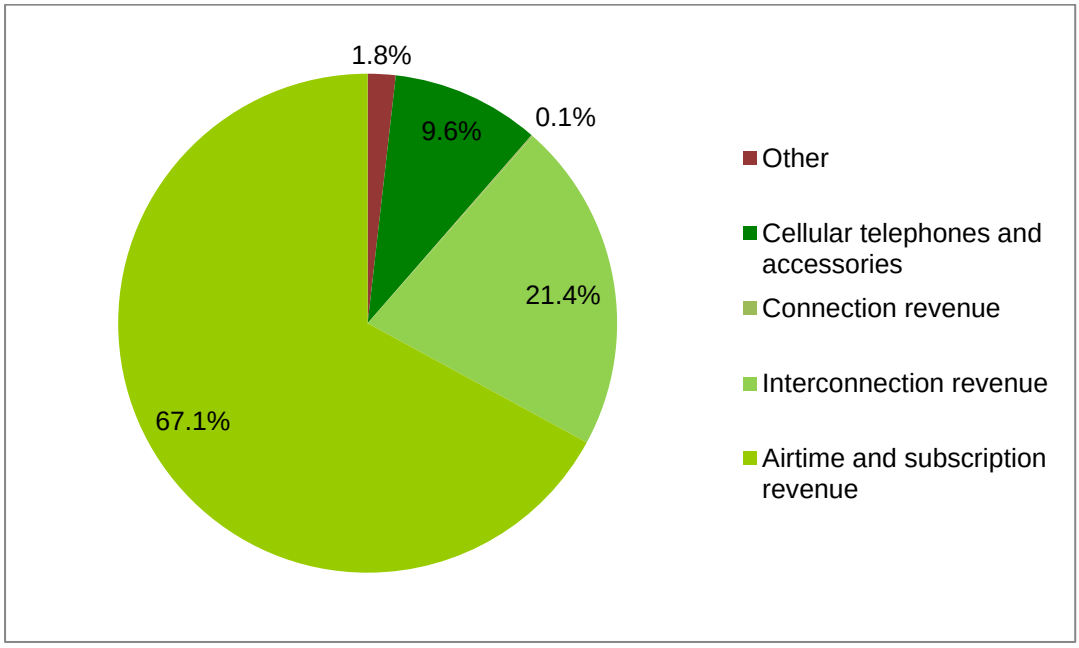
Table 2 : South Africa's interconnection rate compared to other developing countries

Country	Interconnection Rate (US cents, 2007)
India	1.97
Malaysia	4.56
Korea	5.02
South Africa	17.06

SOURCE: Ensor, 2009, p. 1.

Table 2 shows that South African consumers are faced with the highest interconnection charges when compared to a group of similar countries

Figure 1: Interconnection revenue for a typical South African mobile telecommunications company



Source: van Eeden, 2009, p. 4

Figure 1 shows that interconnection revenue makes up an important component of up to 20% of the revenue for a typical mobile telecommunications company.

The following excerpt from the Electronic Communications Network (ECN) Telecommunications (2009) website shows the magnitude of the revenue earned by the incumbent mobile operators from interconnection charges.

> *For the financial year ending 31 March 2009 Vodacom generated R 8 632 000 000 through interconnection in South Africa, up from R 7 945 000 000 a year ago. This is the company´s second largest revenue stream after airtime and access´, and is far higher than the R 5 973 000 000 generated through data services (SMS, MMS & broadband) or the R 5 190 000 000 from equipment sales.*
>
> *MTN generated R 6 951 000 000 in interconnect revenue for the financial year which ended December 2008, up from R 6 346 000 000 for the previous twelve months. As is the case with Vodacom it is also the second*

largest revenue generator for the MTN behind airtime and subscription revenue.

MTN´s interconnect revenue is in fact more than its data and SMS revenue (R 3 596 000 000) and cellular telephone and accessories sales (R 3 122 000 000) put together (ECN, 2009).

Studies have shown that lower mobile termination rates have resulted in lower retail rates in a European country context (Growitsch, Marcus, Wernick, 2010, p.110). The study further concludes that lower mobile termination rates result in greater consumption of mobile services in terms of minutes of usage (Growitsch *et al*, 2010, 137).

1.4.2 Interconnection regulatory processes have been mired in controversy

The South African telecommunications sector authority, ICASA issued new call termination regulations and interconnection regulations only in 2010. The process to get to final rates got going in 1998 when the Authority "issued a notice to invite representations in respect of the form and content of interconnection and facilities leasing agreements" (Thornton, Carrim, Matshaulana & Reburn, 2006, p.185). However the path leading to the issuing of the new regulations was mired in delays, controversy and media, political, and consumer group attention. While this was process was winding along, the South African interconnection fees remained unregulated and consumers were not given any relief with regard to telecommunication prices.

In 2009 Patricia de Lille, then member of the Independent Democrats and member of the Parliamentary Portfolio Committee on Communications called for immediate intervention from government on interconnection rates to reduce charges drastically (de Lille, 2011). Prior to the launching of Cell C 1n 2001, South Africa's third mobile operator, interconnection fees were R0.25 per minute. Interconnection charges increased to R1.25 in 2009 and calls were now being made to reduce this to R0.25 which was estimated to be the true cost of interconnection (Ensor, 2009, p. 1). In parallel, media attention intensified significantly. Meanwhile ICASA reasoned that regulations were not forthcoming as the process to prescribe regulations as defined in the ECA was still underway. However Advocate Gilbert Marcus Senior Council

expressed a legal opinion that sufficient work had already been done by ICASA which would enable ICASA to prescribe regulations without further delay. ICASA did not seem to share this opinion.

However operators voluntarily reduced interconnection rates to R0.89 in March 2010 arguably in the face of intense media and political scrutiny. General (Ret) Siphiwe Nyanda summoned the major operators to the ministry pressing operators to reduce charges. An announcement was made by the ministry soon thereafter that operators were to reduce interconnect fees by 36 cents to 89 cents. Although the reduction was welcomed it did not follow the process promulgated in the ECA.

Eventually a draft set of call termination guidelines were issued in 2010 giving responses to the findings that were made as required by the ECA. Operator input was sought and to the relief of many, a glide path for reducing calls termination rates were at long last prescribed in October 2010.

In the very near future, it is promised, South African consumers can look forward to lower telecommunications prices with the laying of many new undersea cables such as Seacom, EASSy and WACS. These cables together with the laying of new landline optical fibre networks will provide enhanced new telecommunications backbones to complement the existing one. New satellite ventures to provide the backhaul between cellular and broadband towers, a landmark court decision allowing value added network service providers (VANS) to build their own networks and the entry of the incumbent telecommunications fixed line operator into the mobile arena will all contribute to the lowering of prices (McLeod, 2009). “The biggest challenge is to ensure that the national carriers pass the savings on to consumers” (Financial Mail, 2008). An efficient and effective approach to interconnection regulation is therefore critical. With the proliferation of new service providers the importance of seamless and cost effective interconnection between the various service providers is clearly more important now in ensuring that end users receive the benefit of accessible and affordable telecommunications services. Therefore clearly documented and well informed sets of processes that have been implemented in a country that has been successful in reducing interconnection charges could be useful to policy makers, regulators and consumer interest groups in South Africa.

1.5 India and South Africa have both embarked on telecoms reform with seemingly different outcomes

India and South Africa have both embarked on reform for the telecommunications sectors in their respective countries albeit with similar intentions but different outcomes.

1.5.1 India is the largest democracy in the world

India is a constitutional republic consisting of 28 states and seven union territories. Each state or union territory is divided into a number of districts and these are further divided into villages. India has embarked on a process of economic reform starting from the 1980's and this has resulted in India's phenomenal economic growth in the last three decades. India's urban renewal is very evident from the vast amount of development that is taking place in the urban areas. However India's vast rural areas are still lagging behind in terms of social and economic reform. India's population is 1.21 billion (British Broadcasting Corporation, 2011) comprising of a rural population of 72% (Central Intelligence Agency, 2008). India's gross domestic product in 2010 is USD 1 729 trillion (World Bank, 2011). This places India in the top ten economies of the world (Wikipedia, 2011).

India gained its independence from Britain in 1947. Its government is based very much on the British system of government where the Prime Minister is the head of Government. Parliament consists of the Upper House, the Rajya Sabha (Council of States) and the Lower House called the Lok Sabha (House of the People) (Wikipedia, 2011). India is a member of the World Trade Organisation (WTO) since 1995 (WTO, 2011).

The Indian Ministry of Communications and Information Technology, Department of Telecommunication (DOT) is the telecoms policy maker, grants licences and plays a coordinating function for the telecoms sector in India. Overall policies and objectives for the telecommunications industry were articulated in the National Telecom Policy of 1994 (NTP, 94). The objective of NTP, 94 was to progress India's "competitiveness in the global market, to quicken the pace of growth of exports in this sector and to attract foreign direct investment" (Shroff, 2009, p. 116). The NTP,

94 Policy was replaced by the National Telecom Policy of 1999”in order to achieve some of the objectives that were not fulfilled by the previous policy” (Shroff, 2009, p.116).

The Telecom Regulatory Authority of India (TRAI) is the independent sector regulatory body. TRAI’s responsibility is to make recommendations on telecoms issues in India. The recommendations made by TRAI however do not have to be accepted by the central government. TRAI also issues regulations periodically on interconnection, quality of service and tariffs amongst others (Shroff, 2009, p. 116).

The Telecom Dispute Settlement Appellate Tribunal (TDSAT) is a special tribunal set up to adjudicate any disputes between various players in the telecoms sector. This includes operators, consumer groups, licence holders and the policy maker. Appeals against decisions of the TDSAT can be referred to the Supreme Court.

The Competition Act of 2002 proposes the establishment of a Competition Commission of India to promote competition however this is not in implementation mode at the time of this study. The Monopolies and Restrictive Trade Practices (MRTP) Commission is established under section 5 of the MRTP Act, 1969 and adjudicates matters pertaining to unfair trade practices.

1.5.2 India has vigorously pursued competition for the mobile telecoms sector

There is strong competition in the mobile phone sector. Mobile services were introduced in India in 1995. Licences were issued in 20 circles which coincide with the States and four Metros. The Government followed a duopoly policy as there was to be two operators per circle (Gupta, 2007, p. 30 - unpublished). Thus, there could be up to 48 operators in the market. However, some operators have multiple licences. The profile of the mobile supplier market has since changed significantly however, with mergers, acquisitions and some companies falling by the wayside (Gupta, 2007, p.31). Although the incumbent BSNL is a major player it faces stiff competition by private companies such as Bharti, Vodaphone and Reliance amongst others (Gupta, 2007, p. 34).

On the other hand, the fixed services business continues to be dominated by the state owned incumbents BSNL and MTNL (Gupta, 2007, p.30). The country is divided into 27 circles, which coincided with DOT's existing switching areas and had different designations (A, B or C) depending on the revenue generating potential (Gupta, 2007, p. 30).

Likewise, the National Long Distance market is dominated by the incumbent BSNL with a market share of 75,3% (2005-06 figures) with the rest of the supplier market made up by VSNL, Bharti and Reliance (Gupta,2007, p. 30). Various other private entrants are emerging and are seeking licences as well. With International Long Distance the recently privatized incumbent VSNL has 49,2% of market share with the rest made up with Reliance at 37,4% and Bharti with 13% of market share. (Gupta, 2007, p.30)

1.5.3 Interconnection is regulated by the Telecoms Regulatory Authority of India

As per the terms and conditions of the Universal Access Service (UAS licence), the licensee is mandated to provide interconnection to all eligible telecom service providers (Shroff, Amarchand &, Mangaldas, 2009, p. 117). TRAI issues interconnections regulation from time to time, which include price and cost regulation. The interconnection between different service providers shall be as per the standards issued by the telecom engineering centre (Shroff *et al*, 2009, p. 117).

Interconnection disputes, amongst others, are resolved by the TDSAT. In terms of the local loop unbundling the TRAI has made recommendations for mandatory unbundling of the local loop by incumbent operators so as to expedite the penetration of broadband however the government has not yet implemented this (Shroff *et al*, 2009, p. 117)

In India, internet telephony through IP based protocol has been permitted by the DOT with the effect from April 2002; via the "guidelines for issue of permission to offer internet telephony services" (Shroff *et al*, 2009, p.117). However the interconnection between IP based networks and public switched telephone networks have not yet been permitted. The TRAI has made recommendations with respect to

introduction and licensing of the next generation network services (Shroff *et al*, 2009, p. 118).

1.5.4 South Africa is one of the newest democracies on the African continent

South Africa as the name suggests is located in the southern tip of Africa. South Africa is divided into nine provinces. Provinces are further divided into districts that are made up of metropolitan areas and district municipalities. District municipalities are further divided into local municipalities. South Africa has a bicameral parliament that comprises of the National Council of Provinces (the upper house) that has 90 members and the National Assembly (the lower house) that has 400 members (Republic of South Africa, 2011).

The leader of the majority party in the National Assembly is the President. South African law is based on Roman-Dutch mercantile law and English common law (Wikipedia, 2011). The Parliament is the legislature and passes laws for the country. South Africa is a member of the World Trade Organisation since 1 January 1995 (WTO, 2011).

Information and Communications policy is the domain of the government ministry, the Department of Communications (DoC). South Africa enacted the Electronic Communications Act (ECA) in 2005, replacing the Telecommunications Act (1996), and a large portion of broadcasting legislation (Thornton, 2009, p. 251). The main objective of the ECA is to provide for the regulation of electronic communications “in the public interest” (Thornton, 2009, p. 251).

The Independent Communications Authority of South Africa (ICASA) regulates the telecommunications, broadcasting and postal sectors. It is a product of statute – the Independent Communication Authority of SA Act of 2000 which was later amended in 2005. The specific amendments are discussed in Chapter 4 of this report.

The Complaints and Compliance Committee (CCC), established in terms of the ICASA Amendment Act 3 of 2006 adjudicates disputes and complaints from licensees and consumers. It also adjudicates interconnection and facilities leasing

disputes from licensees. ICASA's decisions are not appealable but its decisions may be taken on review to the High Court (Thornton, 2009, p. 251).

The Competition Commission is a statutory body constituted in terms of the Competition Act (1998) and is empowered to investigate restrictive business practices. The Act also establishes the Competition Tribunal with adjudicative powers and the Competition Appeal Court to hear appeals and review decisions of the Competition tribunal. There is concurrent jurisdiction between ICASA and the Competition Commission with regard to competition issues in the telecommunications sector (Thornton, 2009, p. 251).

1.5.5 South Africa's telecoms market structure is dominated by just a few firms

Public switched telecommunication services are dominated by the partly state owned incumbent Telkom. Government has 39.8% shareholding in Telkom and the Public Investment Corporation has an additional 10.9% (Creamer Media, 2010). This gives government an effective shareholding of more than 50% in Telkom. A second provider, Neotel has been licensed but it has not made any significant impact in terms of market share in the telecommunications sector. At least 61.5% of Neotel is owned by Tata Communications (Creamer Media, 2010). Tata is a part of a powerful Indian family owned corporation (Creamer Media, 2010).

The fixed line business is effectively a monopoly. Government also has interests in Sentech, the South African Broadcasting Corporation and Broadband Infraco. The mobile cellular market is effectively a duopoly and is dominated by MTN and Vodacom and although a third service provider, Cell C, has been licensed it has very small market share at about ten percent (10%) (Creamer Media, 2010). Vodaphone Group has a 65% shareholding in Vodacom with the South African government owning 13.91%. Vodacom is South Africa's largest mobile company with MTN a close second (Creamer Media, 2010).

Telkom disposed of its fifty percent share in Vodacom in 2009 but not without controversy. It then launched its own mobile telecommunications service provider 8ta soon thereafter. International, long distance and local network services is in effect dominated by the incumbent Telkom (Creamer Media, 2010). Although the

telecommunications market in South Africa is in transition it is still heavily dominated by the State through it part ownership in the large service providers (Creamer Media, 2010).

1.5.6 Interconnection in South Africa is regulated by ICASA

"Every licensee must interconnect and every Electronic Communications Network Services (ECNS) licensee must provide facilities, on request, on terms negotiated, unless the request is unreasonable" (Thornton, 2009, p. 252). Chapter 7 of the Electronic Communication Act, section 37 deals specifically with the obligation to interconnect. In summary the Act obliges all licensed operators to interconnect with other licenced operators under certain conditions (Republic of South Africa, 2005a, p. 140).

ICASA determines whether a request is unreasonable by determining whether the request is technically and financially feasible and whether the request will promote the efficient use of communications networks and services. (Thornton, 2009, p. 252) The determination of who is exempt from the obligation for providing interconnection had been stalled for many years, pending a determination on the issue of significant market power (SMP). Until then ICASA had proposed to exempt all ECNS licensees from the obligation to provide facilities pending a determination on the issue of SMP (Thornton, 2009, p. 252).

Thornton (2009) further concludes that the existing regulations set up a discriminatory pricing regime for interconnection (Thornton, 2009, p. 252). Major operators such as Telkom providing essential services to Public Operators, Service Providers or Private Operators do so by using Long Run Incremental Costs (LRIC), Fully Allocated Costs (FAC) and Retail Costs respectively.

However ICASA has issued new interconnection and call termination regulations in 2010. This process leading up to the issuing regulations is the subject of this study.

1.6 India and South Africa in comparison

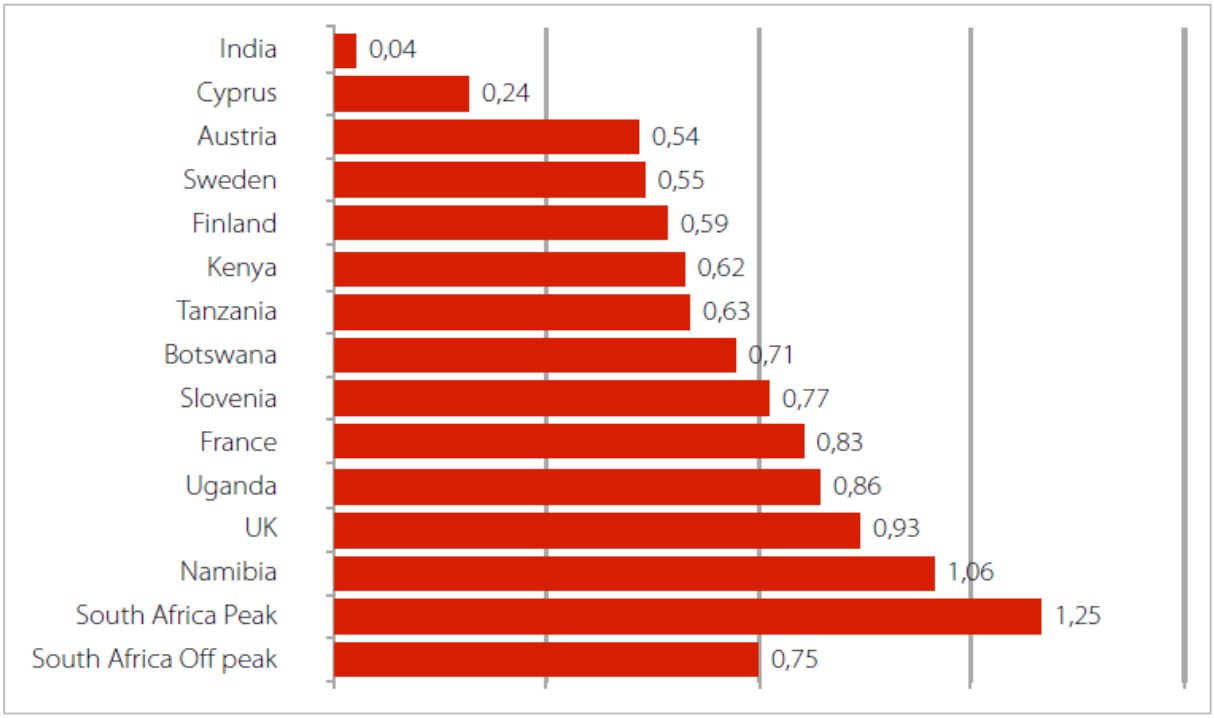
Table 3 : Comparison of basic country indicators of South Africa and India

Indicator	India	South Africa
Population Size	1 200 million	47 million
Size of country	3 287 590 sq km	1 221 037 sq km
Provinces	28 states & 7 Union territories	9 provinces
GDP/capita	$2 600 (PPP 2007)	$9 700 (PPP 2007)
GNI/capita	$ 2 740 (PPP 2007)	$9 560(PPP 2007)
Institutions	Competition Commission, Ministry of Telecommunications, Regulator –TRAI	Competition Commission, Ministry of Telecommunications, Regulator –ICASA
Independence of the Judiciary	Yes	Yes
Rural population	72%	36%
Literacy rate	61%	86%
Population below the poverty line	25%	50%
Unemployment rate	8%	25%
Teledensity – main fixed telephone lines per 100 inhabitants	2.87	8,43
Mobile cellular subscribers per 100 inhabitants	19,98	87,08
Internet users per 100 inhabitants	6,93	8,16

SOURCE: CIA, 2008, ITU, 2009 and the World Fact Book website: BASIC COUNTRY INDICATORS, 2008

Table 3 illustrates country indicators for South Africa and India. South Africa small by comparison in terms of geographic size and population has a very high poverty rate and unemployment rate. Telecommunications indicators are more advanced in South Africa than India.

Figure 2 : Mobile call termination rates (ZAR) (2009)



SOURCE: Comninos, Esselaar, Gillwald, Moyo & Naidoo, 2010, p. 12

This chart shows that South Africa has the highest interconnection rate in the basket of countries that have been indicated, with India being the lowest.

1.7 Summary

Telecommunications access and affordability is a developmental issue. Responsible policy and regulatory decision making is therefore critical in ensuring that telecommunications are used appropriately to enhance wellbeing. Telecoms systems are the highways on which ICT application run and without accessible and affordable transport, developmental objectives will not materialise. South Africa regrettably has some of the highest telecoms rates in the world. Interconnection rates are an important factor in the overall costs of telecoms and its regulation will arguably assist with reducing telecoms costs. South Africa's processes to achieve effective

interconnection regulation have been dogged by controversy and the long period of limbo has not benefited the South African consumer who has had to pay high costs over this period. India on the other hand has some of the cheapest rates in the world. A view of how each country has wrestled with processes for interconnection rate regulation will be helpful to policy makers, regulators, consumers and operators alike.

CHAPTER 2

DEBATES IN THE ACADEMIC LITERATURE ON PROCESSES FOR REGULATING INTERCONNECTION RATES

"Interconnection is the cornerstone of competition" (Melody, 1997, p. 53).

Interconnection is a controversial subject because its regulation can be used to serve pre-determined outcomes (Noam, 2001). The manner in which interconnection is regulated can result in retail prices being reduced. Reduced interconnection charges can also be used to facilitate service provision in underserviced areas. However if not properly regulated interconnection can be used by incumbents to entrench their positions as monopoly service providers. New entrants can enter otherwise closed markets if interconnection regulation allows for easy entry for new telecoms companies. However regulation also needs to ensure that established operators are not negatively impacted by regulation where new entrants may gain unfair advantage at the expense of established operators. Consequently "…interconnection charges are a highly contentious issue" (Noam, 2001, p. 69).

The deliberations are enmeshed around whether interconnection rates should even be regulated at all and if they are to be regulated, the appropriate economic models to be used to determine the rate. In this regard, it is not only the economic model to be used that is contentious, but the question of whether rates should be symmetrical or asymmetrical and for what period the regulated rates should apply. Issues pertaining to whether access deficit charges should apply and whether rates should subsidise other products are raised frequently. Debates focus around whether the regulation of interconnection would indeed achieve the desired outcomes of reducing retail telecommunications prices and whether there would be other unintended consequences.

Other debates are concerned with the market conditions under which interconnection rate regulation should be applied and how markets should be defined (Intven, 2000, p.5-10). Critical to this is to determine the present and future market power of individual telecommunications companies to gauge their ability to influence the

market outcomes and whether obliging them to interconnect under predefined conditions would have the desired effect of facilitating competition. Gauging market competitiveness is key factor in determining whether anti-trust measures should be applied and the nature of such interventions in the market (Intven, 2000, p. 5-10).

The body of knowledge on interconnection rates and the regulation thereof, embrace the issues that have been raised. The debates span various academic areas. The regulation of telecommunications in general and the manner in which it is evolving attracts the interest of researchers in the policy and legal fields while market structures, competition and pricing is the domain of economists. Technologists research the interoperability of networks and social scientists examine the impacts on society. Political scientists examine policy development and outcomes (Noam, 2001, p. 6). This research paper focuses on processes for interconnection rate regulation and synthesises the debates and discussions in the various disciplines and positions the debates within the broad field of public and developmental management

Regulatory processes comprise three stages: “the enactment of enabling legislation, the creation of regulatory administrations and rules and the bringing to bear of those rules on persons or institutions sought to be influenced or controlled” (Baldwin & Cave, 1999, p. 96).The literature review sketches out, using Baldwin and Cave’s three stages of regulatory processes, how the understanding of interconnection has developed over the years as markets evolve and disputes have arisen. It looks at the rationale for regulating interconnection in general. Views on market definition, competitiveness and pro-competitive interventions which include the various pricing models proposed for regulating interconnection rates are discussed. A conceptual framework is developed that draws on the underlying theory and proposes concepts that were used to design the research approach and analyse data.

Insights into the European Union regulatory framework are described to position South African regulatory processes within this broader context, given South Africa’s historical, political and strategic ties with the European Union in many facets of it political and social life and in aspects of its development.

2.1 Arguments in the interconnection debate show that interconnection is not only about the physical linking of networks

Economic theory would define interconnection as an intermediate good (or service) because it is used in the production of a final good (or service) (Noam, 2006, p. 69). In telecom terms, the intermediate good is the physical linking to other network/s and the services required to enable the production of the final good which final good is the completion of a voice call emanating from network 1 and terminating on network 2 (Parkin, Powell & Matthews, 2000, p. 470). Interconnection in its broadest sense can further be described as relationships between various players in the telecommunications sector. According to Noam (2001), the relationships can be cooperative, vertical or horizontal in nature (Noam, 2001).

Prior to commencement of telecoms reform approximately twenty years ago operators' co-operated with each other as they did not generally compete in the same markets (Noam, 2001, p. 3). These relationships were characterised by the major operators co-operating to deliver for example international call services to their end users usually across country borders. It must be noted however that these operators remained monopoly service providers in their own jurisdictions (Intven, 2000. p. 3-1). Therefore operators under these circumstances had symbiotic relationships defined by mutual benefit. Since there was mutual benefit interconnection issues "rarely became a problem" (Intven, 2000, p. 3). Co-operation under these circumstances made sense as there was a need for common technical standards, communication protocols and methods to ensure a standard quality of service across networks. The co-operation also extended to investments decisions and billing systems that needed to be aligned (Melody, 1997, p. 49).

The second relationship can be defined as vertical in nature in that one operator provides a bottleneck service on one stage of the transmission system and where another operator requires the use of that bottleneck to provide a service to its own clients. Such a bottleneck service for example could be an undersea cable system including the landing station operated by an international carrier. The local exchange

carrier will then interconnect to the international long distance carrier to allow its clients to make international telephone calls. It could also be a local loop system that is owned and operated by an incumbent operator and where new entrants require access to the local loop to provide a service to potential clients. This type of interconnection was “fraught with problems from the early days regarding prices for interconnection, use of facilities and the quality of service” (Melody, 1997, p. 4).

A third form of interconnection relationship according to Noam (2001) is horizontal in nature where different operators compete for the same markets and customers. Examples include that of incumbent versus new phone companies including both fixed to fixed, fixed to mobile, mobile to mobile, internet service provider (ISP) to fixed or mobile. The permutations are numerous and the relationships could also be both horizontal and vertical in nature. The telecommunications sector of the 21st century is defined by these horizontal and vertical relationships. This introduces the types of complex relationships that contribute to the challenges experienced by policy makers, regulators, operators and consumers today.

Interconnection can also be viewed as taking place at a physical level, at an applications or content level or at a geographical level (Noam, 2001). At a physical level it is a physical linking of networks for example between fixed and mobile operators or between different mobile operators. At the physical level this might also require the co-location of equipment and the use of each other’s facilities such as buildings, towers and conduits. At an application or content level this might mean the sharing of systems such as billing systems, collaboration with numbering systems and access to support, control and monitoring systems. At a geographical level interconnection involves multiple service providers connecting across different countries. This means that regulators, policy makers, and operators will have to collaborate across national boundaries (Noam, 2001, p. 5).

The definition expressed by the International Telecommunication Union simplifies this complex concept thus: “Interconnection comprises the commercial and technical arrangements under which service providers connect their equipment, networks and services to enable customers to have access to the customers, services and networks of other service providers” (ITU, 1995, p. 5).

Interconnection as per the Electronic Communications Act of South Africa is defined as “the physical or logical linking of two or more electronic communications networks, electronic communications services, broadcasting services, services provided pursuant to a licence exemption or any combination thereof” (Republic of South Africa, 2005a, p. 90).

More specifically interconnection charges are the prices levied by network operators on each other for the use of their networks and associated services and for the termination of calls on each other’s networks. Interconnection charges as defined by the Organisation for Economic Cooperation and development (OECD) is “a charge levied by network operators on other service providers to recover the costs of the interconnection facilities (including the hardware and software for routing, signalling, and other basic service functions) provided by the network operators” (WTO, 2010).

A more comprehensive definition of interconnection has been expressed by the European Commission in the 12 July 2000 Directive on interconnection and access:

> *Interconnection means the physical and logical linking of public electronic communications networks used by the same or a different undertaking in order to allow the users of one undertaking to communicate with the users of the same or another undertaking, or to access services provided by another undertaking. Services may be provided by the parties involved or other parties who have access to the network (Intven, 2000, p 3-2).*

The European Union directive establishes that interconnection rules should apply equally to users of the same network organisation as they should do with users of different network organisations. This directive also introduces the concept of ‘access’ which is different from end user ‘access’ to networks (Intven, 2000, p. 3-2). Access in this sense means access to infrastructure and services of incumbent operators. Interconnection then embodies more than the physical connection of rival networks but includes the co-location of infrastructure at bottleneck facilities, compatibility of equipment and consistency of quality of service across the interconnecting networks, unbundling of network elements at mutually acceptable interconnecting points and rules regarding use of telephone numbers and domain names. (Intven, 2000, p. 3-2)

The underlying nuance captured in the definitions of interconnection is that incumbents' could operate both vertically and horizontally in the telecoms value chain. Thus an understanding of the market in which the telecommunications operators carry out their interconnection business is fundamental to the development of regulatory interventions. The implication therefore is that any development of regulatory processes should be cognisant of this as this could be used for unfair advantage by dominant operators. A further clarification embedded in this definition is that interconnection is also at an access to services level. Access to services could mean interconnection to domain services of the incumbent or access to databases of other operators. At the systems level it could also mean access to the numbering systems of other operators for number portability or carrier selection and as has been described access to bottleneck facilities such the local loop or undersea cabling systems. This leads on to the fact that networks need to be sufficiently unbundled to achieve this collaboration for the benefit of the public at large.

There is general consensus that the complexity of interconnection cannot be understated as it not only concerns the physical linking into other networks but also the sharing of facilities and systems and more importantly interconnection impacts competition in the sector.

2.2 Interconnection is regulated because it impacts on competition

"Strategic anti-competitive" behaviour on interconnection arrangements increases telecoms prices to consumers (Melody, 1997). It further negatively impacts on investment in telecoms infrastructure and will ultimately impact on participation in the global information society.

> *It seems that low interconnection charges and strong competition go in hand with a growth in investment. Therefore protection of the incumbent operator, e.g. through a delay in a reduction in interconnection charges, seems not to be a good strategy for promoting investments either in developed or developing countries (Falch, 2005, p. 126).*

An important policy objective for telecommunications is the provision of affordable accessible and good quality fixed and mobile telecoms networks (Melody, 1997). As the sector become increasingly liberalised competitive competing carriers need to interconnect with each other in order to provide seamless end-to-end services for their users. However, interconnection agreements are stacked heavily in favour of established operators, making policy formulation and regulatory intervention important in promoting effective competition for the sector. When policy direction is unclear and regulatory processes are weak then established operators can use their market dominance to charge interconnection rates that do not reflect underlying costs. If this is not controlled then retail rates can be set at a unreasonably high prices to end customers. Furthermore, established operators can impose high interconnection charges directly or indirectly on new entrants making it extremely difficult for new operators to establish themselves thus reducing them to weak players in the sector.

Ineffectual interconnection arrangements may also result in duplication of infrastructure and facilities thus placing additional burden on already scarce economic resources. In addition, ineffectual interconnection arrangements hamper policy goals for universal access and service thus re-enforcing the need for effective policy direction and regulatory process.

2.2.1 The WTO has set rules for interconnection

The World Trade Organisation (WTO) recognises that interconnection arrangements play a key role in opening up telecom markets. To this end, the 1997 Agreement on Basic Telecommunications Services, Reference Paper on regulation contains rules for interconnection to reduce bias and discrimination:

> *Interconnection with major suppliers must be assured:*
>
> - *At any technically feasible point in the networks*
> - *In a timely fashion*
> - *On non-discriminatory and transparent terms (including quality and rates)*
> - *Sufficiently unbundled to avoid charges for unnecessary components*
> - *At non-traditional interconnection points if requestor pays charges*

Procedures

- *Procedures for interconnection to major suppliers must be made public*

Transparency

- *Agreements or model interconnection offer of major supplier must be made public.*

(Intven, 2000, p. 3-5)

The rules emphasise that interconnection could be a barrier to entry for new telecoms operators and could consequently reduce competition and impede innovation. It reinforces that high telecoms prices have a knock-on effect on other sectors of the economy by increasing the cost of doing business in general. Again ineffectual interconnection arrangements may result in unnecessary duplication of infrastructure and placing additional strain on scarce economic resources.

The importance that interconnection regulation holds for telecommunications markets is further articulated by Noam (2001); “Control of interconnection…..is the key to the control of the telecommunications system and its market structure”. Noam (2001) elaborates, “The regulation of interconnection is therefore becoming the paramount tool of government into the reasonably foreseeable future…It provides government with a tool for extensive micromanagement of markets” (Noam, 2001, p. 3).

Interestingly, interconnection can also be used to entrench monopoly as can be seen in the history of interconnection regulation in the United States (Noam, 2001). Interconnection regulation has a chequered history in the USA. Initially it was used to entrench the positions of the big players. When the Bell patents expired in the 1890’s this should have given the opportunity for numerous new players to enter the market. Instead interconnection to the national networks was blocked for new entrants thus “…creating the monopoly telecoms markets that are being reformed today” (Melody, 1997, p. 49). Independent competitors entered the market when the Bell patents expired especially in the underserviced rural areas and in central business districts (Noam, 2001, p. 17). These independents competed with Bell but there was no interconnection between them. The Bell Company’s policy was to refuse interconnection to the independents (Noam, 2001 p. 18). This perpetuated a system

where AT&T exercised dominance over the telecommunication market and they did this by controlling interconnection of equipment onto their networks and by controlling rival's interconnection on to their local networks and rivals networks to Bell's long distance networks (Noam, 2001 p.18).

Today, interconnection issues go hand-in-hand with the telecoms policy objectives of introducing competition in telecoms markets. Melody (1997) comments that: "efficient interconnection is crucial to the effective implementation of virtually all public policies opening competitive opportunities in telecom" (Melody, 1997, p. 49). Thus, incumbent operators have no market incentive to connect with a new operator (Melody, 1997, p. 51). However, modern telecom policy and regulation instructs the incumbent to interconnect. Instead incumbents seek to maintain the status quo by engaging in behaviour that maintains market positions. Pricing interconnection costs at higher than actual costs incurred, providing poorer quality of service to interconnecting operators, operating cartels to fix interconnection prices, delaying conclusion of interconnection arrangements with new entrants or generally frustrating processes that may lead to fairly priced interconnection arrangements are some of the "strategic anti-competitive behaviour" engaged in by incumbent and established operators (Intven, 2000, p. 3-1).

Traditionally, telecommunications services were provided by large monopoly service providers. With the reform initiatives of the last twenty years, new entrants in the telecommunications sector are faced with a choice of either building their own networks and facilities at huge cost or to link to existing networks and facilities, where possible, to enter this market (Intven, 2000, p. 3-1). Incumbent operators have had entrenched businesses, in some cases for hundreds of years, and have developed extensive network coverage over the years. These networks can be viewed as being natural monopolies thus creating macro-economic inefficiencies if infrastructure is duplicated. Thus to encourage competition one must assure interconnection by entrants to the incumbents networks and services on an efficient basis rather than by compelling new entrants to build their own networks.

Lawrence (2006) summarises succinctly how incumbents use interconnection to frustrate competition – they could not allow new entrants to connect to their networks

on technical or commercial grounds. They could deliberately delay the conclusion of interconnection agreements. They could only agree to interconnect at points on the network that will favour them. They could charge interconnection prices that far exceed costs to provide the service. Lastly they could provide technically inferior interconnection solutions that could negatively impact the quality of service provided by new entrants thus rendering them uncompetitive (Thornton, *et al,* 2006, p. 175). This collectively will have the effect of increasing new entrant costs. Furthermore, the provision of interconnection may allow the incumbent providing the service to gain valuable insights into the pricing structures of new entrants thereby gaining unfair advantage over newer rivals (Vaitilingam, 1998, p. 104).

However, regulators need to take into consideration that new entrants too may want to seek unfair advantage over established operators by understating costs for interconnection onto the incumbent's networks (Vaitilingam, 1998, p. 104). The challenge for regulatory processes therefore is to find a balance that will ensure benefits for the end consumer and at the same time ensure the sustainability of established operators and give opportunity for new entrants to establish their businesses. Thus the importance of fairness, justice, equality and general fair-mindedness in the process for interconnection price determination is crucial and any regulatory process that is developed should be able to withstand such challenges which could defeat public policy objectives and at worst could be challenged legally.

Overwhelmingly then, the literature points to the manner in which interconnection issues have been used to entrench monopoly and later to open up markets. It is an important regulatory tool and can be used to arrive at certain pre-determined outcomes. In the era of de-regulation, the regulation of interconnection rates is a means of facilitating competition in the telecommunications sector and by implication, facilitates the lowering of retail prices. How this should be done and the process to get to a rate that is fair to all is the subject of intense debate and will be discussed in the following sections.

2.3 Interconnection pricing regulatory processes generally require rates to be cost based

The World Trade Organisation's (WTO) 1997 Agreement on Basic Telecommunications Services, Reference Paper on regulation prescribes rules for interconnection to reduce unfair business practices for this sector that could negatively affect end users. Interconnection rates according to the Reference Paper should be cost oriented. This means that interconnection prices should be related to the underlying costs for providing the service. However to establish regulatory processes based on cost based interconnection charges one must "understand the economics of interconnection" (ITU-D study group 1, 2004, p. 5).

2.3.1 Interconnection charges should reflect the underlying fixed and variable costs

All telecommunications costs can be classified as either "fixed or variable costs" (ITU-D study group 1, 2004, p. 5). Fixed costs as the term suggests remain constant irrespective of the quantity of output produced. Fixed costs can also be called overhead costs, indirect costs or unavoidable costs (Fourie & Mohr, 1995, p. 319). There are two types of fixed costs viz. once-off investment costs (capital costs) and recurring costs called operating expenditure (opex). Capital expenditures are generally comprise of large investments in telecoms switches and other network equipment, purchases of land and buildings and investments in cabling and radio equipment. Operating expenditures that are recurring include rental costs, labour costs such as salaries and training, insurance costs, and other costs including materials and services.

Variable costs are directly related to the level of network usage (ITU-D study group 1, 2004, p. 6). In telecoms variable costs are referred to as "traffic sensitive costs" while fixed costs are referred to as "non-traffic sensitive costs" (ITU-D study group 1, 2004, p. 6). To achieve cost based interconnection charges any analysis should identify costs related to the specific service. The challenge according to the ITU-D study group (2004) is that it is difficult to ring-fence charges related specifically to interconnection costs especially when it makes good economic sense to share facilities to deliver a range of services. However as a general rule Intven (2000)

suggests that interconnection charges should indicate the difference between fixed and variable charges as this “should lead to a more efficient use of network components” (Intven, 2000, p. 3-29).

2.3.2 Interconnection charges should reflect peak and off peak rates

Intven (2000) further suggests that interconnection charges should also be priced according to peak and off peak usage. Generally speaking, charging a higher rate during peak hours will incentivise users to call during off-peak hours (Intven, 2000, p.3-29). Calling during peak hours will impose a greater burden on network components during these hours, causing the network provider to upgrade facilities to cater for increased usage. Thus interconnection charges should reflect underlying behaviour of costs (Intven, 2000, p.3-29).

2.3.3 Interconnection charges should be sufficiently unbundled

The WTO Reference Paper requires incumbent operators to sufficiently unbundle network components. This is required so that new entrants can choose at which point they would like to connect onto the incumbent network instead of this is being imposed on them by the incumbents’. Unbundling network components will go some way in ensuring that incumbents do not charge competitors unnecessarily for unwanted network components or facilities (Intven, 2000, p. 3-30). Unbundling reduces barriers to entry for new entrants as initial capital outlay to build complete networks may not be financially feasible but the building of smaller components such as switching circuits, access lines and limited facilities to connect on to incumbents networks may be very possible (Intven, 2000, p. 3-30). The unbundling option will certainly facilitate competitive entry for new operators as the use of the incumbent’s network in the main, in the early stages of establishment and set up of businesses is usually necessary for new entrants to compete with the established operators (Intven, 2000, p.3-30).

It is envisaged that over time the new entrants will be able to compete effectively as they become self-sufficient in terms of network capability. It also encourages innovation as new entrants can bring in their own brand of innovation for example they can interconnect with legacy PSTN networks using IP technologies opening up a whole new world of opportunity to digital technologies. However one must be

cognisant that one of the disadvantages of full scale unbundling is that new entrants may not want to build or upgrade their own networks if the existing incumbents networks are priced below costs and are providing the basic services that are required by the new entrant. This may, instead, discourage innovation (Intven, 2000, p. 3-31).

The advantages however outweigh the disadvantages as it avoids unnecessary duplication of networks, encourages innovation and reduces barriers to entry. Many countries including India and South Africa are implementing unbundling by issuing policies in this regard. Local loops are targeted as components that should be unbundled for competitive entry to be encouraged. The local loops described as the copper cable that connects the client with the local exchange are generally owned and operated by incumbent operators. Local loop unbundling (LLU) requires the incumbent to provide access to their local loops to competitors. With more competition at the local loop level it is hoped that this will encourage innovation by allowing many service providers to offer a multitude of services to households some of which might include competitive broadband services, digital TV, and voice over IP telephony.

2.4 The European Union Framework Directive came into being in 2003

Article 7 of the Framework Directive sets out the procedure under which National Regulatory Authorities (NRAs) must assess competition in telecommunications markets in conjunction with operators and also assess whether operators have significant market power (SMP). The NRAs are then required to prescribe remedies to restore competitiveness (Evans & Long, 2009, p. 1).

Article 15 of the Framework Directive revised in 2007 makes recommendations in terms of telecommunications markets. Amongst others, the Directive identifies wholesale call termination on individual mobile networks as relevant markets and call origination and termination on public fixed networks and individual public fixed networks as relevant markets. Furthermore the Directive provides guidelines on how to define a market and how a market analysis to assess competitiveness is to be

conducted. The aim of the EU Framework is to ensure consistent approaches across all member states (Evans *et al,* 2009, p. 2).

2.5 A market analysis is necessary for regulatory processes to be prescribed

2.5.1 Market failure and Pareto efficiency

The telecommunication sectors in most countries have grown out of monopoly market structures. Services bundled with posts and telegraph was provided by government departments in monopoly market structures. With the introduction of competition and for the reasons described previously the risk therefore exists that those incumbents will continue to exert dominance in their markets after competition is introduced. This continued exercise of market power is a type of market failure (Fourie, *et al*, 1995). Economic theory suggests that market failure occurs when the allocation of resources is not efficient. Efficiency is achieved when it is not possible to make one person better off without making someone else worse off. This notion of allocative efficiency is called Pareto efficiency. Thus market failure exists when there is no Pareto efficiency (Fourie, *et al*, 1995, p. 365).

2.5.2 Market competition

Theory on market competitiveness suggests that a market is competitive when buyers and sellers face no transaction costs, products are homogenous and there are many suppliers each accounting for a small fraction of the overall supply of the good (Bernheim & Whinston, 2008, p. 498). In a perfectly competitive market both buyers and sellers have no effect on price. Now in the absence of transaction costs, sellers can easily communicate their prices, buyers can easily locate suppliers and learn their prices and buyers and sellers can arrange transactions without significant obstacles. Another factor in determining whether a market is competitive is to determine whether the product on offer, in the telecommunications case, interconnection, is homogenous i.e. if a telecommunications operator charges more for interconnection it needs to be established whether the buyer can simply get their interconnection from elsewhere. The third factor is the presence of a large number of buyers and a large number of sellers in the market being investigated. A market is competitive when this is true i.e. when there are a large number of providers of

interconnection and there are a large number of consumers that demand interconnection.

2.5.3 Monopoly Markets

A monopoly market on the other hand, is a market where the likelihood of market failure is high. A firm can produce a product that may not be sold by other firms or it may sell a product for which there are few or no close substitutes. In telecommunications, a substitute for the product defined as interconnection would be a similar product that a consumer would demand if the price for the interconnection that he desires, all else being equal, rises to unacceptable levels for the consumer. A substitute then, if all else being equal, is a product that may be demanded if the price of one product causes consumers to demand more of the other (Bernheim *et al,* 2008, p. 27). A firm has market power in a situation where there are few or no close substitutes for the product it is selling and where the firm can profitably charge prices above its marginal cost (Bernheim *et al,* 2008, p.623). So the question of whether the interconnection product on sale has close substitutes or not is essential in determining whether a firm has market power or not.

2.5.4 Market definition

Economists define a market to include products that are close substitutes for one another and to exclude some distant substitutes. In practice the boundary lines between products that are inside a market and those that are not can be very difficult to ascertain. Hence if a market is defined too narrowly then a firm may be incorrectly defined as a monopolist in that market. However it may be that it in fact it faces significant competition because there are substitutes for the product that it is selling that may have not been identified (Bernheim *et al,* 2008, p. 624). Similarly if a market is defined too broadly then a firm that faces no significant competition may appear to do have many competitors providing similar services. Again incorrectly identifying broad substitutes for a product may incorrectly conceal monopoly markets. Correctly establishing whether products are substitutes is essential therefore in defining the market properly.

Thus a thorough market analysis is necessary to determine the boundaries of the market before any determination is made on whether a company has market power.

This has a direct impact on regulatory processes to be imposed on the markets identified.

2.5.5 Market definition and interconnection rate regulation

The indication is that a market analysis needs to be conducted before rates can be prescribed. This in itself is not problematic. The problem however arises in the mapping out of the process that needs to be followed before rates are prescribed. There is a choice of conducting the process ex-ante or ex-post and this could significantly affect the timing of the issuing of regulation. The choice that is made by regulatory authorities should be a balance between a competition policy approach and an ex-ante approach (Buigues, 2003).

2.6 Processes for market definition, assessment of competitiveness in that market and remedies in the absence of competitiveness are important process steps in regulating interconnection

2.6.1 Market definition is based on the theory of hypothetical monopoly

Gual (2003) expresses a view that standard definition of the relevant market for the purposes of competition policy or regulation is based on the principle of hypothetical monopoly (Gual, 2003, p.2). Gaul (2003) further explains that the principle is that a product or geographic market is defined as the minimum set of products or geographic areas that could be successfully monopolised (Gual, 2003, p. 2). This means that if this set of products or areas were in the hands of a single provider it could be restricted whilst improving the provider's profitability. The principle is also known as the SSNIP test as it refers to a small, but significant non-transitory, increase in price by the hypothetical monopolist (Gual, 2003, p. 2). The SSNIP tests begins by identifying the narrowest possible market and tests whether it will be profitable for a hypothetical monopolist, whose strategy is to maximise profit, to increase prices in a small but significant and permanent manner (Gual, 2003, p. 2). Economic theory suggests that consumers faced with the increase will naturally seek out alternative products, or substitutes from other providers. If these substitutes do in fact exist then the market definition will need to be expanded to include these

products and then the hypothetical monopolist's increase will not be profitable. Alternatively if substitutes do not exist then the market definition will be defined as this narrow market.

This conventional definition of the relevant market as described by Gual (2003) can by and large be assessed using the methodology used in antitrust or competition legislation viz. the hypothetical monopolist and SSNIP test. However the essence of the argument made by Gual (2003) is that due consideration needs to be given to three modifications that need to be made to this traditional definition for the telecommunications industry to prevent markets from incorrectly being defined too narrowly (Gual, 2003, p. 1).

Firstly one has to consider demand as well as supply substitutabilities. Demand substitutes will be other products that can be turned to that meet the consumer's requirements when the price of the product being demanded increases significantly. Thus the hypothetical monopolist will not be able to raise prices significantly without losing market share (Gual, 2003, p.3). Supply substitutability on the other hand means that other competitors can enter the market easily to substitute the product when production is being restrained or where price has increased significantly. Once again the hypothetical monopolist will not be able to raise prices or restrain production significantly without the risk of losing customers to other suppliers that can enter the market easily and provide the same product or service (Gual, 2003, p. 3).

Secondly Gual (2003) argues that in the telecoms industry many products or services are bundled e.g. SMS, call termination, access and call origination due to economies of scale and scope and to the economies of joint production. These constitute demand complementarities (Gual, 2003, p. 18). Complements are goods that are used jointly like milk and tea or subscription (access) and call termination. These bundles of services should also be analysed for competition or regulatory purposes (Gual, 2003, p. 1).

Thirdly, the telecoms industry is characterised by fixed and continuous sunk costs of service provision because this industry continuously has to innovate and keep up

with technological advances (Gual, 2003, p. 1). According to Gual (2003) therefore the conventional definition of a hypothetical monopolist as being a firm that can increase its prices above marginal cost in a market where there are no close substitutes can be applied to the telecoms industry but a few adjustments need to be made (Gual, 2003, p. 1). “Marginal cost pricing is taken to be the competitive benchmark in the conventional definition of a hypothetical monopolist” (Gual, 2003, p.6). This definition according to Gual (2003) needs to be expanded for the telecoms industry because pricing above marginal cost may be necessary to recover the continuous sunk costs typical of this industry (Gual, 2003, p. 6). Gual suggest that ideally a new benchmark needs to be set corresponding to mark-ups which generate sufficient revenues to cover fixed costs without leading to excessive profitability. If the effect of fixed cost recovery is not taken into consideration it may result in markets being defined too narrowly (Gual, 2003, p. 6).

A further characteristic of the telecoms industry is the existence of bottlenecks (Gual, 2003, p. 15). The local loop which gives access to residential customers has been a bottleneck in many countries because access to the home can only be reached via the PSTN and given the existence of fixed costs it is not economical to duplicate this service. To apply the market definitions discussed earlier, this will constitute a market of its own because there are no substitutes and it is also difficult for another supplier to enter this market in the short-run (Gual, 2003, p. 15). Network effects too would result in a network being defined as a market on its own (Gual, 2003, p. 15). The internet for example demonstrates this concept quite aptly (Gual, 2003, p.12). Network effects result in the internet becoming more useful as more users and more web servers are added. The internet now is large enough to have very few substitutes. This then will pose a dilemma to antitrust authorities who deliberate on mergers between internet backbone providers (Gual, 2003, p. 12).

Similarly call termination in the mobile sector can be perceived as a bottleneck service because of the way the charges are structured (Gual, 2003, p.16). In countries where the calling party pays (CPP) principle applies, there is little incentive for the end user to change networks when the cost of termination for the calling party increases (Gual, 2003, p. 16). If the end user paid for the call the reaction from the end user would be to change service providers if termination prices were excessive.

However the fact that the end user does not pay for this service creates an inelastic demand i.e. increase in price does not cause the consumer to seek alternative products (Fourie, *et al,* 1995). This coupled with the fact that there are no substitutes for call termination on the end user's telecoms provider, means that from the calling party's viewpoint, conventional competition law theory would regard call termination on each network to be a market on its own (Gual, 2003). "Each network operator thus has hundred percent (100%) market share of its own network" (Gual, 2003, p.16).

Now, as has been previously described, a modification needs to be made to the conventional antitrust market definition as call termination is usually bundled with complementary services such as call origination, SMS, internet access and instant messaging (Gual, 2003, p. 16). Thus the relevant market for antitrust purposes could be a bundle of mobile services. The conventional definition of starting with an individual service, applying the SSNIP test and then expanding the product set may not work because of the complementarities that exist regarding the service bundles (Gual, 2003, p.16). Demand may be very elastic if the product set is expanded to include complements. In this case service providers will not be seen to have market power. However if only a single product such as call termination is expanded then the service provider can be seen to have market power. Thus the existence of complementary services can change the perception of the existence of market power for service providers.

The conventional definition of relevant markets then involves the use of the hypothetical monopolist test to determine the consequences to competition when a hypothetical monopolist increases prices of its product by a small but significant margin for an extended period of time. Market boundaries are increased or narrowed accordingly. However consideration needs to be given to the effect of demand and supply substitutabilities, demand complementarities as a result of the bundling of services and the effect of fixed and sunk costs on pricing for the telecoms industry to avoid markets being defined too narrowly (Gual, 2003, p.16).

2.6.1 Assessment of competitive conditions in relevant markets

There are a number of important criteria that can be assessed to determine the level of competitiveness in the market that has been defined. The existence of market power plays a very important role in assessing whether a market has an acceptable level of competitiveness. Michael Porter's five forces model can be used in general to determine the effectiveness of competition in a particular market (Hitt, Hoskisson & Ireland, 2009, p. 48).

Firstly, the existence of rivalry between existing companies, on a forward looking basis needs to be evaluated as the prime source of competition in any industry is among the existing incumbents (Hitt *et al*, 2009, p.48). The rivalry is likely to be most intense when a number of conditions are satisfied such as when the companies are evenly matched in terms of market size and market share. If companies are not evenly matched then competition law may define firms as being dominant according to certain scales related to market share and the existence of market power. Concentration ratios may indicate the level to which companies may have significant market power. The Herfindahl-Hirschmann index (HHI) is used to measure the level of concentration in a market (Chin, 2010). High levels of concentration are not desirable. The HHI takes the sum of squares of market shares of each firm competing in a market (Chin, 2010). A score closer to zero indicates competitive conditions and values closer to one indicate the existence of firms with market power. Other indexes too may be used such as the Landes-Posner index (Melody, 1997). Inputs to calculate the index comprise of the firms market share, elasticity of market demand and elasticity of competitive supply (entry conditions). Any index of greater than 0.50 means that there is a lack of effective competition (Melody, 1997, p. 35).

Attention needs to be paid as well to firms that operate as vertically integrated businesses. In the telecoms industry firms that provide wholesale backbone infrastructure and that also provide up-stream services such as internet service provision could be in a position to cross-subsidise costs between industries. As such these firms may be viewed as possessing market power. Furthermore, in assessing competitive conditions authorities should take account of any collusive practices that

may exist in the market under review. This can be done by examining price trends between firms over a period of time.

Rivalry also exists during periods of low market growth where price competition is intense (Hooley, Piercy & Nicouland, 2008, p. 74). Furthermore firms are more likely to "compete hard for success" when they find it difficult to exit a market once they have entered (Hooley *et al,* 2008, p. 74). "High initial investments may create barriers to exit" in this situation (Hooley *et al*, 2008, p.74). Rivalry is also intense when customer switching costs are low when there is little variation across products in this market (Hooley *et al*, 2008, p. 74). Finally rivalry is also intense in markets where firms fixed costs are relatively high compared to variable costs. In this situation firms require greater sales volumes and until that volume is reached competition can be intense (Hooley *et al*, 2008, p.74).

Secondly, in evaluating the effectiveness of competition authorities should also consider the potential for new entrants to emerge. New entrants are likely to enter the market when the costs of entry are low and when existing or new distribution channels are available for use (Hooley *et al*, 2008, p.74). Barriers to entry are high when "competitive retaliation" is anticipated i.e. when incumbents "signal their intention" (Hooley, *et al*, 2008, p. 75) to defend their market share aggressively for example incumbents' increasing interconnection rates precipitated by the granting of a licence to a new operator. Barriers to entry are low when there is "little differentiation between product offerings" of existing operators (Hooley *et al*, 2008, p.75). Here there is more scope for new entrants to offer a service that is unique (Hooley *et al*, 2008, p.75). Furthermore new entrants may emerge when there are perceived gaps in the market i.e. the existing incumbents "may not be serving the wants or needs of existing customers adequately" (Hooley *et al*, 2008, p.75). Here existing firms may be "slow to recognise diversity in customer requirements" prompting opportunities for new entrants (Hooley *et al*, 2008, p.75).

Thirdly, the threat of substitute products makes for competitive markets (Hooley *et al*, 2008, p.76). Substitutes increase competitiveness of a market by making existing products redundant through technological innovation e.g. 3D digital television sets replacing LCD television sets. Incremental product improvement too can affect

competition when existing market offerings become out-dated (Hooley *et al*, 2008, p.76).

Fourthly, the bargaining power of suppliers to the industry can influence competition in that market (Hooley *et al*, 2008, p.76). When there are few suppliers their effect on buyers tends to be greater. Competitive conditions are reduced when the costs of switching suppliers are high. This might be the case when a supplier provides a key item for the industry that is not possible to source elsewhere. This key item may be a bottleneck service such as local loops in the telecommunication industry. Similarly competition is reduced when the suppliers' offerings are highly differentiated. Suppliers hold more bargaining power when their products are distinct and different through differences in standards or differences in branding and reputation (Hooley *et al*, 2008, p.76).

Lastly competition is increased when buyers have countervailing power in situations where buyers are fewer than sellers and these buyers are responsible for large volumes of purchases (Hooley *et al*, 2008, p.77). This is also true when suppliers produce small volumes of product. Competitive conditions are improved when buyers have low switching costs i.e. buyers have an opportunity to choose easily between suppliers to get better deals (Hooley *et al*, 2008, p.77). In addition to this, competitive conditions improve when there are readily available alternate sources of supply where it may be relatively easy for buyers to buy elsewhere (Hooley *et al*, 2008, p.77).

2.6.2 Pro-competitive interventions may be applied in anti-competitive markets

A number of pro-competitive interventions could be applied to firms in defined markets that have been identified as lacking acceptable levels of competition and to firms that have market power or significant market power in the defined markets. The European Commission's Interconnection Directive define firms that have more than 25% share in the telecoms market as having significant market power (Intven, 2000, p. 5-12). Remedies imposed could be ex-ante, ex-post or both (Intven, 2000, p.5-12). Ex-ante remedies are imposed pro-actively and are usually the prerogative of a sector specific regulator whereas ex-post regulation is usually imposed after the anti-trust transgression by a competition or anti-trust authority (Intven, 2000, p.3-6).

Structural separation of firms could be introduced to ring-fence different lines of business into separate companies. An arm-length relationship between the separated entities is desired (Intven, 2000, p. 5-22). There are disadvantages however as firms may lose opportunity for economies of scale where for example head-office premises may be shared. The advantages brought on by these economies of scale may be outweighed however by the reduced opportunity for firms to cross-subsidise lines of business where products or services are priced below cost or for firms to engage in predatory pricing where products and services are priced below cost in the short-run to force competitors' out of business (Intven, 2000, p. 5-23). With structural separation however the various firms that have been created are generally still owned by one holding company which does not "completely eliminate the opportunity for collusion" (Intven, 2000, p. 5-23).

More radical separation could involve divestiture which could mean that operators will be forced to sell off various lines of business through competition policy or regulation to remedy anti-competitive behaviour (Intven, 2000, p. 5-23). Here because of company law directors will be forced to make decisions in the interest of the company that they serve and thus companies will be run on an arms-length basis (Intven, 2000, p. 5-23). The "most famous divestiture case" involves the selling off of the local AT&T businesses from its long distance and international businesses to break the monopoly that AT&T had on the telecommunications business in the USA (Intven, 2000, p. 5-25). This divesture was very successful in that it "created companies that could genuinely compete with each other" (Intven, 2000, p. 5-25).

"Wholesale cost imputation" may be imposed to prevent vertical price squeezing (Intven, 2000, p. 5-24). This anti-competitive practice by incumbents that are vertically integrated involves setting upstream wholesale services to competitors such as backbone infrastructure at exorbitant prices to increase downstream prices for competitors where both incumbent and competitor compete for the same business such as internet access. The practice becomes even more anti-competitive when the incumbent for example reduces its own retail price in the downstream internet business (Intven, 2000, p. 5-24). Remedies include cost imputation which means that the incumbent needs to show evidence that its retail price for the

downstream service (internet access in this example) is not lower than the sum of its wholesale price to competitors for the upstream service plus its marginal cost for its own downstream internet access business (Intven, 2000, p. 5-25).

Transparency of costs and account separation is another means that can be used to remedy anti-competitive practices (Intven, 2000, p. 3-8). Transparency obligations will allow regulators to determine whether a firm is engaging in practices that impact on competition and will improve on countervailing power of buyers of the services from the firm in question (Republic of South Africa, 2010a, p. 13). The principle of non-discrimination is generally included in transparency obligations (Republic of South Africa, 2010a, p.14)

Accounting separation will enhance transparency obligations but the literature shows that although it will not deter firms from anti-competitive conduct it will assist regulators to determine for example whether there is any “cross subsidisation of costs between product offerings” (Intven, 2000, p.5-19). The European Interconnection Directive requires that its member states impose requirements on their public telecoms operators with significant market power, to keep separate accounts for their interconnection costs (Intven, 2000, p.5-19). In essence accounting separation requires operators to account for the costs and revenues of their different products separately. In this way it can be determined whether the particular products are making losses (Intven, 2000, p.5-19). It can be inferred from the accounting data that product costs are being cross subsidised by revenues from other product lines if this is the case. Thus accounting separation requires operators to ring fence costs and revenues for each product (service) on offer (Intven, 2000, p.5-19). This is not always possible for telecoms operators as telecoms operators provide a multitude of products and service. Therefore from a practical point of view for accounting separation, products are divided into broad categories of services for telecoms operators (Intven, 2000, p.5-19). Operators could be required to report costs in a standard format to be determined by the Authority in order to standardise reporting across various operators so that comparisons may be able to be made for similar products across firms. The Chart of Accounts and Cost Allocation Manual (COA/CAM) is an accounting separation methodology that can be used by

Authorities' to detail the underlying costs of providing telecommunications services (Republic of South Africa, 2002).

Price controls are another method that can be employed to remedy anti-competitive behaviour. There is however no single process for setting interconnection charges. Interconnection charges make up a large portion of costs for any new entrant. As a result unnecessarily high costs "impact on the viability of any start up operator" (Intven, 2000, p. 3-23). It has been suggested widely in the literature that any process for setting interconnection charges should be set on actual costs incurred to provide interconnection. There are a number of pricing models that could be adopted by regulators to achieve particular regulatory goals. Interconnection charges should be based on a forward-looking cost of providing the interconnection service (Intven, 2000, p. 3-25). The choice of a pricing model is therefore essential to the setting up of regulatory processes. Some of the other approaches to interconnection pricing will be discussed first, concluding with a discussion on forward looking cost models.

2.6.3 Zero Charge (Bill and Keep/Sender Keeps All (SKA) and Lump sum payments

In this model there are no call terminating charges between cooperating operators. This Bill and Keep model or SKA model can be used by regulators to reduce barriers of entry for new entrants. With this model two or more networks might agree on a zero charges if the volumes and costs of calls terminating on each other's networks is more or less the same. Since no cost based charge is levied each network has an incentive to increase efficiencies to reduce costs (Noam, 2001, p. 76). However this model must be seen in conjunction with other regulatory processes for example number portability regulations will give the opportunity for the telecommunications market to balance out as it reaches a level of maturity (Brock, 1995, p. 2).

However with this model there might be an incentive to dump calls on the other network as soon as possible to reduce costs on one's own network. This could result in calls being routed in a very inefficient manner i.e. calls emanating from a suburb in Johannesburg made to a suburb in Pretoria being routed via Cape Town if the network that operates the Johannesburg – Pretoria link treats the call as a "hot potato" (Brock, 1995, p. 2) and dumps the call on a different network that so happens

to operate the Johannesburg-Cape Town-Pretoria link (Brock, 1995, p. 2). As a response this may incentivise the impacted operator to degrade its service to discourage this call dumping behaviour (Brock, 1995, p. 2).

Further to this an additional negative outcome to this model is that development for rural telecommunications infrastructure may not take place as there is an imbalance with more incoming calls. As a result the rural operator does not receive any income, making the provision of the service in the rural area very unprofitable. The consequence is that rural operators will not readily invest in infrastructure here.

The Bill and Keep model was the main model used by ISPs earlier when data exchanged between the ISPs was more balanced. However as the balance shifts the larger ISPs now treat the smaller companies as clients rather than as equals (Intven, 2000, p. 3-24).Other analysis done for internet backbone service providers' show that this model does not provide adequate incentives for collaboration and an asymmetric interconnection rate is the preferred option (Tan, Chiang & Mookerjee, 2006, p. 776-788).

A similar model is related to a payment of a lump sum or fixed payment for access to another operator. This model too has negative consequences in that operators may choose to " seek bypass" if the charges are perceived to be too high, to avoid payment (Noam, 2001. P. 78). This model was used in the early days by Indian local operators and by US and Canadian local operators (Intven, 2000, p. 3-24).

2.6.4 Fully Distributed Cost Pricing Model (FDC, two part tariff)

This model is also referred to as the Fully Allocated Cost method. It is based on historical allocation of costs and in theory it combines fixed and incremental costs and allocates them to different broad categories of services. The problem with this method is the difficulty of allocating joint and common costs to different classes of service. This is usually done by allocating these costs using a formula that is aligned to the relative usage of that particular service. For example if network access lines at the local exchange are used in a ratio of eighty percent (80%) for local calls and twenty percent for international calls then joint and common costs will be allocated in the 80/20 ratio as well. This model then is related to a two part tariff (Noam, 2001, p.

79). It is composed of a variable usage charge with a flat capacity charge. The problem with this method is that any inefficiency in the incumbent operator will be passed on to the new entrant using the historical costs associated with particular services (Intven, 2000, p. B-14).

A counter argument is that because the fully distributed cost exceeds marginal cost that is it includes joint and common costs it will encourage unfair entry by new operators whose long run marginal costs are higher than that of the incumbent (Noam, 2001, p. 78). This model was used in many states in the United States at one stage (Noam, 2001, p. 79)

2.6.5 Efficient Component Pricing Rule (ECPR)

With this model the new entrant pays the incumbent any incremental cost that the incumbent incurs in providing the service for the new entrant plus any opportunity cost for revenue lost because of the complimentary service provided by the new entrant. This model has been the subject of intense debate from the time it was first proposed by Baumol, Ordover and Willig principal authors of the theory (Noam, 2001, p. 94). Counter proposals suggest that in fact network access charges should be equal to the incumbents cost of excess excluding opportunity costs in order to achieve productive efficiency (Armstrong, 1998, p. 297). However the ECPR was an influential option and was used in the United Kingdom and New Zealand and is considered here (Noam, 2001, p. 86).

The four main advantages proposed by the advocates of ECPR is that only interconnectors with lower incremental costs will be prepared to enter the market, new entrants would not affect incumbents revenues, it will not change any cross-subsidisation that exists and finally it overcomes the desire for incumbents to keep new entrants out as it will not affect their revenues (Noam, 2001, p. 88).

There are many criticisms regarding ECPR model however. Criticisms include the fact that this rule protects the incumbent from making losses due to competition as it will still retain profit from the interconnection fees charged to new entrants based on the opportunity lost model (Noam, 2001, p. 88). It is also incorrect to assume that customers of the new entrant would have necessarily been diverted from the

incumbent as the new entrant might be attracting first time customers to its network from the innovation and new products supplied by the new entrant. There are positive externalities i.e. the advantage that the new entrant brings to the customers of the incumbent by increasing the base number of customers that can now be called and this is not factored into the model. ECPR requires the new entrant to have its full costs less than the incremental costs of the incumbent; and given that the incumbent has the advantage of economies and scope and scale due to its generally entrenched nature, this will be difficult to achieve for the new entrant. Other criticisms include the fact that placing a value on opportunity cost is dependent on good information and because of information asymmetries this is not always possible for regulator to gather good data.

Furthermore the ECPR is a sound principle only if a stringent set of assumptions holds true. These assumptions are that the “incumbent’s price for the complementary service is based on a marginal-cost principle, the incumbent and the new entrant’s service components are perfect substitutes and that the incumbent’s marginal cost of production can be accurately determined amongst other things” (Economides, White, 1995, p. 3). If any of these assumptions are relaxed for example if new entrants are excluded based on the fact that their costs are higher than the incumbents efficient costs then this exclusion could have negative social benefits (Economides, White, 1995, p. 3). The argument posed by Economides and White is that if the incumbent’s interconnection charges are reduced by regulatory process it will allow a new entrant, even if it is inefficient to enter the market thus posing a competitive challenge to the incumbent which will in the long run provide social benefits to consumer’s at large (Economides, White, 1995, p. 8).

The debate around the use of ECPR as a price model for interconnection has certainly been controversial with courts of law in New Zealand for example finding for and against the model (Noam, 2001, p. 92). However OFTEL the then British telecommunications authority concluded that in fact the “ECPR does not support a more competitive market for telecommunications” (Noam, 2001, p. 94).

2.6.6 Marginal Cost Pricing Models

Marginal cost is defined as the cost of producing one more unit of a product (Fourie, *et al*, 1995, p. 306). In the same vein incremental cost is the cost of increasing output by a given quantity which in turn is equal to the marginal cost when the cost is averaged across the quantity produced to calculate the cost for one additional unit of production (Noam, 2001, p. 94). In interconnection terms marginal pricing models will be based on the incremental cost incurred by the incumbent to interconnect with a new entrant or network requiring interconnection. However the short term incremental costs do not include the cost of capital i.e. upfront investments in the network which are usually fixed costs (Noam, 2001, p. 94). Therefore economists regard the "long run marginal cost as the optimal pricing rule" (Noam, 2001, p. 95).

Thus the long run costing approach defines the incremental cost for the total service and this includes both fixed costs and the incremental and marginal costs (Intven, 2000, p. 3-26). The question to be asked is whether the interconnection pricing model should be based on costs for building the network (historic or embedded costs), present costs or even future costs. Eventually many regulators for example Oftel and the FCC have settled for a forwarding looking cost model called LRIC based on a hypothetical network using best practice technology and efficient engineering (Noam, 2001, p. 95). A LRIC type of approach that is well designed will provide an estimate of the costs of an efficient operator to provide interconnection to a new entrant in a fully competitive market (Intven, 2000, p. 3-26). Any LRIC calculation will estimate the direct costs incurred by an operator over the long run to smoothen out any peaks in investments costs over the years and will also include capital costs for the costs of financing the interconnection facilities. Joint and common costs are also included and are calculated forward looking, according to the costs that an efficient operator will incur to provide the service. According to Noam (2001) there are "two variants of LRIC i.e. Total Service Long Run Incremental Costs (TSLRIC) and Total Element Long Run Incremental Costs (TELRIC)" (Noam, 2001, p. 95).

TSLRIC is defined as the total forward looking cost of a hypothetical, efficient system built from scratch, using the most efficient technology (Noam, 2001, p. 95). This

approach was developed by the FCC and measures the difference in cost of producing and not producing a service (Intven, 2000, p. 3-26).

TELRIC on the other hand although similar to TSLRIC is not the cost of the total service but rather the cost of the unbundled elements that are used to provide the service (Noam, 2001, p. 95). This approach was also developed by the FCC and includes the incremental cost resulting from the adding or subtracting a specific network element in the long run together with the proportionate joint and common costs (Intven, 2000, p. 3-26).

> *There are five major steps to deriving TELRIC: creating a hypothetical network based on future needs, a breakdown of the network into unbundled elements, the assignment of costs to the unbundled network elements (cost of constructing the network element, operating and maintaining the element and the allocation of overhead expenses), forecasting of a hypothetical usage rate based on current and future demand and lastly calculate the per unit cost of the specific network element by dividing total costs of the network element by the projected usage rate (Noam, 2001, p. 97).*

Although generally accepted as best practice there is disadvantages to the use of the LRIC approach particularly in developing country environments (Intven, 2000, p. 3-26). This model could be “inappropriate where there is cross subsidisation i.e. where end user prices are set far below costs” (Intven, 2000, p. 3-26). This model could also be problematic where incumbents are inefficient and the implementation of the LRIC model will not allow an inefficient operator to recover all its costs and could be a threat to the incumbents’ sustainability (Noam, 2001).

2.6.7 The waterbed effect must be recognised when regulating prices

Prices charged by telecommunications companies are interdependent (Schiff, 2007, p. 23). Decreasing the price of one component will cause another component to rise hence the waterbed effect (Schiff, 2007, p. 23). This effect will prevail if operators are reluctant to absorb a decrease in revenue and will counter this by raising retail prices for example or by reducing capital costs (Schiff, 2007, p. 23). A caution is that if we ignore these “linkages between prices when doing market definitions this could lead

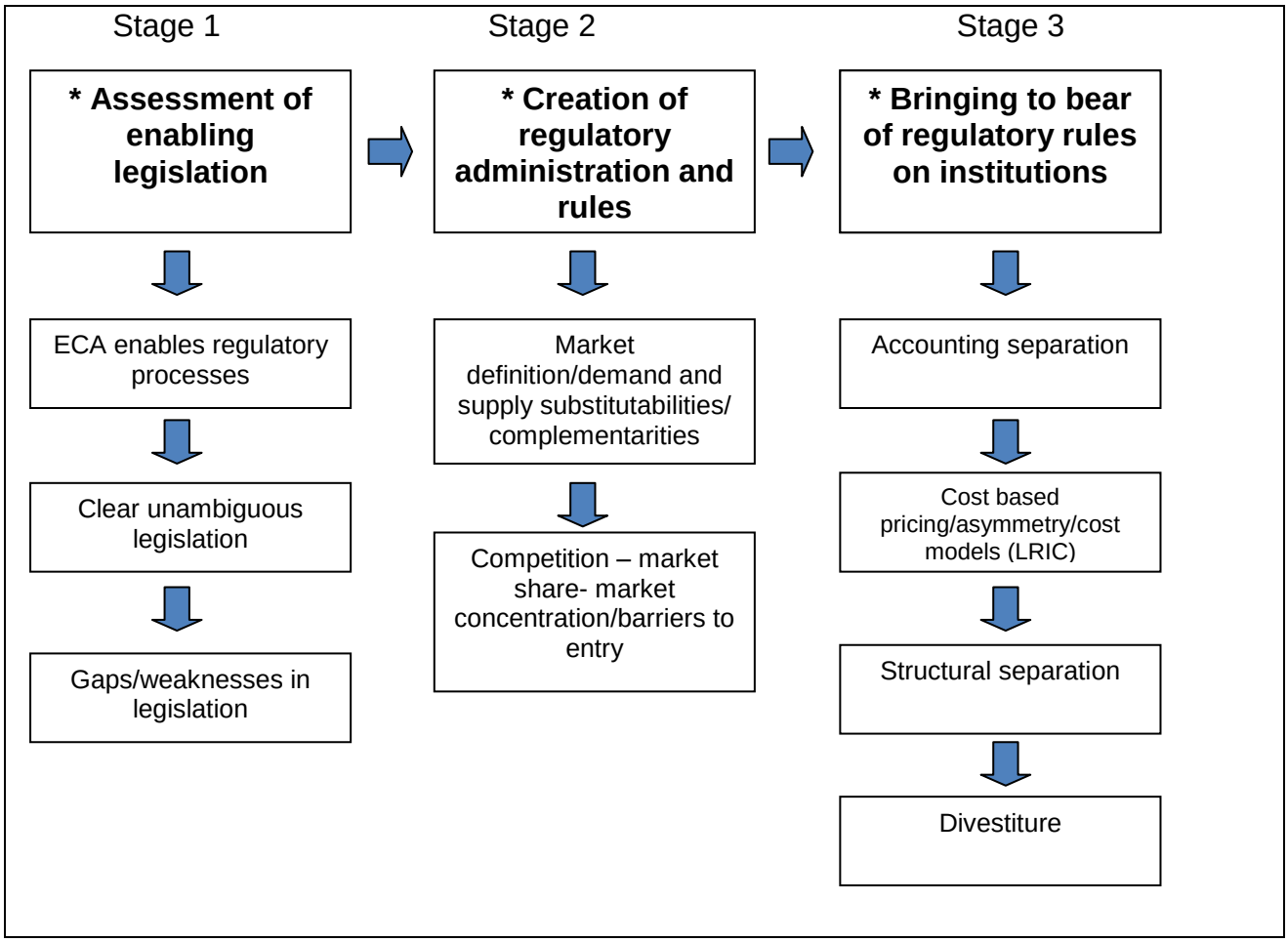
to a definition that is too wide or narrow" (Schiff, 2007, p.23). However there are debates on the consequences of regulating interconnection rates and how existence of a waterbed effect needs to be acknowledged, that is where the "downward pressure on interconnection rates in a regulated market could have the effect of increasing prices in un-regulated markets eg retail prices, handset subsidies" (Schiff, 2007, p. 3)

2.6.8 Access deficit charges are paid to operators to compensate them for prices below costs

In the liberalisation process incumbent operators are expected to continue to rollout services to improve teledensity (Intven, 2000). In the past operators were able to achieve this by cross-subsidising the costs of these loss making service from more lucrative service offerings (Intven, 2000). However with tariff-rebalancing where prices are regulated to trend towards being cost oriented incumbent operators are reluctant to continue with loss making rural rollouts. To compensate for this incumbents are offered an access deficit charge. New entrants usually do not have these roll-out obligations and are requested to contribute to a Universal Service Obligation fund. Intven acknowledges that "it is good practice to ensure that these charges are separated from interconnection charges" (Intven, 2000, p. 3-31). Furthermore the WTO regulation reference paper requires USO and ADC to be reflected separately (Intven, 2000, p. 3-31)

2.7 The conceptual framework used to design the research approach and analyse data

Figure 3 : The Conceptual Framework: STAGES OF THE REGULATORY PROCESS



Source: *Baldwin & Cave, 1999, p. 96

Prepared by: Chetty, 2011

The concepts used to design the research approach are illustrated in Figure 3. The central concept to the study is drawn from Baldwin and Cave's three stage process for regulation i.e. the "enactment of enabling legislation, the creation of regulatory administration and rules and the bringing to bear of these rules on the identified institutions" (Baldwin & Cave, 1999, p. 96). Concepts explored in Stage 1 are related to the legislation that has been promulgated and an assessment of the efficacy of the legislation's enablement of regulatory processes for interconnection regulation. The legislation is tested for ambiguity and gaps, strengths and weaknesses are identified.

In Stage 2 concepts such as demand and supply substitutabilities and product complementarities are explored with the view to defining relevant markets. Next, competitive conditions are explored using concepts such as market concentration, market share and barriers to entry in relevant markets. Stage 3 explores imposition of pro-competitive methods such as wholesale call termination price determination, asymmetrical prices and price models such as LRIC and divestiture.

It is important to note however that the conceptual framework illustrated above however does not assume that the processes shown above need to be conducted in the sequence as illustrated. The market review process for example can be conducted ex-ante or ex-post. However it does not have to be one or the other as there could be a balance between competition policy processes and ex-ante processes. The cost based pricing study could also be conducted in parallel with the market definition process.

2.8 Summary

Interconnection is contentious issue but is an important regulatory tool and in the past, in the days of AT&T has been used to entrench monopoly. More recently it is used as a tool to enhance competition. Entrenched incumbent telecoms companies hold the balance of power in settling interconnection agreements and can strategically use interconnection to dominate markets and keep new entrants out. Interconnection between telecoms operators takes place at different levels and includes concepts such as the co-location of equipment at data facilities. Before regulations can be prescribed it is important to define markets, assess competitiveness in the markets and impose pro-competitive measures to remedy in-effective competition. Importantly the actual rates themselves need to be cost-based and an exercise needs to be performed to assess the costs. Different economic models can be used to determine rates and marginal cost models such as LRIC can be used to benchmark costs of an efficient operator.

A conceptual framework is developed against which the research design and analysis of data will be done and encapsulates the main concepts discussed in this chapter.

CHAPTER 3

RESEARCH METHODOLOGY USED TO ANALYSE PROCESSES FOR INTERCONNECTION REGULATION IN INDIA AND SOUTH AFRICA

Processes to arrive at interconnection rates or wholesale call termination rates for call termination in South Africa, that are acceptable to all i.e. consumer lobby groups, operators, government, opposition political parties, the regulator, the competition commission and the media have been fraught with problems. The issue of interconnection rate regulation has attracted substantial media attention for the last few years. Certain opposition party members in government have called for state intervention at certain points in the process. Successive Communication ministers have called operators to book but in doing so have bypassed legislative processes earning the ire of the sector regulator and operators. At various stages of the process incumbents have threatened to take legal action against the regulator due to process not being followed correctly. Thus the processes to arrive at interconnection rates have been mired in disputes, challenges and contestations.

The body of literature established fairly conclusively that interconnection affects competition and that interconnection needs to be regulated at least until competition is attained. The literature points to the robust processes that involve market assessments and cost analyses amongst other things that need to be performed before rulings can be made.

3.1 The Research Problem

The research problem is concerned with the efficacy of the processes for prescribing interconnection rates in South Africa. As has been described earlier South Africa has one of the highest telecommunications costs in the world and part of the cause is attributed to the high cost of interconnection or call termination rates. South African authorities have been wrestling with this problem for many years, the process of which was seemingly bogged down in a morass of processes, contestations and red tape. Not many studies have been untaken to document and analyse the processes

engaged in by the South African authorities in arriving at call termination rates. This piece of research seeks to document the processes and determine strengths and weaknesses and lessons learnt.

Interconnection agreements between telecommunications operators in South Africa are stacked heavily in favour of the large established operators, making policy formulation and regulatory intervention important in promoting effective competition for this sector. Weak policy and regulatory mechanisms allow established operators to use their market positions to keep interconnection costs above actual costs incurred by them and because they are left unchecked result in high call costs to end users. Furthermore established operators seemingly impose high interconnection costs directly or indirectly on rivals who require their infrastructure and services thus rendering them uncompetitive.

The South African telecommunications sector is characterized by high interconnection prices leading to high end user pricing. South Africa's telecommunications policy and regulatory reform process has struggled to arrive at reasonably priced interconnection rates compared to other developing countries. Telecommunications prices in India for example are amongst the cheapest in the world possibly due to their focus on interconnection pricing. Both countries went through major telecommunications reform but the outcomes have been different with respect end user to pricing.

South Africa's process for the regulation of interconnection rates was stalled for an extended period due to impasses on processes that needed to be followed. Some of the disagreements on what constitute an operator with significant market power (SMP) for example, and the process challenges that ensued stalled the process for many years. Interconnection guidelines have been issued in 2000, 2002 and subsequently in 2007 but were only finalized in 2010. India on the other hand has progressively reduced interconnection charges over the similar period.

Moreover, South Africa is in danger of losing its position as mobile leader in Africa and with it the economic benefits that come from improved telecommunications penetration. It has been shown previously in the report that high telecommunications

costs is a developmental issue and can have a debilitating effect on the economy because it has an impact on access, affordability, cost of doing business, rollout of new media and participation in the global economy. Furthermore the high cost of mobile calls erodes the disposable income of the poorest members of South African society by displacing requirements for food and other essentials with telecommunications costs.

High mobile costs further widen the chasm of the digital divide because of unaffordability; further isolating South Africans from the rest of the world. Projects on poverty alleviation involving telecommunication services are also severely impacted by the high cost of telecommunications in South Africa. Many educational programs especially for rural communities rely on mobile service that cannot be rolled out cost effectively with current pricing structures. Senior government leaders have articulated the need for lower telecommunications cost to leverage ICT opportunities for using South Africa as a destination for business process outsourcing and call centres hubs. This aspiration is far from reaching the objectives.

The analysis of the problem being researched will lead to a better understanding of the processes by systematically describing, explaining and evaluating the processes engaged in by the authorities to arrive at an interconnection rate which was shown earlier to be a large factor in overall telecommunications costs to the end user. It will determine strengths and weaknesses in the processes and will suggest improvements to be made if any, to the processes.

3.2 The Research Purpose

The purpose of this research is to analyse processes for the South African situation using the conceptual framework developed during the literature review (Fig 3) by, in summary, firstly investigating how legislation enables interconnection regulation, secondly by investigating processes for creating regulatory administration and rules including processes for defining markets and assessing competition and thirdly by investigating processes for remedying the situation of market failure if indeed it exists. Strengths and weaknesses are determined and lessons learnt are extracted by drawing parallels with processes engaged in by the Indian authorities over a

similar period to determine any differences in approaches adopted by the two countries

India has a workable process for interconnection rate determination as is evident from TRAI's latest determinations in 2009 that have reduced rates by a further 30%. An analysis of the processes being followed in both countries will be useful to policy makers, regulators and consumer groups. By examining the process followed in India it is hoped that lessons can be learnt that can be reported on and be made available to interested parties.

3.3 The Research Question

The key question to be answered is: to what extent does the approach to regulating interconnection rates adopted by the South African Regulator present a favourable outcome with reference to the approach adopted by the Indian Regulator?

Sub questions related to the research topic are:

3.3.1 To what extent has the approach to market definition promoted an effective regulatory process?

3.3.2 To what extent has the review of the effectiveness of competition provided a valuable component of the regulatory process?

3.3.3 How does the determination of pro-competitive remedies strengthen the regulatory process?

3.3.4 How does the process for determining interconnection rates strengthen the process?

3.3.5 What lessons can be learnt from the approach to interconnection regulation adopted in India?

3.4 The Research Approach

This research is a qualitative inquiry as it is a type of inquiry in which "the qualities, characteristics or properties of a phenomenon are examined for better understanding and explanation" (Henning, Smit & van Rensburg, 2004, p. 5). According to Bogdan and Taylor two major theoretical perspectives have dominated social research i.e.

positivism and phenomenology (Bogdan & Taylor, 1984, p. 1). The positivist “seeks the facts or causes of social phenomena whereas the phenomenologist is committed to understanding social phenomena from the actors own perspective” (Bogdan & Taylor, 1984, p. 2). The positivist seeks to understand causes by methods that produce data that can be statistically analysed. The phenomenologist seeks understanding through qualitative methods such as interviewing, document analysis, participant observation and others.

3.4.1 The research uses an interpretivist framework

However, gradually the role of the researcher as “co-creator of meaning” became more important (Henning *et al*, 2004, p. 19). The “qualitative project thus took an interpretive turn” (Henning *et al*, 2004, p. 19). The interpretivist believes that “measurement is fallible and encourages varieties of data and different sources and analysis methods in order to strive for validity” (Henning *et al*, 2004, p. 20). Thus this study lends itself to a qualitative analysis since it seeks to gain understanding by the actors own perspectives through a method of interviewing and document analysis using an interpretivist framework.

3.4.2 The research is exploratory and explanatory

In general research design involves specifying exactly “who or what is to be studied and when, how and for what purpose a study is to be undertaken” (Babbie, 2001a, p. 90). Usually the choice of research design for any research project is a function of the purpose of the research being undertaken (Babbie, 2001a, p. 91). Babbie indicates three purposes of research which purposes may also be a combination thereof.

The first purpose of research is to do exploratory studies for reasons that include a better understanding of a subject, to test the feasibility of undertaking a more extensive study or to develop methods to be employed in subsequent studies (Babbie, 2001a, p. 92). The second purpose of research is to describe situations and events (Babbie, 2001a, p. 93). In this case a researcher observes and then describes what is being observed. An example of descriptive research is the 2011 South African census that seeks to describe accurately and precisely a wide variety of characteristics of the South African population.

However research is generally not limited to just being descriptive in nature and will require examinations of why observed patterns exist and what the patterns imply (Babbie, 2001a, p. 93). Following on, is the third purpose of research which is explanatory in nature. This type of study asks the question “why”. Whereas descriptive studies ask the question what, where, when and how explanatory studies will ask why certain phenomena take place. For example a research project of a descriptive nature may report the attitudes of various segments of the population to people living with AIDS whilst an explanatory study might determine that females are more accepting of people with AIDS than males which might assist the researcher in determining that gender plays a role in people’s attitudes.

The purpose of this particular study is to seek answers to the questions set out in 3.3 above. The questions seek to describe the processes that were followed and explore why certain paths or models were chosen, why regulation has taken a long while to be developed and how and why various stakeholders responded in the ways that they did. The purpose of this particular study is therefore descriptive, exploratory and explanatory in nature using an interpretivist framework.

3.4.3 The units of analysis

The next step in the research design is to specify what or who is to be studied that will give relevant answers to the questions posed. Babbie clarifies that it is not important what you call given units of analysis but the key is to be clear as to what your unit of analysis is (Babbie, 2001a). One of the central units of analysis in this study is the regulatory processes for interconnection regulation. The regulatory process as define previously can be broken down into three steps that make up the units of analysis for this piece of research. They are the regulatory processes comprising three stages: “the enactment of enabling legislation, the creation of regulatory administrations and rules and the bringing to bear of those rules on persons or institutions sought to be influenced or controlled” (Baldwin & Cave, 1999, p. 96). These three stages make up the units of analysis.

3.4.4 The case study research method

A case study approach was taken for this research paper. A case study may involve the study of “events, roles and relationships” (Babbie & Mouton, 2001b, p. 281). Amongst other things a case study may focus on best practice, policy implementation and evaluation making this approach ideally suited to the case in South Africa for processes for interconnection rate regulation and the case in India for interconnection rate regulation. This approach lends itself to this study as it investigates the processes taken by a specific Authority in South Africa i.e. ICASA in regulating interconnection rates. Similarly it also investigates the approach taken by the regulatory Authority of India, TRAI for similar processes. Leedy states that case studies may focus on a single case but more importantly he clarifies that case studies may be used to study two or more cases that may be different in keys items to make comparisons. The case study method was chosen for this research paper as it involves South African practices with parallels drawn with practices in India (Leedy & Ormond, 2003, p. 135).

The conceptual framework shown in Fig 3 will be the basis on which the case study is undertaken. It shows the purpose of the study, the principles guiding the study and has led to the formulation of the research questions set out in 3.3 above. Multiple sources of data will be used which is typical of case study methods involving a variety of informants and documentation analysis (Babbie and Mouton, 2001b, p.282).

3.5 Data Collection and Analysis

Methods of data collection involved interviews and examination of appropriate written documents (Leedy & Ormond, 2003, p.144).

3.5.1 Data Collection

Interviews

Interviews were conducted with various experts in the field. Interviewees could be broadly be categorised into three categories: experts that were or are employed by ICASA or TRAI or other regulatory institutions, experts employed by the main telecommunications operators and thirdly experts that are consultants in the

telecommunications sector. The assistance of key informants in the telecommunications regulatory field in South Africa and in India were sought to set the direction for the interviews to follow. The researcher translated the information provided by the key informants into a set of questions that gave direction to the interviews that were conducted (see Appendix 1). The interviews were semi structured and questions were used as a means to extract information.

The interview questions was a general plan of enquiry and although questions were developed to guide the interview, very rarely was the set of questions strictly adhered to. The questions were used more as probes to guide the conversations. The discussions with subject matter experts took on the form of a discussion about the interconnection regulatory process. The participants did most of the talking and raised certain topics and themes that were explored. Participants expressed views and often prompted the interviewer to agree or disagree with what was being said.

Preparation for the interviews involved the understanding of the interconnection regulatory concerns beforehand so that intelligent conversations could ensue and so that the interviews could flow in a smooth and continuous manner. The approach that was taken was that the participants had specific information that needed to be drawn out. The researcher participated in the discussion to allow the conversations to flow smoothly but was cautious about not dominating the discussion so the approach was to allow the respondent to speak freely. However the researcher did express opinions when the conversations demanded and often this led to different paths being explored.

Key informants were identified for the purpose of gathering broad perspectives on interconnection and specific individuals were sought out to gather their knowledge, experiences and opinions in the specialist fields of interconnection rate regulation. Key informants were drawn from the telecommunications sector. Some had previously been employed by the sector regulator in South Africa and India viz ICASA and TRAI respectively. Other informants are or have been employed in the regulatory divisions of the major telecommunications operators viz Telkom, Vodacom, Neotel, Cell C, Reliance and MTN. Others work as consultants to the major operators, ICASA and TRAI.

Table 4: Respondents and background: South Africa

Name	Category	Institution
KEY INFORMANT	Regulator/Operator	Regulator/Industry
Respondent 1	Competition Commission/ Operator	CC/Industry
Respondent 2	Regulator/Operator	Dept of Communications/Regulator/Industry
Respondent 3	Regulator/Operator	Regulator/Industry
Respondent 4	Operator	Industry
Respondent 5	Regulator/Operator	Regulator/Industry
Respondent 6	Consultant/Operator	Industry
Respondent 7	Consultant/USASA	Universal Service Agency
Respondent 8	Consultant	Industry

Table 4 shows a list of respondents in South Africa and are all still involved in the telecommunication sector in South Africa (2011) in one form or the other.

The Key Informant in South Africa was interviewed with the express purpose of setting direction for this research report. The Key Informant worked for both the regulator and the industry and has vast experience at senior levels in both. A number of themes emerged from the discussion with the Key Informant that were used for the development of interview questions and also pointed to the kind of documents that were required to be examined (Appendix 1).

Table 5: Respondents and background: India

Name	Category	Institution
KEY INFORMANT	Research Fellow/Regulator	Regulator/Industry
Respondent 1	Regulator	Regulator
Respondent 2	Regulator	Regulator
Respondent 3	Academic/Advocacy Group	Advocacy Group/Indian University
Respondent 4	Academic/ ICT Consultant	Indian University
Respondent 5	Academic	Indian University
Respondent 6	Academic	Indian University
Respondent 7	Consultant/Advocacy Group	Advocacy Group
Respondent 8	Consultant	Industry
Respondent 9	Research Officer	Industry/Indian University

Table 5 shows respondents in India drawn from a sector that have in-depth knowledge of the telecommunications sector in India.

The Key Informant in India and was interviewed with the express purpose of setting direction for the Indian segment of the research report. The Key Informant has a long association with the Telecoms Regulatory Authority of India (TRAI) and the Department of Telecoms and was involved amongst other things in interconnection regulation in the early days.

A number of themes emerged from the discussion with the Key Informant that were used for the development of interview questions and also pointed to documents that were required to be examined (Appendix 1).

Although the distribution of selected respondents is significantly different between South Africa and India, any bias, views shared and quality of information issues are corroborated by a thorough document analysis process. It must be noted however that this research report is a case study of the Republic of South Africa with a perspective from India.

Document Analysis

Document analysis was also undertaken as a means of gathering research data for analysis together with the interviews as set out above. Content analysis is the “study of recorded human communications” (Leedy & Ormond, 2003, p. 304). Content analysis lends itself perfectly to this research study as it involves the study of laws, constitutions, emails messages, web pages and letters amongst others. It answers the questions of “who said what to whom and for what effect” (Leedy & Ormond, 2003, p. 305). Babbie advises that it is not advisable to study all content that is available but rather sample appropriate material.

In this study the legislation pertaining to telecommunications, guidelines issued by the authorities, findings documents, policy documents and regulations were analysed to establish the processes that were followed by the authorities. The coding of the particular content that was done by transforming the data into a standardised form according to the conceptual framework established in Chapter two, Fig 3. Thus content analysis was done by codifying from the documents certain patterns relating to interconnection regulation that involved legislation, how markets were defined, how market failure was established and remedies invoked. Furthermore documents

were codified and certain models and patterns that appeared repeatedly established as being significant for this study were grouped into themes to be studied.

The documentation in South Africa consisted of the Telecommunications Act, the Electronic Communications Act, the Competition Act, governments gazettes issued by ICASA consisting of invitations to comment, findings documents, guidelines, media releases, draft regulations, regulations, notices, licences issued to Operators, Operator responses, reference interconnection agreements and charts of accounts.

In India document gathering involved the analysis of documentation mainly available on the TRAI website, the Indian Telecoms Act and a strategic document published in 1998, Consultation paper No. 98/3 that according to the Key Informant set the direction for Interconnection regulatory processes in India.

3.5.2 Data Analysis

In this qualitative analysis the researcher commenced with a large body of data gathered from the interview and document analysis process and through inductive reasoning reduced the data into small sets of abstract themes (Leedy *et al,* 2003, p. 150). The researcher engaged in an active process of interpreting the data to take note of issues that are significant and discarding issues that are not regarded as being material (Leedy *et al,* 2003, p. 150). Common threads emerged and these were gathered under broad themes using the conceptual framework (Fig 3) to contextualise the themes that were identified.

There was a continuous process of interpreting the data that was presented to identify general categories or themes. Sub themes were also identified and a sense of what the data meant began to take shape as the analysis progressed. The analysis process concluded by drawing parallels with the processes engaged in by the Indian Authority and lessons learnt were summarised.

3.5.2.1 Validity was a strongpoint of this Qualitative research however reliability was questionable at times

In research validity refers to the “extent to which the empirical measures adequately reflect the real meaning of the concept under consideration” (Babbie, 2001a, p. 143). This can be interpreted for this piece of research, the extent to which the data gathered from interviews and content analysis correlates with the actual interconnection regulatory processes.

Validity in this research study was assured as it is a factor of having interviewed the very people that were involved in the development of the processes for interconnection regulation in South Africa and India. Babbie is clear when he advances that validity in field research is “superior as compared with surveys and experiments” (Babbie, 2001a, p. 299). Field researchers can give detailed illustrations instead of merely specifying concepts (Babbie, 2001a, p. 299).

The reliability in field research however is problematic according to Babbie (Babbie, 2001a, p. 299). Reliability means, for this research topic, that the observations and assessments made can be repeated over a number of different interviews and by different researchers and will not differ much. However it cannot be guaranteed that different researchers will not assess respondents differently to that of this researcher. In fact it is probably certain that other researchers may interpret responses differently. However a system of triangulation was used to ensure reliability as two different research methods were used for this field research. Semi-structured interviewing was coupled with content or documentation analysis. Furthermore after interviews were conducted they were immediately written up and made available to the same respondents for comment. Respondents that did comment made certain adjustments to some of the interviewer’s observations.

3.5.2.2 Ethical considerations included assuring respondents that comments will not be attributed to any single respondent

Interconnection has had been mentioned previously is highly contentious and no more so than in South Africa. Litigation has often not been ruled out through the entire process so the confidentiality of the respondent statements was assured. In fact some of the respondents were very reluctant to speak to the researcher unless comments were not to be attributed directly to them.

Care therefore was taken not to attribute comments directly to respondents.

3.6 Summary

In essence, the problem that was researched was the ineffectual processes conducted by ICASA that did not achieve the desired outcome of cost-based interconnection rates. Parallels are also drawn with similar processes in India. The research question sought to unravel how processes have unfolded over the years and the strengths, weaknesses and lessons learnt are portrayed. The research design was exploratory and interpretivist in nature and a case study method was used to gather information through interviews and document analysis. Analysis was accomplished by codifying data gathered into themes that were examined for patterns and commonalities so that inferences could be made and lessons learnt could be extracted.

CHAPTER 4

REVIEW OF SOUTH AFRICA'S MARKET REVIEW APPROACH, KEY LEGISLATION, REGULATIONS AND OTHER MATERIALS

The conceptual framework developed in Chapter 2 (Fig 3) set the approach by which data was to be gathered and tested against the framework that was developed. Seven themes emerged that will be discussed here.

The conceptual framework began with an analysis of telecommunications legislation. It followed with a review of how markets were defined using certain concepts such a demand and supply substitutabilities and complementarities and economic tools such as the hypothetical monopolist test. Processes on how the markets were assessed for competitiveness were investigated using concepts such as market concentration, market share and barriers to market entry. Competition law or anti-trust interventions to propose pro-competitive measures were investigated such as imposing cost based pricing, accounting separation, pricing models e.g. LRIC, structural separation and divestiture.

4.1 Themes from interviews conducted

Seven themes emerged from the interviews conducted with the Key Informant and other respondents. Care was taken to preserve the anonymity of the Key Informant and the eight respondents (collectively referred to as the respondents). However one of the respondents pointed the researcher to a paper that was written by the respondent that captures the views of this particular respondent. Therefore an exception is made as this article is referenced directly in this report, as it exists in the public domain and was referred to often during the interview with this particular respondent.

4.1.1 Theme 1 – The ECA defined interconnection regulatory processes are onerous

The majority of the respondents believe that the ECA effectively promulgates interconnection regulatory processes but they share a common view that the ECA has promulgated a very onerous process. One respondent suggested that there was

no real power in the previous Telecommunications Act of 1996 (Respondent 3 SA, personal communication, 8 March 2011). The Telecommunications Act according to this Respondent was promulgated mainly to deal with the issues of managing the Telkom monopoly. The ECA however was brought about to manage the liberalisation of the telecommunications market, the main driver of which was convergence. (Respondent 3 SA, personal communication, 8 March 2011). Previously, the Minister established Ministerial interconnection guidelines for Telkom which were supposed to be in force until May 2000 (Respondent 3 SA, personal communication, 8 March 2011). Thereafter, ICASA was to determine interconnection fees and charges. The original Ministerial determination stated that Telkom's interconnection charges should as soon as practicable be based on its long-run incremental costs (LRIC), but did not prescribe what Telkom should do in the meantime, preventing ICASA setting and enforcing interconnection price regulation until LRIC was feasible (Respondent 4 SA, personal communication, 5 May 2011). Whilst interconnection agreements had to be lodged with ICASA and the regulator was to resolve any disputes, it lacked either data or any guiding framework within which to do this (Respondent 3 SA, personal communication, 8 March 2011)

Respondents agreed that with the passing into law of the ECA in 2006 the processes were now clearly defined. A respondent pointed out that although the market definition process in the ECA was developed according to the European model it had one striking difference in that it had in contracts to the European model an ex-ante approach to market definition (Respondent 2 SA, personal communication, 5 May 2011). The European Union approach meant that a Framework had to be established before regulations could be prescribed (Respondent 4 SA, personal communication, 5 May 2011). With the ECA, Chapter 10 required that the regulator had to do a study to define the market and only if it was found that there is not significant competition then only could it issue call termination rates (Respondent 4 SA, personal communication, 5 May 2011). Thus a full market investigation had to be concluded first before regulations could be prescribed (Respondent 4 SA, personal communication, 5 May 2011).

In the European Union context although the market definition process is similar to Chapter 10 of the ECA this did not have to be done before regulations could be

prescribed (Respondent 3 SA, personal communication, 8 March 2011). Although legal opinion confirmed that the ex-ante process needed to be followed this could have been challenged had ICASA pursued this with more vigour (Respondent 3 SA, personal communication, 8 March 2011). Advocate Gilbert Marcus SC confirmed that ICASA could have short-circuited the process because it had done sufficient work according to him to issue the regulations. “The ECA does not say that regulations needed to be prescribed subject to the market definition exercise” (Patricia de Lille, 2009). The processes could have been implemented in parallel (Respondent 3 SA, personal communication, 8 March 2011).

Although the ECA before passing into law was circulated for comment, ICASA was not cognisant of the complexity involved in executing the terms and conditions of chapter 10 at the time (Respondent 4 SA, personal communication, 5 May 2011). It was only during implementation “like many telecommunication policies” that the challenges became evident (Respondent 4 SA, personal communication, 5 May 2011). A Respondent that was with ICASA at the time, suggested that the Operators’ were probably aware that requirements were onerous but did not raise this during the commentary process (Respondent 5 SA, personal communication, 9 May 2011).

Respondents suggested that it was not relevant whether the process that was prescribed by the ECA was efficient or not but ICASA as a creature of statute had to follow the ECA to the letter (Respondent 8 SA, personal communication, 2 February 2011).

A respondent reminded the researcher that notwithstanding the ECA it must be noted as well that it is required that all parties comply with the Promotion of Administrative Justice Act (PAJA) (Respondent 4 SA, personal communication, 5 May 2011). Therefore it is critical to note that “process is everything” (Respondent 4 SA, personal communication, 5 May 2011). The inference is that had ICASA not followed the process as defined by law, it would have opened itself to challenges as per the PAJA.

Most respondents concurred that the process followed under the ECA therefore was the right process whereas in the past it seemed that “ICASA wanted to get to an

outcome that was already pre-determined" (Respondent 4 SA, personal communication, 5 May 2011). The common view held by respondents was that the ECA however is onerous and is very complex to implement. A Respondent further suggested that it was also developed for a "managed liberalisation" strategy but this needed to evolve into a set of legislation that will support a fully liberalised market that is evolving very quickly. "Some minor changes to the Telecoms act could have probably fostered a better outcome" (Respondent 3 SA, personal communication, 8 March 2011).

The Chapter 10 process then is too complex and overly prescriptive (Respondent 3 SA, personal communication, 8 March 2011). There should be room for the Authority to have more latitude (Respondent 3 SA, personal communication, 8 March 2011). There are too many steps and they are onerous and require a skill set that is not readily available (Respondent 3 SA, personal communication, 8 March 2011). The entire economic exercise that needs to be done is very long and too complex as it requires a lot of data from the operators which ICASA did not have at the time (Respondent 3 SA, personal communication, 8 March 2011).

The framework for defining markets therefore needs to be simplified (Respondent 3 SA, personal communication, 8 March 2011). The ex-ante framework needs to be removed and replaced with a framework that will allow the process to be concluded concurrently with the issuing of regulations (Respondent 3 SA, personal communication, 8 March 2011). The process in the end was expedited because of the vast public interest that was generated around this issue (Respondent 3 SA, personal communication, 8 March 2011).

To add to the complexity of the ECA there are differences in opinion too as to how the ECA is interpreted (Respondent 3 SA, personal communication, 8 March 2011). The requirements of Chapter 10 in the ECA are not in themselves problematic however the prescriptions in Chapter 7 did not tie back to the requirements in Chapter 10 (Respondent 3 SA, personal communication, 8 March 2011). For example under Chapter 7 interconnection pricing could be regulated by the Authority but the definitions in the chapter complicated the implementation thereof (Respondent 3 SA, personal communication, 8 March 2011).

4.1.2 Theme 2 – The market analysis process was eventually carried out effectively by ICASA

Some of the respondents shared the view that the regulatory process that was followed in the beginning from around 2000 was not a very efficient process. It seemed that the regulator in the past "took short cuts to get to an end objective that was almost predetermined" (Respondent 4 SA, personal communication, 5 May 2011). Respondents from Industry suggested that this combined with the lack of continuity with ICASA councillors, poor skills retention, inappropriate use of the skills available at ICASA, internal strife at ICASA all contributed to a process that did not yield any results at that stage. As a consequence this resulted in many legal challenges from the operators when regulations were issued in 2000. Telkom challenged these regulations especially strongly in the earlier days. So call termination and interconnection regulations "did not get anywhere" (Respondent 4 SA, personal communication, 5 May 2011).

In 2007 ICASA released a set of draft framework regulations which were never finalised and instead opted to proceed on a market-by-market basis as prescribed by the ECA (Respondent 4 SA, personal communication, 5 May 2011). The reaction from the operators was that they were going to challenge ICASA in court to force ICASA to follow the correct process (Respondent 4 SA, personal communication, 5 May 2011). This also contributed to the extraordinary delay where the regulations were only finalised in 2010 (Respondent 4 SA, personal communication, 5 May 2011).

However ICASA did not follow through on this until government intervention in the form of the Parliamentary Portfolio Committee and Ministerial intervention in 2009. However "the process that was followed subsequently to get to the regulations of 2010 was by and large a good process. This is evidenced by the fact that there are no legal challenges to the process" (Respondent 4 SA, personal communication, 5 May 2011). "However ICASA could have stated more explicitly what exactly it wanted to achieve by prescribing interconnection rate regulations. This was always only inferred but not stated overtly by ICASA. This Respondent had a strong view that this will be problematic in the future when it comes to measuring the success of the regulatory processes" (Respondent 2 SA, personal communication, 5 May 2011).

This process is not unique to SA but as has been stated, in many ways it was overly prescriptive and onerous (Respondent 1 SA, personal communication, 12 November 2010). The economic analysis that had to be done required an enormous amount of data and it was time consuming as well and it needed the appropriate resources to be able to complete this exercise successfully and within the timeframes required. It did not give ICASA much flexibility (Respondent 1 SA, personal communication, 12 November 2010).

Some Respondents shared a view that instead of a market review process a benchmarking study of other jurisdictions could have sufficed “It would have been much easier to have done a benchmark study of other countries in a similar position with SA in terms of development as a starting point” (Respondent 6 SA, personal communication, 23 April 2011). The Respondents drew the Researcher’s attention to the fact that Operators in South Africa possibly also operate in other jurisdictions that would have been chosen for benchmarking, including looking at best practice.

Most Respondents shared a view that a strength in the process followed was that ICASA engaged very robustly with the operators which made for a situation where there will probably be no legal challenges from the operators with regard to the process that was followed.

Note that although interested parties had an opportunity to make comments on the regulatory processes that were being proposed to be followed in the ECA but nobody really anticipated the challenges that ICASA faced with in implementing some of the provisions of the Act (Respondent 5 SA, personal communication, 9 May 2011). It is up to ICASA to point out some of these challenges and make recommendations for amendments to the ECA (Respondent 5 SA, personal communication, 9 May 2011).

A common view held by Respondents is that the market review process in hindsight however was very comprehensive and hence it is not anticipated that any complications will arise from the implementation of the interconnection regulations. It also places ICASA in a favourable position in that the regulations are in fact very practical and should be able to be implemented easily..

4.1.3 Theme 3 – The process has catered for asymmetric call termination rates but it is not supported by all stakeholders

Respondents held differing views as to the fairness of prescribing asymmetric call termination rates, albeit temporarily through a glide path for Cell C and Telkom's 8-ta subsidiary. Respondents confirmed that the new regulations provides for asymmetrical rates. Respondents affiliated to the smaller mobile operators held the view that this is a positive development from a competition point of view in that new operators are given an opportunity to compete with incumbent operators in the market. Justification for this was given by Respondents as being that asymmetry is an effective mechanism to increase the level of competition with more operators coming into the market which will have a positive effect in the retail prices and choice for the consumer. Furthermore it was suggested that asymmetry is premised on the fact that incumbent operators have an established market share that they can use to leverage the cost of providing their services without the burden of having to invest in infrastructure and compete with other operators in the market at the same time, unlike new entrants into the market (Key Informant SA, personal communication, 5 October 2010).

There is a case also to be made for keeping call termination rates for fixed and mobile different as there is no fixed to mobile substitution. "One cannot take one's fixed line with you when travelling about hence no substitution" (Key Informant SA, personal communication, 5 October 2010). Some Respondents suggested that fixed and mobile will always service different needs. Although Telkom has complained about the supposedly low rate that it receives for calls terminated on its network (0.29c) benchmarks have shown that in other jurisdictions this is in fact very high (Key Informant SA, personal communication, 5 October 2010).

However the main weakness in the process, some Respondents suggested, is the inconsistent approach ICASA has taken in using the market definition to get to its end objectives. In one instant ICASA declared each operator as a monopoly in the call termination market when calls are terminated on its own network. This means then that all operators should have been treated equally. Yet ICASA used another market definition i.e. the fact that some operators don't have a majority in the entire market as sufficient reason to give some operators an asymmetric rate (Respondent

4 SA, personal communication, 5 May 2011). “However there is a glide path here and it reduces over time. So it is not a battle that the operators want to fight because the outcome in the end is not an incorrect outcome” (Respondent 4 SA, personal communication, 5 May 2011).

At least two Respondents shared a differing view as to why interconnection rates were increased by MTN and Vodacom just before Cell C’s entry into the market place. One respondent reminded the Researcher that it is often quoted by various commentators that MTN and Vodacom increased their prices to keep others out of the sector (Respondent 6 SA, personal communication, 23 April 2011). In 1993 the mobile operators were charging each other between 10c and 20c for call termination and Telkom about R1.19 (Respondent 4 SA, personal communication, 5 May 2011). This went up substantially because of the majority ownership of Telkom in Vodacom, Telkom was in fact receiving a large portion of the charge that they were paying to Vodacom for call termination back in the form of profits through their majority shareholding in Vodacom. So this large increase was implemented more to balance this effect than as has been stated to keep other players e.g. Cell C out of the industry (Respondent 4 SA, personal communication, 5 May 2011).

Another Respondent stated that Cell C were net beneficiaries of interconnect revenues at the time because of the sheer volume of calls terminated on the Cell C network by Vodacom, MTN and Telkom. The Respondent suggested that COA/CAM could have revealed this. There is an opposing view regarding the increase in termination rates before the entry of Cell C in the market. A consultant to the industry that was one of the respondents believes that this is a fallacy that still persists that “in 1999 Vodacom and MTN conspired to raise interconnection rates to keep Cell C out” (Vella, 2011, p.55). According to Vella (2011) the raising of the rates benefited Cell C as it was a net earner of interconnection revenues in the first few years of its operations. The new rates also were in line with international fixed/mobile interconnection rates at the time. Thus Cell C’s growth was partially funded by the incumbents at the time.

> *Now ten years later after Cell C struggled to build up a ten percent market share the regulations prescribe reduced interconnection rates. ICASA has got*

> *it wrong yet again by allowing cheaper termination rates for 8-Ta, a sub-brand of Telkom and for Cell C that has been running for ten years* (Vella, 2011, p. 55).

ICASA seems oblivious to the fact that Cell C has already benefited to a large extent from being a net receiver of interconnection revenues in its early days (Vella, 2011, p. 55). By exempting Cell C from making the availability of COA/CAM data mandatory has resulted in incorrect decision making. It seems then that far from levelling the playing fields the "new call termination regulations rewards failures and penalises successes" (Respondent 4 SA, personal communication, 5 May 2011).

4.1.4 Theme 4 – The economic model chosen for rate regulation does not support the South African situation

Respondents suggested that one has to understand what the basis is for interconnection costs to understand what interconnection really is. One Respondent further suggested that one has to understand from an international perspective what the basis for this rate actually is (Key Informant SA, personal communication, 5 October 2010). The recurring theme emerging from the interviews is that there must be some underlying basis behind the rate that needs to be established before rates are prescribed. The Key Informant SA suggested that one has to understand how Vodacom and MTN "exchanged numbers with each other in the past to establish the basis for their interconnection rates" (Key Informant SA, personal communication, 5 October 2010).

Most Respondents held the view that to establish a regime for interconnection rate regulation there needs to an exercise conducted to understand the real costs of interconnection via a COA/CAM exercise that will strip out all unrelated costs. "One has to look at the real costs via a COA/CAM exercise which must exclude all the corporate sponsorships viz. rugby, soccer world cup etc" (Key Informant SA, personal communication, 5 October 2010).

There is a prevailing view from various commentators that call rates will come down if interconnection rates are reduced. Most respondents from Industry were sceptical that this would be the case in the South African situation.

Respondents acknowledge that ICASA has chosen LRIC as a forward looking cost based model to determine interconnect rates. However some suggested that this might not necessarily apply to the South African situation (Respondent 4 SA, personal communication, 5 May 2011). One Respondent suggested an *ex-post* regulatory regime where rates are only imposed on a case by case basis when the Competition Commission for example find unfair market practices. “The Competition Commission has got it right. They do a market study every time there is potential issue with competition. It is part of their DNA” (Respondent 4 SA, personal communication, 5 May 2011).The Respondent expressed a strong view that the larger operators have been labelled “Big is Bad” with the incumbent label that is not necessarily fair (Respondent 2 SA, personal communication, 5 May 2011).

Vella (2011) suggests that LRIC is not suitable for the developing country situation as it has its origins in western democracies or hard currency markets (Vella, 2011, p. 57). Most of the equipment needed to build these networks is “denominated in these western currencies” (Vella, 2011, p. 57). South Africa has a currency that is highly volatile compared to these western currencies which make it extremely difficult to use the LRIC model to estimate what funds will be needed in the long run (Vella, 2011, p. 57). Furthermore the mobile industry is already investing in fourth generation technology (Vella, 2011, p. 57). These new infrastructure costs cannot be foreseen in the medium term let alone in the long term (Vella, 2011, p. 57).

> *It is granted that regulation should focus more on stimulating macro-economic benefits for the sector at large. But it should look at the negative impact of tax revenues being reduced as operator revenues decline as an unintended consequence of focusing just on reducing interconnection rates* (Vella, 2011, p. 58).

There is danger that is the telecoms sector is regulated to vigorously that venture capitalists that fund infrastructure development will withdraw funds from infrastructure project that don’t give them healthy returns. This in turn will negatively impact innovation in the sector (Vella, 2011, p.58). Regulation should therefore focus on efficiencies such as optimising infrastructure such as towers and

underground fibre optic cables" (Respondent 6 SA, personal communication, 23 April 2011).

Respondents from Industry suggested that ICASA did not take into account the "water bed effect" in that if you reduce one of the revenue streams then the natural effect is that the other revenue streams will have to be increased. The operators have just three main streams of income i.e. interconnection, retail pre-paid and retail post-paid (Respondent 4 SA, personal communication, 5 May 2011). When the interconnection revenue stream is decreased the only other way the operators can use to protect revenue is to increase retail prices. "This is exactly what happened in Israel when interconnect rates were reduced" (Respondent 4 SA, personal communication, 5 May 2011). This is the water bed effect and will be a natural outcome of reducing interconnect revenue stream (Respondent 4 SA, personal communication, 5 May 2011). Reducing investment in infrastructure is not an option as the core business of any mobile operator is to ensure that the networks are capable of handling all the traffic generated by smart phones for example. Smart phone traffic needs about 40% more capacity than only voice traffic (Respondent 4 SA, personal communication, 5 May 2011).

4.1.5 Theme 5 – The pro-competitive remedies imposed by ICASA are accepted but is not well supported

There is a view from some of the Respondents that pro-competitive remedies should not have been imposed in this round of regulations but rather ICASA should have waited to see what the outcome of the regulations would be. The impression held by some Respondents is that ICASA have just applied what happens in other jurisdictions. "Often it seems that a sledgehammer is used to kill a fly" (Respondent 4 SA, personal communication, 5 May 2011). Respondents believe that ICASA has not chosen appropriate pro-competitive measures. "An appropriate remedy for a particular problem needs to be chosen" (Respondent 4 SA, personal communication, 5 May 2011). For example carrier pre-selection has been mooted as a remedy for competition. However it is not recognised that carrier pre-selection only applies to the fixed line environments in other jurisdictions. This Respondent suggests that ICASA needs to choose the appropriate remedy to address a particular competition issue.

Another Respondent described that the other remedy that has been chosen is local loop unbundling (LLU); yet ICASA has done absolutely nothing substantial in this regard yet (Respondent 4 SA, personal communication, 5 May 2011). ICASA want to use facility leasing concepts to be able to implement LLU. “Telkom whether we like it or not is still seen as a national asset” (Respondent 4 SA, personal communication, 5 May 2011). The Respondent inferred that a culture of protection for Telkom still exists in the country.

A view expressed by a number of the Respondents is that initially when the first set of regulations were issued ICASA tended to take some short cuts that eventually resulted in challenges to the process from the operators (Respondent 4 SA, personal communication, 5 May 2011). “The policy makers and regulators tend to hear buzz words from other jurisdictions and assume that the same principles will work here. This is termed the “wash over” effect. ICASA want to apply the buzzwords in SA” (Respondent 4 SA, personal communication, 5 May 2011).

One of the Respondents held very strong views as to why the ICT industry should not be regulated too forcefully. Regulation of the ICT industry, suggests this Respondent, can in fact be described as being “too little too late” (Vella, 2011, p.51). The “banking and mining industries for example have been established over hundreds of years while ICT industries are only decades old” (Vella, 2011, p.51). The ICT regulator too has “only just been established relatively speaking therefore it is premature to expect that the engagements between the ICT industry players and the regulator to be anything but non value adding to the sector as a whole” (Vella, 2011, p.51).

This Respondent goes on to suggest that unlike other industries the ICT industries are not reliant on natural resources. The products produced by ICT industries are virtual in nature e.g. Google and Facebook therefore if the regulatory environment is untenable it will be quite easy for ICT industries to move their businesses off-shore to more accommodating jurisdictions. Governments and Regulators need to cognisance of this (Vella, 2011, p.51).

Further strong views expressed by this Respondent are that: “with the remedies imposed by the new call termination regulations the mobile operators are being coerced into losing their fixed-mobile interconnection subsidy and no thought has apparently been given to its effect on retail tariffs to consumers” (Vella, 2011, p. 57). Although much of the focus has been on the high mobile retail tariffs the question that begs to be asked is whether this in fact will reduce their ability to reduce consumer prices. Some of the benefits can be seen in the cheap 3G prices of anywhere in the world of approximately 25 cents a Mbyte (Vella, 2011, p.51). It is a well-known fact that data services are being sold at a loss. This situation could change if operators become pressured to reduce investments to retain some semblance of profitability (Vella, 2011, p.51).

A recurring view from the interviews conducted was that ICASA were not explicit in stating what their desired outcome was for the sector as a whole. If for example the intention was to reduce retail rates then “we seem to be pulling the wrong lever to achieve retail price reduction” (Respondent 4 SA, personal communication, 5 May 2011). If one has to look at the basket of goods in the CPI formula “one will see that mobile telecommunication prices in particular are actually trending downward within this basket whereas the other indices such as fuel are increasing” (Respondent 4 SA, personal communication, 5 May 2011). This means that we are targeting retail mobile prices unnecessarily (Respondent 4 SA, personal communication, 5 May 2011). According to this Respondent Stats SA have done a slide presentation in about March that shows this phenomenon quite clearly (Respondent 4 SA, personal communication, 5 May 2011). The Respondent believes that the only conclusion one can make is that ICASA did not make an informed decision but they were pushed by political forces i.e. the DoC and Parliament (Respondent 4 SA, personal communication, 5 May 2011).

Respondents from Industry reminded the Researcher that the objective of the ECA is to regulate telecommunications in the public interest and that this does not necessarily mean that this is all about pricing. The Respondents pointed the Researcher to Michael Porter in this regard viz. there must be a balance (Respondent 4 SA, personal communication, 5 May 2011). The Respondent drew attention to what is happening in India where according to the Respondent the

authorities have reduced interconnection to such an extent that there is a huge problem with quality of service as operators are questioning why it is necessary to invest in this network under this environment of very low interconnect and retail prices (Respondent 4 SA, personal communication, 5 May 2011).

4.1.6 Theme 6 – Participation by the policy maker in the process was counter-productive

In 2009 there was direct intervention by Minister Nyanda to get the operators to reduce interconnection rates (Key Informant SA, personal communication, 5 October 2010). The operators then dropped their rates voluntarily to 0.89c (Key Informant SA, personal communication, 5 October 2010). This is a significant drop and questions have been asked about operator sustainability. In the short run the MTN and Vodacom have had their licensing rates reduced from 5% of gross profit to about 1.5% of gross profit. So this will give them some immediate relief but when the glide path and the reduction to 0.40c become effective this will have a huge impact on their sustainability (Key Informant SA, personal communication, 5 October 2010). Cell C on the other hand has not had its licensing fees reduced so it will have to bear the full brunt of a much reduced interconnection fee (Key Informant SA, personal communication, 5 October 2010). Furthermore Vodacom and MTN have a subscriber base of about 20 million subscribers compared to the 7 million of Cell C so should be better able to buffer the loss of revenue from interconnection charges than Cell C (Key Informant SA, personal communication, 5 October 2010). Some Respondents pointed out that that an unintended outcome of the reduction in licensing fees is that there are reduced collections that will now filter into the fiscus. Respondents are concerned that somehow this situation needs to be remedied.

The PPC was driven by the so called high interconnect charges but some Respondents suggested that fundamental errors were made in assessing the problem. Firstly the charge of R1.25 is often quoted as being the high rate but this is in fact the peak rate (Respondent 4 SA, personal communication, 5 May 2011). A more correct reference will be to take the blended rate between the peak and non-peak and compare this with other jurisdictions. One will find that this rate was very much aligned with the others (Respondent 4 SA, personal communication, 5 May 2011). The Respondent asked the Researcher to that note that the UK for example

also started at a high rate of the equivalent of about R2.50 about this time (Respondent 4 SA, personal communication, 5 May 2011).

Many of the Respondents held the view that the Ministry's intervention through the Portfolio Committee was not helpful. Respondents suggest that the Ministry and the PC were reacting to a major public outcry on interconnection charges and the cost of communications in the country (Respondent 4 SA, personal communication, 5 May 2011). However, ICASA still had to follow the process as prescribed by the Act. Although, the operators did reduce their charges but this was not based on any regulation that could be upheld in law. Therefore ICASA did the right thing and continued with the process to its logical conclusion. Most Respondents contend that if the Ministry had continued, the process would have eventually been unenforceable and open to challenge in court.

> *The ambivalence of government is a major stumbling block to success of this sector. These results in a schism between policy and regulation because government often acts as both referee and player taking decisions aligned with its particular position at the time. Government ownership in Telkom and its direct and indirect control of the SABC, Sentech, and Broadband Infraco can explain why government behaves in the way that it does when decisions involving the sector are to be made. A number of decisions that have been made in the past reflect this schism between policy and regulation* (Vella, 2011, p. 55).

Respondents cited other examples where the Policy Maker intervened unnecessarily in decisions that ICASA should have been allowed to make without undue pressure. Telkom operated as both a fixed line service provider and as a mobile operator through its shareholding in Vodacom. After years of negotiating at the highest governmental level it was finally agreed to sell its controlling stake to Vodafone. But the Friday before Vodacom's Initial Public Offering (IPO) on the Johannesburg Securities Exchange, COSATU served papers on ICASA who then claimed that it had in fact not approved this transaction (Star, 19th May 2009). In the end the courts ruled that the transaction was legitimate and that it could go through but this could

have impacted negatively impacted on the attractiveness of South Africa as destination for Foreign Direct Investment.

> *Further examples of this schism is reflected in governments poor handling of the digital broadcasting standard by first supporting the industry recommendation then calling for a subsequent review under Minister Nyanda and then under the past Minister Padayachi agreeing on a third revised standard. This suggests that government's impartiality is questionable given that the SABC and Sentech, both major stakeholders in the process both report to the DoC. This leads to government confusing the roles of referee and player.*
>
> *With regard to the new call termination rate regulations that were issued the entire process was influenced politically and operators were coerced into reducing their rates despite the process that was required to be followed as prescribed in the ECA* (Vella, 2011, p. 57).

Respondents from Industry suggest that the reduction in call termination rates will ultimately result in a decline of service levels. There will be a lack of investment by the larger operators. Some Respondents believe that the large operators are in fact the only parties that are capable of massive infrastructure improvements and any impact on their profitability will surely affect investment.

In conclusion a Respondent strong expressed that a "blight on the entire process was the heavy handed approach by Minister Nyanda in coercing the operators to reduce their interconnection rates without following the process prescribed in the ECA" (Respondent 6 SA, personal communication, 23 April 2011). Under this pressure MTN and Vodacom just rolled over (Respondent 4 SA, personal communication, 5 May 2011). ICASA responded by re-establishing the process that it had started years ago and capitulated to the Ministers wishes (Respondent 4 SA, personal communication, 5 May 2011).

4.1.7 Theme 7 – ICASA's view on interconnection has evolved over time

Respondents accept that ICASA is mandated to promote universal access and service to communications services that is also affordable to the consumers. Most agreed that as such, delays in intervening in the mobile wholesale termination market did not support this imperative.

A previous ICASA Councillor expressed the opinion that ICASA had different views over time regarding the strategy to be followed. The Council however did not want to regulate retail prices but were interested in regulating wholesale prices which was known to lead, but not always, to a decrease in retail pricing (Respondent 4 SA, personal communication, 5 May 2011). The previous Councillor expressed the view that the thinking with regard to call termination evolved over time. Further, it must be noted that interconnection only became problematic only when prices began escalating (Respondent 4 SA, personal communication, 5 May 2011). In 1994 under the Ministerial Determination prices for termination were around 24c (Respondent 4 SA, personal communication, 5 May 2011). This increased dramatically to R1.25 just before the entry of Cell C into the market and terminations costs were estimated to be around 56% of the retail price. This is when the problem in fact started (Respondent 4 SA, personal communication, 5 May 2011).

The previous ICASA councillor believes that the first group of councillors at ICASA in 2004 left a framework in place that could be built on to complete this work (Respondent 4 SA, personal communication, 5 May 2011). However it has taken 5 years to complete the process (Respondent 4 SA, personal communication, 5 May 2011). There were problems with the requirement for periodic reviews but by and large there was a process in place that could be developed on and finalised by the subsequent set of councillors (Respondent 4 SA, personal communication, 5 May 2011). This did not happen however. The Respondent explains that this could be the result of councillors having different frame of references for how this work needed to be done. Some of the councillors were from a Competition Commission background and a Treasury Department background. This change of approach could have resulted in very long delays as there was no evidence that ICASA was moving on this at all (Respondent 4 SA, personal communication, 5 May 2011).

A Respondent holds another view that ICASA should move away from regulating interconnection. In last 15 years the mobile industry has provided phones to the majority of the population (Respondent 6 SA, personal communication, 23 April 2011). This industry has an annual turnover in excess of R140 bn (Respondent 6 SA, personal communication, 23 April 2011). Although government is committed to providing telecoms services to the majority of citizens it has not succeeded in this. Rather the mobile industry has been successful in providing services to majority and this was done in an era of lax regulatory controls and in the absence of price regulation (Respondent 6 SA, personal communication, 23 April 2011).

> *A more strategic question rather to be posed is whether regulation should continue on the laissez faire route or should these industries be regulated. It is not coincidental that some of the smaller operators such as VOX and ECN are bordering on folding up. Vodacom and MTN could also potentially lose about 10-20% of their revenue* (Vella, 2011, p. 57).

The Respondent suggest that Government should focus more on regulatory controls that will increase funding to smaller players to allow them to compete effectively and let the big operators get on with the task of building infrastructure and rolling out services (Respondent 6 SA, personal communication, 23 April 2011). It seems that this was the view in the dual-layer licensing structure in the ECA (Respondent 6 SA, personal communication, 23 April 2011). This was reversed in the Altech Autopage case that allowed VANs to self-provide (The Financial Mail, 7th November 2008).

> *Perhaps the strategy to be adopted by ICASA should focus on efficiencies rather than on regulation that could negatively impact the country as a whole. There are opportunities to optimise the use of mobile phone towers or fibre optic cable by regulating the sharing of facilities and resources for example by national roaming arrangements on existing networks* (Vella, 2011, p.58)

4.2 Review of legislation, regulations and other materials

As has been previously stated regulatory processes comprise three stages: “the enactment of enabling legislation, the creation of regulatory administrations and rules

and the bringing to bear of those rules on persons or institutions sought to be influenced or controlled" (Baldwin & Cave, 1999, p. 96). The approach that will be taken in analysing documents relating to processes for interconnection regulation will be to examine the legislation relating to telecommunications and specifically the prescriptions describing processes relating to regulation of interconnection, the processes leading to the issuing of guidelines and regulations, the notices, guidelines, documents and regulations issued by ICASA (or SATRA).

4.2.1 A review of current telecommunications legislation with regard to interconnection

The first stage of regulatory processes according to Baldwin and Cave (1999) comprises enabling legislation. This section will examine current telecommunications regulation and more specifically the legislation that pertain to interconnection.

Figure 4: **A schematic representation of processes leading up to the issuing of final Call Termination Regulations by ICASA in 2010**

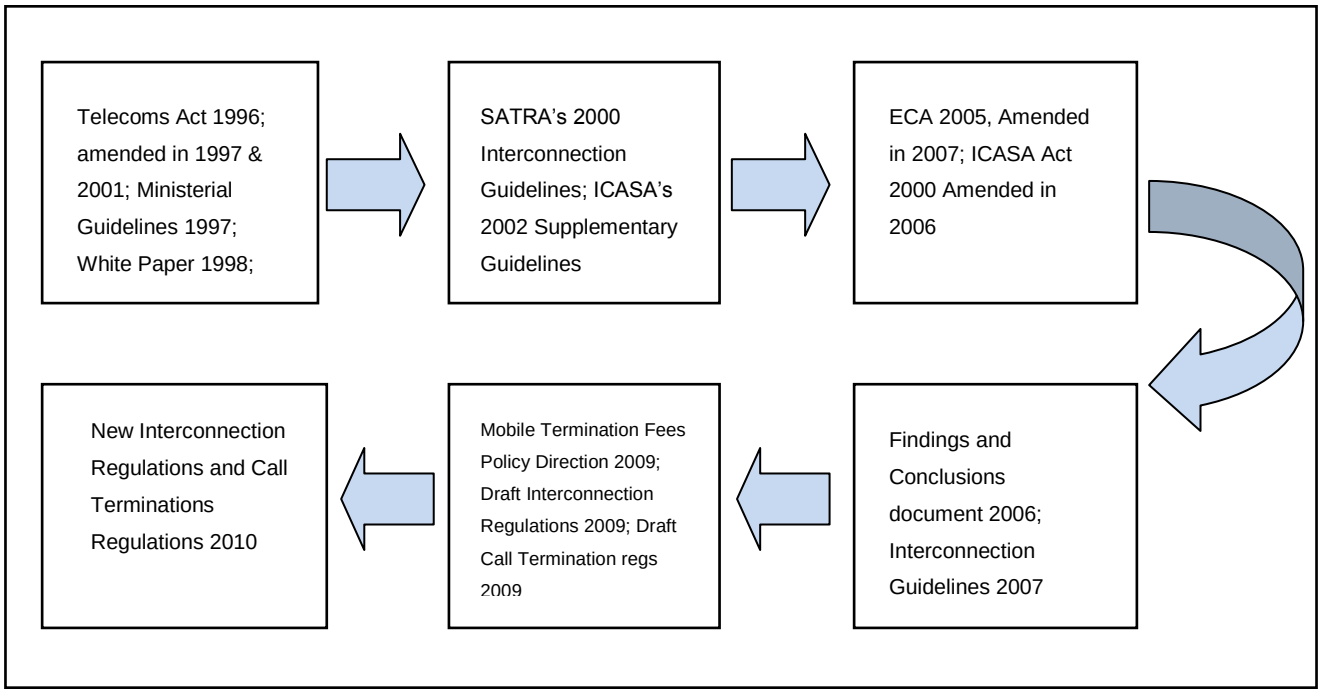


Figure 4 shows a time line for interconnection rate regulation in South Africa (Chetty, 2011).

This section examines how the relevant telecommunications legislation defines regulatory processes and examines specifically the processes for interconnection regulation.

4.2.1.1 Analysis of the Telecommunications Act No 103 of 1996 (Telecoms Act) as amended relating to interconnection processes

The Telecommunications Act of 1996 pre-dates the Electronic Communications Act of 2005. The primary objective of the Telecommunications Act No 103 of 1996 *was* to provide for the regulation and control of telecommunications matters in the public interest and it thus sets the context for the analysis of current legislation. Listed amongst the seventeen objectives of the Act are the objectives to promote universal and affordable provision of telecommunications services, protection of the interests of telecommunications consumers and users and the ensuring of fair competition within the telecommunications industry. (Republic of South Africa, 1996b).

- *The Act established the first independent telecommunications regulatory authority*

The Act established the independent telecommunications regulatory authority, the South African Telecommunication Regulatory Authority (SATRA). The Act affirms that SATRA will be independent and impartial in the performance of its functions. The Act however frames SATRA's role in terms of policy directions that will be issued by the Minister from time to time. References to SATRA in section one of the Telecommunication Act was amended in 2000 with the passing into legislation of the ICASA Act 13 0f 2000. ICASA replaced SATRA as the Authority referred to in the Telecommunications Act.

- *The Act provided the legislative framework for the creation of regulatory administrations and rules for the regulation of interconnection rates*

Provisions of section 43 of the Telecoms Act provided the legislative framework for the creation of regulatory administrations and rules for the regulation of interconnection rates. In essence the Act makes it obligatory for any PSTN service provider to interconnect with other operators if the request to interconnect is reasonable i.e. it is technically feasible, it will promote the efficient use of the PSTN

and furthermore that it can be done on a mutual basis between the operators wishing to interconnect and the PSTN operator.

- *The Act required the Authority to publish interconnection guidelines*

An important aspect to the Telecoms Act was that it required the Authority to formulate guidelines for Interconnection Agreements between operators. The guidelines had to cover the essential terms and conditions for the agreements. Some of the essential elements included timelines for interconnection to be executed, the quality of service to be provided and the applicable rates for providing interconnection. The Telecoms Act required that Ministerial Guidelines regarding interconnection be published within a year of the Act being passed and these Guidelines were to remain in force for a period of three years.

The Act however specified that Ministerial Guidelines regarding Telkom would be published within a year of the Act being passed and that these guidelines will remain in force for a period of three years.

- *The Authority issued interconnection guidelines in March 2002*

The then Minister of Communications Dr Ivy Matsepe-Casaburri approved Interconnection Guidelines published by SATRA in March 2000 (Republic of South Africa, 2000a). Subsequently supplementary Interconnection Guidelines were issued in 2002 as a "result of changes in the industry and technology" (Lawrence, 2006, p. 186).

The Interconnection Guidelines define major operators and essential services, give guidance on the content of interconnection agreements, prescribe principles pertaining to requests for interconnection and negotiations for interconnection (Lawrence, 2006, p. 186).

The issue of a Major Operator is dealt with in the 2000 Guidelines. According to the Guidelines a Major Operator is an operator that controls at least 35% of the market in which it operates and can influence price and supply because of the influence and control it has over the market. The onus is on the operator who disagrees to prove

that it does not have market power. SATRA could also declare an operator as a Major Operator if it feels that in doing so it will promote the objectives of the Telecoms Act (Republic of South Africa, 2000a). The Guidelines further declared Telkom as a Major Operator (Republic of South Africa, 2000a).

A very important principle established by the Guidelines is that interconnection charges must reflect underlying costs. Furthermore charges must "not exceed retail charges for similar services" (Lawrence, 2006, p.190). Charges for interconnection by Major Operators for essential service should be on Long Run Incremental Costs (LRIC) and should be calculated on the basis of relevant forward looking costs calculated for an efficient telecoms service provider and including any reasonable cost of capital (Republic of South Africa, 2000a).

Prior to the application of the LRIC pricing regime the 2002 Interconnection Guidelines included a two year transitional period whereby all charges imposed by a Major Operator for Essential Services must be "no greater than the Major Operator's fully allocated costs" (FAC) (Lawrence, 2006, p. 190). Fully Allocated Costs were to be calculated according to the accounting separation principles set out in the Major Operators Chart of Accounts and Cost Allocation Manual (COA/CAM) including a reasonable cost of capital (Lawrence, 2006, p. 191).

4.2.1.2 Analysis of the Independent Communications Authority of South Africa (ICASA) Act 13 of 2000 as amended

The ICASA Act was promulgated to establish an Authority in an environment where the broadcasting and electronic communications field were rapidly converging. The Act provided for the formation of ICASA and the dissolution of the Independent Broadcasting Authority (IBA) and the South African Telecommunications Authority

- *The objective of the ICASA Act was to establish an independent authority to regulate matters in the communications sector*

The ICASA Act established an independent authority to regulate broadcasting, electronic communications and postal services "in the public interest" (Republic of South Africa, 2000b). The objective was that the Independent Regulator will regulate

appropriately to achieve the objectives set out in the underlying statutes that collectively regulate these sectors (Republic of South Africa, 2000b).

- *The ICASA Act sets out the functions of the Authority and chairperson allowing it to make regulations, conduct research and undertake enquiries, amongst other things*

Section 4 of the ICASA Act permits the Authority to make recommendations to the Minister on policy matters related to the sectors being regulated. This Section also allows ICASA to recommend amendments to the related Acts supporting the objectives that will promote development of the sectors (Republic of South Africa, 2000b). Some of the other objectives listed in the Act permit the Authority to conduct research, undertake inquiries and gives the Authority the mandate to make the necessary regulations that will support objectives. Furthermore ICASA is given the responsibility to deal with complaints submitted in terms of the Act (Republic of South Africa, 2000b).

Section 4B and 4C expand the rules related to the undertaking of inquiries. The Act calls for public participation before regulations are made by requiring the Authority to inform the Minister timeously and by inviting written representations from the public (Republic of South Africa, 2000b).

4.2.1.3 Analysis of the Electronic Communications Act (ECA) 36 of 2005 as amended.

In relation to interconnection, the ECA, in summary, sets out objectives for ICT, emphasises the importance of interconnection arrangements and lays out processes for regulating interconnection.

- *The purpose of the ECA is to regulate electronic communications in the public interest*

Section 2 of the Electronic Communications Act (ECA) 36 of 2005 as amended lists the objectives of the Act and emphasizes that the primary purpose of the Act is to regulate electronic communications in the public interest. Section 2b of the Act amongst other things states that for this purpose the Act seeks to “promote and

facilitate the development of interoperable and interconnected electronic networks" (Republic of South Africa, 2005a, p.20).

- *The Minister makes policies and can issue policy directions to ICASA with regard to, inter alia, interconnection*

Section 3 of the ECA confirms the Minister as the policy maker and also gives the Minister authority to issue policy directions to the Authority subject to certain processes (Republic of South Africa, 2005a, p.22). A policy direction can be issued by the Minister after obtaining Cabinet approval to allow intervention by Government to ensure "strategic ICT infrastructure investment" or to provide for a framework for the licensing of a public entity by ICASA (Republic of South Africa, 2005a, p.22). Policy directions may also constitute inquiries to be conducted by ICASA, submission of reports to the Minister, the determination of priorities for development of the sector or for any matter that the Minister requires to be urgently dealt with by ICASA (Republic of South Africa, 2005a, p.22).

- *The Act gives ICASA the mandate to make regulations regarding any matter related to electronic communications as described in the Act and sets out processes for making such regulations*

This section of the Act gives ICASA its mandate to make regulations ''with regard to any matter which in terms of this Act or the related legislation must or may be prescribed, governed or determined by regulation" (Republic of South Africa, 2005a, p.24). The Authorities mandate includes making regulations regarding technical aspects of the licensing framework, matters of procedure for the ECA or related Acts, payment of fees to the Authority, control of the radio frequency spectrum and related matters. Regulations can be made for different uses of the radio frequency spectrum and for different licences (Republic of South Africa, 2005a, p.24).

The processes for making regulations are prescribed under section 4 of the Act: for example the Authority must publish the regulation in the Government Gazette at least 30 days before the regulation is issued. It must invite public participation by requesting interested persons to make written submissions related to the regulation that it intends publishing. The Minister has to be informed at least 30 days before of

the Authorities intention and also the subject matter of the regulations. However the Act does make provision for the Authority to issue regulations that need to be made urgently, in the public interest, without having to notify the public of its intention to make regulations. The Authority need not invite interested parties to make written submissions under these circumstances (Republic of South Africa, 2005a, p.24).

Non-compliance with regulations could be regarded as an offence as long as the regulation specifies the penalty to be imposed in respect of the contravention. The penalties could be a fine or imprisonment and are covered in more detail in section 17H of the ICASA Act (Republic of South Africa, 2005a, p.24).

- *ICASA needs to determine the reasonableness of an interconnection request and more importantly establish Significant Market Power before obliging operators to comply in full with interconnection regulations*

Sections 37-42 (Chapter 7) of the ECA deals with interconnection and states broadly that on request licensed service providers are obliged to interconnect with one another under the terms and conditions of an interconnection agreement that should be entered into by the parties (Republic of South Africa, 2005a, p.58). However, the service providers are not obliged to interconnect if "the request is unreasonable" (Republic of South Africa, 2005a, p.58). Requests are assessed as being reasonable if they are financially and technically feasible and will "promote the efficient use of electronic communications networks and services" (Republic of South Africa, 2005a, p.58). This section of the Act also introduces the important concept of service providers with Significant Market Power (SMP) (Republic of South Africa, 2005a, p.60). The Act states that a service provider is not obliged to interconnect if it does not have SMP in relevant markets or market segments. The Authority has the task of determining the reasonableness of any interconnection request that is disputed and to determine whether a licensee has SMP (Republic of South Africa, 2005a, p.86).

If the parties are unable to reach agreement given a dispute then the Authority may intervene by imposing terms and conditions for interconnection within the framework of the Act. The Authority can stipulate timeframes for the conclusion of interconnection agreements or in the case of disputes may refer the dispute to the Complaints and Compliance Committee (CCC) for speedy resolution (Republic of

South Africa, 2005a, p.58). The Authority is obliged to respond within specific period to ensure timeous resolution to disputes.

With regard to SMP, the ECA declares that licensees have SMP with regard to the relevant market or market segment if “they are dominant, have control of essential facilities or have a vertical relationship” that the Authority determines could impact on competition in the applicable markets (Republic of South Africa, 2005a, p.86). Licensees are not obliged to interconnect if they do not have SMP (Republic of South Africa, 2005a, p.86). In this case if interconnection agreements are entered into, non-discrimination need not be a factor to be managed by the Authority and service levels don’t have to be regulated either.

Furthermore these Service providers do not have to disclose their rates and charges and they do not have to publish terms and conditions of their interconnection agreements. For all other non-exempted service providers the Authority must review interconnection arrangements for consistency with regulations prescribed and must intervene if this is not the case.

- *ICASA must set out interconnection agreement principles in regulations to facilitate conclusion of interconnection agreements*

The Act requires ICASA to give guidance on interconnection agreement principles. This may take the form of a Reference Interconnection Offer (RIO) containing terms and conditions that will support the objectives of the Act for interconnection (Republic of South Africa, 2005a, p.58). These terms and conditions may specify time frames for conclusions of agreements, technical implementation of interconnection agreements, quality of service issues, points of interconnection and facilities, pricing, dispute resolution, invoicing and payment arrangements (Republic of South Africa, 2005a, p.20). The principles may also cover access and security arrangements, frameworks for determining technical and financial feasibility and the promotion of efficient use of the electronic communications networks. The principles also may cover the unbundling of services so that requestors for interconnection are not forced to take up services that they do not require (Republic of South Africa, 2005a, p.60).

- *ICASA's regulatory process must include a process for speedy dispute resolution*

According to the ECA processes for regulating interconnection disputes must ensure that disputes are resolved quickly. Disputes not resolved by the Authority can be referred to the Complaints and Compliance Committee (CCC) (Republic of South Africa, 2005a, p.62). The decision by the CCC is binding unless overturned by a court order of "competent jurisdiction" (Republic of South Africa, 2005a, p.62).

- *ICASA's regulatory process must define the retail or wholesale markets or market segments, set out the methodology to determine whether competition is effective in the markets it has determined and then establish the level of competition in the said markets before prescribing interconnection regulations*

The ECA sets out that the Authority may regulate wholesale interconnection rates and related services. However regulation can only be made if the Authority establishes that competition will impacted in the present and as well as in the future if no action is taken to regulate the sector (Republic of South Africa, 2005a, p.84).

The Authority needs to establish a number of criteria before regulations are passed. These include that the Authority needs to prescribe regulations that spell out what would be considered by the Authority as giving "undue preference or causing undue discrimination" to another licensee (Republic of South Africa, 2005a, p.84) However before regulations can be prescribed the Authority must firmly establish that there is not sufficient competition in the market or market segments being investigated (Republic of South Africa, 2005a, p.84).

Hence before making these pronouncements regulations must be prescribed that define the retail or wholesale markets or market segments and then a determination needs to be made with regard to the level of competition in the markets. The methodology to determine whether competition is effective needs to be set out in the regulations. Regulations must prescribe the pro-competitive measures that may be imposed to correct the situation should the Authority find that competition is ineffective. Regulations must declare in the relevant market or market segments

licensees that have SMP and must set out pro-competitive measures applicable to such licensees (Republic of South Africa, 2005a, p.84.

In determining SMP the Authority must consider barriers to entry to the applicable markets or market segments and must also consider the "dynamic character and functioning of the market or market segments" (Republic of South Africa, 2005a, p. 86). The analysis of the effectiveness of competition must consider the effective market share of the various licensees in the defined markets or market segments. The assessments must also be forward looking in that the market power needs to be investigated for a suitable period that will:

> *consider actual and potential existence of competitors, level, trends of concentration and history of collusion, size of each of the market participants, control of essential facilities, technological advantage or superiority of market participants, the degree of power of other market participants, ease and privilege of access to capital markets and financial resources, the dynamic characteristics of the market, including growth, innovation and products and service diversification, economies of scale and scope, the nature and extent of vertical integration and the ease of entry into the market including market and regulatory barriers to entry (Republic of South Africa, 2005a, p.86).*

- *ICASA's regulatory process must set out pro-competitive measures that may include a requirement for the separation of accounts should it determine that competition is ineffective*

A number of pro-competitive measures may be imposed if the Authority finds that there is ineffective competition. These measures include "fair, reasonable, non-discriminatory, transparent and timely responses to requests for access, provisioning of services, interconnection and facilities leasing" (Republic of South Africa, 2005a, p.88). Terms and conditions of agreements need to be published to ensure transparency. Furthermore the Authority may require that licensees maintain a separation for accounting purposes of the different line items that make up access charges, interconnection and facilities leasing, and including all other services. A separation of retail and wholesale prices may be required as well (Republic of South

Africa, 2005a, p.88). The Authority may also stipulate the accounting methodology to be used to show the separation of accounts (Republic of South Africa, 2005a, p.88).

Arguably the most important pro-competition measures cited by the Act is to introduce wholesale and retail price controls for interconnection in markets or market segments that have been found to have ineffective competition (Republic of South Africa, 2005a, p.88).

- *The Act gives direction to ICASA with regard to the review of pro-competitive conditions*

The Act also requires pro-competitive conditions to be reviewed on an on-going basis. Based on the review the Authority can decide whether it wants to continue with the pro-competitive measure or whether the measure needs to be withdrawn or modified. To do this the Authority must review the market determinations it had made previously that gave rise to the pro-competitive measures that were set (Republic of South Africa, 2005a, p.88). If the licensee no longer has SMP then the Authority may withdraw the measure set. If the licensee still retains SMP but the market condition has changed resulting in share profiles in the market changing then the Authority may revoke pro-competitive conditions for that licensee as the situation requires (Republic of South Africa, 2005a, p.90).

In conclusion the Competition Act applies to all competition issues for the electronic communications industry as well notwithstanding the ECA. Further to this ICASA is defined as a regulatory Authority in terms of section 1 of the Competition Act (Republic of South Africa, 2005a, p.90). The Competition Commission and ICASA may request and receive assistance from one another in regard to any competition matter related to the ICT industry (Republic of South Africa, 2005a, p.90).

4.2.2 A review of regulatory administrations and rules

The second stage of regulatory processes concerns the “creation of regulatory administrations and rules” (Baldwin & Cave, 1999, p. 96). This section will examine the processes leading up to the issuing of Interconnection and Call Termination regulations by ICASA in April and October 2010 respectively.

- *An analysis of ICASA's processes for definition and identification of the relevant (interconnection) markets, the methodology to determine competitiveness, the level of competition in the relevant markets, identification of operators with SMP, setting out of pro-competitive measures and ICASA's schedule for the periodic review of the relevant market and competitiveness.*

Regulatory principles imposed by the ECA define a process to be followed before interconnection regulations or call termination regulations are gazetted. The methodology to be used to determine markets, the identification of markets and identification of operators with SMP and the setting out of pro-competitive measures and a process for regular review needs to be completed before regulations are made (Republic of South Africa, 2005a). The process that ICASA has to follow to engage with all stakeholders including operators, the Minister of Communication and interested parties is set out in the ECA as described above.

Processes leading to the issuing of regulations can be ascertained from the process initiated in 2005 by notice in the Government Gazette No 27854 of July 2005 dealing with mobile pricing under the old Telecommunications Act No 103 of 1996. This notice invited comment on a review of mobile pricing to be conducted by ICASA under section 27 of the Telecommunications Act No 103 of 1996. This notice was accompanied by a discussion document (DD) which summarised the concerns at the time. The discussion document was triggered by a complaint lodged by the Communications User Association of South Africa (CUASA) regarding various aspects of mobile pricing (Republic of South Africa, 2005b, p. 5).

The aim of the discussion document according to the notice was to obtain inputs regarding the nature of the problem and possible solutions. ICASA's intention in issuing this notice was to establish whether the high costs of mobile services was justifiable and whether there was a need for more "rigorous regulatory oversight of mobile pricing" (Republic of South Africa, 2005b, p. 5).

In summary the problems identified by CUASA that ICASA was requested to investigate were the high costs of mobile calls and other services including pre-paid services, the reasons for the difference in interconnection charges between mobile

and fixed calls and why mobile call rates had not reduced after the introduction of a third mobile operator i.e. Cell C and whether there is sufficient competition in the market (Republic of South Africa, 2005b, p. 5).

- *ICASA issued its Findings and Conclusions document on 15 December 2006 establishing the need to identify relevant market segments to establish SMP and also declared that it needed to look at call termination charges to reduce mobile pricing*

ICASA issued its Findings and Conclusion, Government Gazette number 29457 in response to the invitation for comment on mobile pricing as described above, on the 15th December 2006 (Republic of South Africa, 2006).

This process resulted in eight findings with regard to mobile fees and charges: The regulatory framework requires operators to lodge fees or tariffs with the Authority before they may charge for services. Increases in any existing tariff were restricted to the increase in the Consumer Price Index (CPI).The Authority must provide written responses to the Licensee where it disallows or delays tariff increases. The Authority's view was that the current regulatory framework for fees and tariffs was not adequate (Republic of South Africa, 2006, p. 26). The Authority is required to define relevant markets as per the ECA and the Authority needs to impose regulatory measures where it finds licensees with SMP. This Findings and Conclusions document thus sets the process for the definition of markets (Republic of South Africa, 2006, p. 26).

The important conclusion from the Findings Document was that the Authority determined that it had to give attention to call termination charges in order to reduce mobile prices. The list of key findings concluded by giving assurance that the approach described above will allow the Authority to deal with allegations of SMP and pricing in a holistic manner (Republic of South Africa, 2006, p. 26).

- *On the 29th January 2007 ICASA set out its methodology for market definition, proposed markets, evaluated SMP and competitiveness and proposed pro-*

competitive regulations for operators with SMP and called for representations from interested parties.

The next step in the process leading on from the Findings and Conclusions document of December 2006 saw ICASA issuing a notice of intention to define wholesale call termination markets in terms of the chapter 10 of the ECA on the 29th January 2007, Government Gazette number 29568. All interested parties were invited to submit written representations in response to the issues being discussed. This notice set out the four essential issues for discussion i.e. the methodology to be used for market definition, the markets that were identified, evaluation of SMP and competitiveness and pro-competitive regulations for operators with SMP (Republic of South Africa, 2007a).

ICASA's gives assurance by stating that the proposed methodology to be used for market definition is in line with that being used by the Competition Authorities in South Africa (Republic of South Africa, 2007a, p. 7). The methodology is also used by other jurisdictions such as the European Commission and the United States Department of Justice (Republic of South Africa, 2007a, p. 7). The methodology proposed the "hypothetical monopolist test" as the conceptual framework to define markets (Republic of South Africa, 2007a, p. 8). The test involves the evaluation of the likely "competitive consequences emanating from a hypothetical profit maximising entity imposing a small but significant non-transitory increase price (SSNIP) test' " to measure market dominance (Republic of South Africa, 2007a, p. 8). Simply put the SSNIP looks at a narrow market that the operator is active in. It then looks at a hypothetical small increase in price and whether this will increase profitability for the operator. If there are no substitutes that users can turn to then this is defined as the narrow market. If users are practically able move to other products and services then there is substitutability and the market is probably not an attractive one for monopolists (Republic of South Africa, 2007a, p. 8). In this case the product of the operator does not constitute a market in its own right. The market then has to be defined wider to include the substitutes. Again a hypothetical small increase in price is applied and profitability is measured. This time if profitability for the operator improves then the operator is regarded as an SMP in that expanded market. The notice also lists examples of qualitative analytical tools to be used with the conceptual framework in defining markets. These tools are given as "critical loss

analysis, price correlation analysis, price elasticity analysis and diversion ratio analysis" (Republic of South Africa, 2007a, p. 8).

The second issue dealt with in this notice was call termination markets. ICASA identified call termination on the Vodacom, MTN and Cell C networks as markets in their own right (Republic of South Africa, 2007a, p. 9). The notice goes on to say that the declaration of each mobile operator's network as constituting a separate market is in line with other jurisdictions such as the UK, Sweden, France, Norway, Ireland, Finland and the European Commission (Republic of South Africa, 2007a, p. 9).

ICASA explains that the narrow definition of these markets is based on the Calling Party Pays principle (CPP). ICASA affirms that South Africa like most jurisdictions in the world has adopted CPP where the mobile operators do not charge users for incoming calls (Republic of South Africa, 2007a, p. 10). With CPP the caller's mobile company is charged a termination fee by the receiving party's mobile company and this termination fee is included in the calling party's call charge. The argument being made is that users do not choose mobile operators based on the cost effectiveness of their call termination charge as these charges are passed on to the calling party. This therefore does not incentivise mobile operators to reduce call termination charges to attract and retain customers. In fact users are probably not aware of call termination charges levied by their networks as there charges are accrued to other users. Therefore operators are not constrained by high call termination charges in attracting customers (Republic of South Africa, 2007a, p. 10).

In line with the SSNIP model discussed earlier the concept of substitutability is raised in this notice (Republic of South Africa, 2007a, p.11). ICASA argues that parties have no substitute for calling the called party on their operator's network (Republic of South Africa, 2007a, p.11). Similarly if other operators want to provide off-net calls or fixed to mobile services they have no choice but to purchase mobile call termination form that particular mobile company that will terminate the call (Republic of South Africa, 2007a, p. 11).

ICASA uses definitions of product and geographic markets to further justify the narrow market definitions it has proposed i.e. being that of call termination on each

mobile operator's networks. The notice goes on to describe four conditions that need to be met before operators may be constrained by call termination charges. Firstly, the mobile call termination charge must pass through transparently to the outgoing price that calling parties face when making calls to that network. Operators' may be constrained if callers are made aware of the mobile operator that is terminating their calls and the associated costs that they are being charged. Lastly operators may be constrained if users have choices or substitutes for calling that particular network (Republic of South Africa, 2007a, p. 11).

The notice then explains in detail why none of four conditions mentioned above are likely to be met in the South African situation which means that users will not react to an increase in call termination charges. It further explains that there is little or no substitutability in the wholesale, demand side or supply side for off-net calls or for fixed-to-mobile calls. Numerous substitutes such as fixed-to-fixed, mobile-to-fixed, Voice over internet (VoIP), small message service (SMS) are examined then discarded as being impractical (Republic of South Africa, 2007a, p. 16).

The third issue to be dealt with by ICASA in this notice is that of SMP. It reminds readers of the definition of Significant Market Power as set out in the ECA. It also draws from the Competition Act that states that a firm is dominant in a market if it has at least 45% of the market share or if it has at least 35% of market share but less than 45% of the market share unless it can show that it does not have market power, or it has less than 35% of market share but it has market power (Republic of South Africa, 1998). In the context of the legislation and the definition of the relevant markets as discussed above ICASA proposes that Vodacom has SMP in the market for call termination on the Vodacom network and similarly Telkom, MTN and Cell C have SMP in the market for call termination on their networks (Republic of South Africa, 2007a, p. 32).

ICASA then, in terms of this notice turns its attention to the determination of levels of competitiveness and examines barriers to entry and countervailing power as two important criteria for measuring the effectiveness of market competition (Republic of South Africa, 2007a, p. 33). ICASA declares that each mobile operator is a complete monopoly in the supply of call termination to its own network. There are also no

technological alternatives to this therefore there are absolute barriers to entry into this market of call termination.

After examining potential for countervailing power ICASA finds that countervailing power does not exist with any of the operators in trying to reduce call termination charges by for example threatening not to interconnect with the termination supplier or to threaten to charge high call termination charges in return (Republic of South Africa, 2007a, p. 34).

Lastly, in terms of pro-competitive measures ICASA proposes six remedies that include the regulatory principles proposed by the ECA. The obligation to "interconnect (upon reasonable request), the obligation not to discriminate between buyers and price transparency is to be imposed on all operators declared as having significant market power" (Republic of South Africa, 2007a, p. 39). Additional measure which the Authority proposes to implement and that are in line with the ECA are price controls, account separation and methodologies to recover costs relating to call termination (Republic of South Africa, 2007a, p. 39).

The notice proposes that all six remedies need to be imposed on the larger operators i.e. Telkom, Vodacom and MTN and that only the first three remedies will apply to Cell C and Neotel. ICASA argues the case for this approach by stating that although Cell C and Neotel have SMP they are not significant market players yet (Republic of South Africa, 2007a, p. 40).

In conclusion the price controls to be imposed on MTN, Vodacom and Telkom are Long Run Incremental Costs (LRIC). Factored in will be reasonable capital costs for infrastructure development (Republic of South Africa, 2007a, p. 40). Furthermore accounting separation is required so that the Authority may verify whether prices reflect LRIC (Republic of South Africa, 2007a, p. 40).

- *ICASA published its Findings regarding the Wholesale Call Termination market definition process on the 9th November 2007*

In response to the January 2007 document that called for representations regarding definitions of wholesale call termination markets, written responses were received,

and hearings were held in May of 2007. ICASA consolidated the views received and published its findings in the Government Gazette, No 30449 on the 9th November 2007. However ICASA clarifies that these are preliminary findings and are not final determinations. ICASA in fact sees these preliminary findings as a setting a "stake in the ground" as to the current state of affairs regarding call termination markets and indicates that there "are parameters that still require definition" (Republic of South Africa, 2007b, p. 6).

In summary ICASA, using the methodology set out in the DD of January 2007 concluded that the markets can be defined in its narrowest sense as call termination on each individual operator's networks. Thus the defined markets are individual wholesale call termination on the Vodacom, MTN, Cell C, Telkom and Neotel networks and wholesale call termination on all other Electronic Communications Network Services (ECNS) providers that provide call termination on their networks (including Under- serviced Area licensees) and call termination on all Electronic Communication Service (ECS) providers that are able to set call termination rates on their networks (including VoIP providers) (Republic of South Africa, 2007b, p. 7).

ICASA bases this definition on the methodology chosen previously (See DD January 2007) to define markets viz. the hypothetical monopolist test using the small but significant non-transitory increase price (SSNIP) test which was explained earlier in this report. Based on these instruments ICASA finds that there are no substitutes that users can move to, to find alternatives to call termination on the receiving user's network. ICASA argues that the operator providing call termination is therefore not constrained. As a result the market needs to be limited to call termination on each operator's network. If for example there are suitable substitutes available then the market could be expanded to include these substitute products. In the previous case however the market needs to be defined in this narrow sense as described (Republic of South Africa, 2007b, p. 9).

- *ICASA published its Draft Interconnection Regulations on the 10th July 2009 calling for written representations on the draft regulations*

The process in which ICASA engaged in is started from time of the issuing of draft interconnection regulations on the 24th July 2007 by notice in the Government

Gazette No 30091 (Republic of South Africa, 2007c). Public hearings were held in October 2007 and another set of draft interconnection regulations was published for comment on the 27th December 2007 in the Government Gazette No 30611 (Republic of South Africa, 2007d). A workshop, open to all interested parties was held in April 2008 and a third set of draft interconnection regulations, together with an explanatory note was published on the 10 July 2009 in Government Gazette No 32370, for comment. With the publishing of these draft regulations the interconnection guidelines published in 2000 (Government Gazette No 20993), the supplementary interconnection guidelines published in 2002 (Government Gazette 24203) and the interconnection and facilities guidelines and supplements published in 2004 (Government Gazette No 26539), all of these published under the Telecommunications Act of 1996 were to be revoked (Republic of South Africa, 2009, p. 31).

- *The purpose of the Draft Interconnection Regulations of 10 July 2009 was to facilitate the process, make interconnection mandatory and to encourage inter-operability*

The purpose of the draft regulations of 10 July 2009 was three fold. The first purpose focused on the facilitation of the process for the conclusion of interconnection agreements. It proposed timeframes for the conclusion of agreements, the process to be followed by parties for the submission, review and filing of agreements (Republic of South Africa, 2009, p. 20). The second purpose of the regulations was to "provide for and require the provision of interconnection services to enable licensees to interconnect with one another" and the third purpose was to encourage interoperability between the networks and operators (Republic of South Africa, 2009, p. 20).

- *The Draft Interconnection Regulations sets out the process of how interconnection requests should be made and responded to*

The draft regulations set out the rules of how requests for interconnection are to be made. Requests must be in writing and must include the date of request, technical requirements taking into account the interconnection provider's technical standards and must state the type of interconnection that is required (Republic of South Africa, 2009, p. 21). Further to this an interconnection provider must respond within very

specified periods for responses to requests and for the final conclusion of agreements.

- *The Authority sets conditions to determine whether a request is technically and financially feasible*

The Authority will determine that a request for interconnection is reasonable if it is financially and technically feasible on a "case by case basis" (Republic of South Africa, 2009, p. 21). This notice describes conditions for financial and technical feasibility. The interconnection providers existing capacity needs to be used efficiently. There should be no adverse conditions imposed on the provider due to "overloading" of the provider's network (Republic of South Africa, 2009, p. 21). There should be no need for the provider to build additional capacity to satisfy the needs for this interconnection request if it has not been included in the planned budget (Republic of South Africa, 2009, p. 21). However if this is a requirement then to ensure fairness the requester will bear a portion of these costs. Technical feasibility according to the draft regulations will be possible if the request will not impact the interconnection provider's network negatively, if there are indeed technical synergies between the networks and if all aspects of the interconnection request can be achieved with the current resources and in the current circumstances (Republic of South Africa, 2009, p. 22).

- *The draft regulations promote seamless interoperability between different network providers*

The notice further requires that the terms and conditions of interconnection agreements "facilitate interoperability and promote any-to-any connectivity such that an end user on the requestor's network can communicate electronically with an end user on the provider's network and vice versa" and furthermore this should be able to "take place seamlessly" (Republic of South Africa, 2009, p. 22). Interconnection agreements should also allow for the interconnection requestor to enter into different interconnection agreements with different interconnection providers (Republic of South Africa, 2009, p. 22).

- *The draft regulations sets out principles for interconnection agreements that include amongst others principles for technical standards, service levels,*

remedies and penalties, transparency, points of interconnection, charges, unbundling, non-discrimination and conditions under which providers are exempted

The draft regulations deal next with principles for interconnection agreements. The agreements must deal with issues of technical standards to ensure compatibility and must comply with international standards as prescribed by the ITU or standards set by the Authority themselves (Republic of South Africa, 2009, p. 23). The interconnection agreements must spell out the service levels required and must contain remedies and penalties for repeated breach of service levels (Republic of South Africa, 2009, p. 23). Agreements should not have clauses that restrict public disclosure of the agreement (Republic of South Africa, 2009, p. 23).

Non-discrimination is an essential requirement in the ECA and the draft regulations provide for this. To prevent discrimination the Authority requires that under similar circumstances agreements should have similar terms and conditions and pricing models. This requirement is not a requirement for operators that do not have SMP as per the criteria in the ECA. Parties to the interconnection agreement must not discriminate between requestors for interconnection in the negotiation, conclusion and implementation of agreements and lastly requests from an interconnection seeker including requests for additional interconnection from existing interconnection agreements must be concluded “in the order that they are received in” (Republic of South Africa, 2009, p. 23).

The regulations related to transparency, amongst other things require that charges for interconnection services are sufficiently unbundled so that interconnection requestors do not pay for unwanted services (Republic of South Africa, 2009, p. 23). Further to this, charges levied by an interconnection provider should not “exceed its retail charges for similar services” (Republic of South Africa, 2009, p. 23). These two regulations however do not apply to interconnection providers that do not have SMP according to the definitions of SMP in the ECA (Republic of South Africa, 2009, p. 23).

The interconnection provider must provide within a period specified in the regulations, any information that the requestor may need to formulate its request for

interconnection. Information has to be provided to the requestor that may assist it in planning, establishing and maintaining its networks for the purposes of interconnection (Republic of South Africa, 2009, p. 24).

A location needs to be specified for points of interconnection that is identified as a "demarcation between the two networks" (Republic of South Africa, 2009, p. 24). Examples of locations for points for interconnection are mobile switching centres, media gateways, local exchanges or tandem exchanges (Republic of South Africa, 2009, p. 24). These points of interconnection are not exhaustive and may include others. The interconnection provider needs to offer interconnection services at any financially or technically feasible point on its electronic communications network on request by the interconnection seeker. The parties must agree on operations and maintenance expenses of the facilities necessary to reach points of interconnection within the provider's network. In the situation where the requested point of interconnection lacks sufficient capacity then the provider needs to provide alternate points of interconnection. Lastly, in terms of points of interconnection, the parties must work together to agree on nearest points for interconnection (Republic of South Africa, 2009, p. 25).

- *The draft regulations sets out terms and conditions of interconnection agreements*

The draft regulations set terms and conditions of interconnection agreements that need to be agreed between service providers. Interconnection agreements must contain definition of terms and abbreviations. It must deal with the technical scope of the interconnection including descriptions of the purpose of the interconnection, the connection services required and the technical scope and specifications (Republic of South Africa, 2009, p. 26). It must document the mechanisms for changes to the purpose, scope, and specifications for interconnection. It must give details regarding access to numbers by the parties and data interchange formats (Republic of South Africa, 2009, p. 26). The terms and conditions of interconnection agreements must specify points of interconnection including the location of the point of interconnection and the specifications of related facilities, processes for changes to the point of interconnection or related facilities, charges for each point of interconnection and signalling interconnection description (Republic of South Africa, 2009, p. 26).

The terms and conditions must address billing and settlement which includes billing procedures, payment terms and conditions and billing and dispute settlement processes (Republic of South Africa, 2009, p. 26). The terms and conditions must address detailed charges for specific services and must set out mechanisms for the review of charges. Terms and conditions must address service levels and quality of service obligations, penalties, testing and maintenance, fault reporting, service level disputes, and system protection and safety measures. Lastly the terms and conditions of interconnection agreements must address contract termination procedures and contractual dispute resolution and arbitration procedures (Republic of South Africa, 2009, p. 29).

- *The draft regulations sets out processes for dispute resolution*

The draft regulations set out structured processes for dealing with disputes. In summary the party requesting interconnection may notify the authority if the reasonableness of a request is in dispute or if the interconnection provider has not responded within the specified period after the request (Republic of South Africa, 2009, p. 27). Parties may inform the Authority of a dispute if the terms and conditions of an agreement have not been agreed to within the stipulated period (Republic of South Africa, 2009, p. 27). Disputes must be in writing, must give the Authority sufficient time to respond and the Authority will inform the parties within specified period whether the dispute warrants further investigation or whether the dispute will be dismissed accordingly. If the dispute warrants further investigation the Authority will inform the parties in writing of the dispute and give parties sufficient time to respond. The Authority may call for oral submissions or may decide on the merits of the case based on papers submitted to it if the issue is urgent. The Authority will provide its final decision to the parties in dispute within the specified timeframes and the Authority reserves its right to refer any matter to the Complaints and Compliance Committee (CCC) (Republic of South Africa, 2009, p. 28).

- *The draft regulations sets out processes for submission, filing, review, and timeframes of agreements*

Interconnection agreements or amendments must be submitted to the Authority within three days of signature (Republic of South Africa, 2009, p. 28). The Authority will review the agreements to assess compliance with regulations and the ECA Act. The draft regulations set out specific timelines for submission, filing and review. The Authority will notify the parties within twenty (20) days whether the agreements are consistent with regulations and the ECA (Republic of South Africa, 2009, p. 28). If not consistent then parties must agree on new terms within a period determined by the Authority (Republic of South Africa, 2009, p. 28). The Authority will review such amended agreement and advise the parties within a specified period on the consistency of the amended agreement with regulations and the ECA. The Authority will issue a compliance notice when it is satisfied that the agreement is consistent

with regulations and the Act and the date of issuance of the compliance notice will be taken as the date of filing (Republic of South Africa, 2009, p. 28).

- *The draft regulations conclude with conditions under which agreements may be suspended or terminated and make provisions for contraventions and penalties*

The regulations stipulate that the agreement must provide for termination and suspension that will minimise the effect of termination or suspension on the services received by end users (Republic of South Africa, 2009, p. 29). Suspension will only be allowed to address problems of quality of service degradation. Agreements may only be terminated if there is mutual agreement that it may be terminated, a "vis major"' (act of God) situation, if there is material breach, or if one of the parties is declared insolvent or liquidated (Republic of South Africa, 2009, p. 29). However written notice of intention to terminate must be provided to the Authority and in the case of material breach, the Authority will give thirty (30) days to remedy the breach. Fines will be imposed by the Authority for non-compliance with any of the regulations as determined by the CCC (Republic of South Africa, 2009, p. 29).

It must be noted that any regulations that were concluded before the regulations come into place will be reviewed by the Authority after parties are given to opportunity to align agreements with the new regulations (Republic of South Africa, 2009, p. 29).

- *ICASA published new Interconnection Regulations on the 9th April 2010*

The purpose of the new regulations is consistent with the purpose described in the draft regulations published on the 10th July 2009 and as set out above and will not be repeated here. The new regulations confirm the processes for requesting interconnection as set out in the draft regulations. The new regulations once again confirm that interconnection is obligatory if it is financially and technically feasible. The regulations reiterate principles for interconnection agreements i.e. quality of service and standards, service level parameters, confidentiality and non-discrimination and transparency (Republic of South Africa, 2010a).

Exemption from the obligation to interconnect will not apply to licensees with significant market power (SMP) i.e. see ICASA's pronouncements on SMP in the new call termination regulations of October 2010 where Cell C, MTN, Vodacom, Neotel and Telkom are declared as having SMP in their call termination markets (Republic of South Africa, 2010a, p. 14).

The regulation further set out transitional provisions for agreements concluded before the coming into being of the new interconnection regulations in accordance with the table below (Republic of South Africa, 2010a, p. 15):

Table 6: Transitional arrangements for interconnection agreements concluded before publishing of new interconnection regulations

Year Interconnection agreement entered into	Date to be submitted to the Authority
On or before 01 January 2007	On or before 31 January 2011
On or after 01 January 2007	On or before 30 June 2011

SOURCE: Republic of South Africa, 2010a, p. 15.

Lastly, the new Interconnection Regulations revokes previous interconnection guidelines published in 2000, supplementary interconnection guidelines published in 2002 and interconnection and facilities leasing guidelines and supplements published in 2004 (Republic of South Africa, 2010a, p. 15).

- *ICASA published its draft Call Termination Regulations in the Government Gazette of the 16th April 2010 and interested persons were invited to give written representations on the draft regulations*

The purpose of the draft call termination regulations are consistent with the notice published on the 29th January 2007 i.e. the purpose of the regulations is to define the relevant markets, set out the methodology to determine whether competition is effective, pronounce on operators with SMP, set out pro-competitive measures and provide for enforcement of the regulations. Again the Authority finds that competition is ineffective in the markets it has defined and declares the main operators

Vodacom, MTN, Cell C and Telkom as having Established SMP in their own markets (Republic of South Africa, 2010b).

The Authority requires that a reference interconnection order (RIO) be published within forty five days of the issuing of the regulations and describes the processes for the compilation, submission and approval of the RIO (Republic of South Africa, 2010b, p. 8).

Furthermore the Authority establishes pricing controls for call termination charges as set out below (Republic of South Africa, 2010b, p. 9):

Table 7: Glide path for Call termination charges (July 2010 – July 2013)

Period	Mobile Call termination rates (R)	Fixed call termination rates (R)
From Jul -10	0.65	0.15
From Jul-11	0.50	0.12
From Jul -12	0.40	0.10

SOURCE: Republic of South Africa, 2010b, p. 9.

The draft regulations also make provision for accounting separation and cost accounting. The Authority prescribes the processes and format for the submission of reports in regulations to be prescribed by the Authority. A review of call terminations markets will take place in there years' time from the publication of the call terminations regulations. Furthermore the draft regulations propose financial penalties for non-compliance with regulations set out in the draft regulations (Republic of South Africa, 2010b, p. 10).

- *ICASA published new Call Termination Regulations in the Government Gazette of the 29th October 2010*

The purpose of the regulations is consistent with the objectives published in draft regulations of April 2010 and previous notices such as those published in January 2007. The purpose of the new call termination regulations is set out below.

In summary the purpose of the new regulations are: the definition and identification of the wholesale call termination market that exist within the country, the methodology used to determine the effectiveness of competition in the defined markets, the declaration of licensees that have significant market power (SMP), the pro-competitive measures the Authority will impose to remedy market failure in the markets found to have ineffective competition and lastly to set out the schedule for periodic review of the relevant markets and the effectiveness of competition in those markets (Republic of South Africa, 2010c, p. 5).

- *The definition and identification of the wholesale voice call termination market that exist within the borders of the Republic of South Africa*

The Authority defines the markets as the markets for mobile and fixed wholesale call termination services in the Republic of South Africa. The Authority further categorises the markets according to the type of service offered to the end user in the country as being Market 1 for wholesale call termination services to any mobile location on the network and Market 2 for wholesale voice call termination services to a fixed location on the network.. Market 2 is further categorised into firstly market segments for wholesale voice call termination services to a fixed location within a geographic 0N area code and secondly between geographic 0N area codes (Republic of South Africa, 2010c, p. 4).

- *Methodology used to determine the effectiveness of competition in the markets defined*

The Authority has used the methodology described as the Hypothetical Monopolist Test which has been described in detail in the analysis of draft regulations of January 2007 and will therefore not be repeated here. To complement this, the Authority has determined market share in the relevant markets for each of the

operators and assessed on a forward-looking basis the level of competition and market power in the relevant markets (Republic of South Africa, 2010c, p. 6).

- *Effectiveness of competition in the defined markets and SMP*

The Authority has determined in these new regulations that there is ineffective competition in the wholesale call termination service markets. Furthermore the Authority determines that all licensees that offer wholesale call termination services have significant market power in their own markets. For clarity this will include Neotel, Telkom, Telkom 8ta, Vodacom, MTN and Cell C (Republic of South Africa, 2010c, p. 6).

- *The pro-competitive measures the Authority will impose to remedy market failure in the markets found to have ineffective competition*

The Authority has determined that market failure exists because there is a lack of provision of access, there is a potential for discrimination between licensees that provide similar services, there is a lack of transparency and lastly there is inefficient pricing for wholesale call termination services (Republic of South Africa, 2010c, p. 6).

The Authority further prescribes that all licensees must comply with interconnection regulations published in government gazette 33101 of 2010, the soon to be published Compliance Manual Regulations and charge fair and reasonable call termination rates. The Authority goes on further to impose additional pro-competitive measures on MTN, Vodacom and Telkom as they have according to the Authority benefitted from the allocation of lower more efficient bandwidth and have benefited from both “economies of scale and scope” because they have a “share of greater than twenty five percent (25%) in the termination markets” (Republic of South Africa, 2010c, p. 7).

MTN, Vodacom and Telkom are obliged to submit reference interconnection offers within forty five days of publications of the regulations and according to a set of rules laid down in the regulations (Republic of South Africa, 2010c, p. 8). The Authority goes on further to impose price controls based on cost based pricing for both mobile and fixed termination markets for the period 1st March 2011 to 1st March 2014 for MTN, Vodacom and Cell C as follows (Republic of South Africa, 2010c, p. 8):

Table 8: Market 1 – Wholesale voice call termination rates to mobile locations

Period	Peak (R)	Off-Peak (R)
1 March 2011	0.73	0.65
1 March 2012	0.56	0.52
1 March 2013	0.40	0.40

SOURCE: Republic of South Africa, 2010c, p. 8.

Table 9: Market 2 – Wholesale voice call termination rates to fixed locations

Period	Within 0N area code (R)		Between 0N area code (R)	
	Peak	Off-peak	Peak	Off-Peak
1 March 2011	0.20	0.12	0.28	0.19
1 March 2012	0.15	0.12	0.25	0.19
1 March 2013	0.12	0.12	0.19	0.19

SOURCE: Republic of South Africa, 2010c, p. 8.

Neotel and Cell C may charge higher termination rates if they are able to justify why the current spectrum allocation negatively impacts them or they may charge an asymmetric rate if they have less than twenty five percent (25%) of the total terminated minutes in the relevant market as of June 2009. There are certain limits however to the asymmetric rate that Neotel and Cell C may charge based on the table below (Republic of South Africa, 2010c, p. 12):

Table 10: Allowable asymmetric voice call termination rate

Period	Maximum percentage above rate set for identified licensees
1 March 2011	20%
1 March 2012	15%
1 March 2013	10%

SOURCE: Republic of South Africa, 2010c, p. 12.

An additional requirement for MTN, Vodacom and Telkom is that they have to submit regulatory financial reports in line with the format prescribed in the Accounting Separation and Cost Accounting Regulations to be published by the Authority (Republic of South Africa, 2010c, p. 9).

The regulations also oblige the Authority to review the wholesale voice call market, the effectiveness of competition and the application of pro-competitive measures in these markets after a three year period from publication of the regulations. Lastly the regulations lay down penalties for contraventions of the regulations and fines range from between five hundred thousand rand to two hundred thousand rand (Republic of South Africa, 2010c, p. 9).

4.3 Summary

The Conceptual Framework (Figure 3) developed in Chapter 2 was used as a basis for identifying themes from discussions with the Key Informant and the other respondents. The themes that emerged broadly were that the ECA has defined a very onerous process for interconnection regulation. However the processes themselves were followed to the letter by ICASA and even the asymmetric rates were heralded as being tolerable by the incumbent operators even though they did not support it fully. Government intervention was seen as counterproductive and it very nearly scuppered the process. The rate model, LRIC that was prescribed did

not have widespread support though. The pro-competitive measures were seen as being pre-mature and other unintended consequences were pointed out. Finally the last theme that emerged was that ICASA's strategic view on interconnection evolved over time as councillors changed. It started off as a much defined process but traction was lost for a few years and picked up again with the close scrutiny precipitated by the media, the PPC and the Minister.

The regulations themselves developed over the period under review and followed a European Union approach to market definition, assessment of competitiveness and the setting of pro-competitive measures. The regulations were very thorough and were aligned to processes described in the literature in terms of methodologies for defining the market, the assessment of the level of competitiveness and to some degree the imposition of pro-competitive interventions. This is seen as international best practice.

CHAPTER 5

REVIEW OF INDIA'S COST-ORIENTED APPROACH, KEY LEGISLATION, REGULATIONS AND OTHER MATERIALS

India articulated its plan for telecoms in the country by identifying three strategic imperatives i.e. tariff rebalancing, quality of service regulation and interconnection regulation (Republic of India, 1998).

5.1 Themes in India's approach to regulation

Seven themes were identified whilst examining India's approach to interconnection regulation:

5.1.1 Theme - 1 Interconnection was integral to telecoms strategy for India

The Key Informant explained that when telecommunications reform first began in India the three main issues that needed to be considered were tariff rebalancing, interconnection and quality of service issues (Key Informant India, personal communication, 29 October 2009). The approach that was then taken was to rebalance tariffs first and then to look at interconnection (Key Informant India, personal communication, 29 October 2009). Thus the status quo for interconnection remained as it was not dealt with initially (Key Informant India, personal communication, 29 October 2009). The status quo meant that interconnection was "heavily skewed in favour of the incumbent" viz. the Department of Telecommunications (DoT) (Key Informant India, personal communication, 29 October 2009). DoT at the time was housed within what is now the Ministry of Communications and Information Technology (Key Informant India, personal communication, 29 October 2009). The corporatization of DoT only took place in 2000 (Key Informant India, personal communication, 29 October 2009).

The Key Informant further informed the Researcher that at this time there was no Regulator in place even when private mobile companies were making their entry into the market. Interconnection was heavily biased in favour of DoT because at this

point the payment regime was Receiving Party Pays (Key Informant India, personal communication, 29 October 2009). The mobile companies paid DoT a fixed fee of IR1.20 (Key Informant India, personal communication, 29 October 2009). The incumbent however did not have to pay the mobile operators anything for terminating calls on their networks (Key Informant India, personal communication, 29 October 2009).

5.1.2 Theme 2 – The move from Receiving Party Pays regime to Calling Party pays assisted with interconnection regulation

Respondents shared a common view that India watershed process that resulted in a regime where interconnection could be regulated effectively was a move from the traditional model of Receiving Party Pays to a system of Calling Party Pays. This ensured that the playing field between the incumbent and the new entrants was levelled out.

When private mobile companies began establishing themselves in India they had to pay the entire PSTN charge for calls even when calls originated on the incumbents network (Key Informant India, personal communication, 29 October 2009). The interconnection fee paid by mobile operators to the fixed line company was IR1.20. However because of the Receiving Party Pays regime when calls originating from the fixed network were terminated on the mobile network no fee was paid by DoT to the mobile companies (Key Informant India, personal communication, 29 October 2009). There was no Calling Party Pays (CPP) at this point. This then was biased in DoT's favour and DoT's attitude was a "take it or leave it attitude" (Key Informant India, personal communication, 29 October 2009).

TRAI first started operating in 1998. TRAI came up with a process for tariff rebalancing. Although it did not tackle interconnection directly this was a strategy that was a part of the rebalancing process (Key Informant India, personal communication, 29 October 2009). The interconnection regime was not changed at all initially but a Consultation paper was issued in 1998 (Key Informant India, personal communication, 29 October 2009). The paper mostly looked at rate rebalancing between international and long distance calls with local calls (Key Informant India, personal communication, 29 October 2009). According to the Key

Informant DoT did not want this to the extent that TRAI wanted rebalancing. Politicians feared the backlash for local calls going up which would have been a consequence of the rate rebalancing. However there was some kind of “political give and take that occurred between TRAI and DoT” that allowed the process to continue (Key Informant India, personal communication, 29 October 2009). By March 1999, one third of the rebalancing had taken place. Although interconnection was not dealt with directly, there was a consideration given to it as there was a chapter on interconnection in the Consultation Paper (Key Informant India, personal communication, 29 October 2009). TRAI described quite clearly in the Consultation Paper what they wanted to do with interconnection. Thus the path to interconnection regulation was not a meandering path but was a strategic approach as is borne out by the Consultation paper (Key Informant India, personal communication, 29 October 2009).

Interconnection regulation was derailed by the incumbent when it was first mooted but in the end it eventually took place (Key Informant India, personal communication, 29 October 2009). Soon after rebalancing took place TRAI worked on interconnection as the second task. TRAI introduced CPP in 2003. This process initiated by TRAI however started a process of litigation with the incumbent (Key Informant India, personal communication, 29 October 2009). In 1999 TRAI started a consultation process for interconnection. New entrants did not have facilities and port charges needed to be reduced (Key Informant India, personal communication, 29 October 2009).

The incumbent at that stage was charging high prices for facilities but also did not allow access on to the networks (Key Informant India, personal communication, 29 October 2009). Delaying tactics were also used in 1999 to 2000 (Key Informant India, personal communication, 29 October 2009). In 2001 interconnection costs were reduced but a sliding scale was employed and it was reduced gradually over the years (Key Informant India, personal communication, 29 October 2009). CPP however was still not implemented (Key Informant India, personal communication, 29 October 2009). It was stuck in court battles between TRAI and DoT (Key Informant India, personal communication, 29 October 2009). TRAI tried to convince DoT that it will benefit in the long run but DoT was not interested in profit but only interested in

not losing market share. “They were in-fact a deal spoiler backed by the Minister” (Key Informant India, personal communication, 29 October 2009).

By 2000 CPP implementation was still being blocked by the incumbent (Key Informant India, personal communication, 29 October 2009). The incumbent did not share any of its revenue but kept 100% of all interconnection revenue (Key Informant India, personal communication, 29 October 2009). The Key Informant impressed on the Researcher that CPP was the tipping point, the watershed for solving the interconnection issue. “In fact a causal link can be made that the introduction of CPP helped with the reduction of interconnection charges” (Key Informant India, personal communication, 29 October 2009). The Key Informant explained that there was an explosion in growth after CCP was introduced (Key Informant India, personal communication, 29 October 2009). This led to an acceptance that it was the changeover to a CPP regime that got interconnection fixed in India. Therefore, according to the Key Informant one can conclude that interconnection was weaved in with the CPP issue (Key Informant India, personal communication, 29 October 2009).

A further point raised by the Key Informant was that the timing of the introduction of CPP and interconnection regulation in general was important as the political climate was changing towards competition all over India. There was an increasing acceptance by government that private players could come into telecoms. This led to this explosion in growth. TRAI had been in court for 4 years with interconnection challenges mostly from the incumbent. Eventually with consultation with all parties there was eventual acceptance. Politicians were starting to see the value in mobile not from a development perspective but a revenue generating perspective i.e. licence fees (Key Informant India, personal communication, 29 October 2009). Mobile was now seen as an elitist technology that could generate huge incomes. ICT for development came much later. They saw potential for sharing in some of the profits. It was a money spinner for government from licence fees (Key Informant India, personal communication, 29 October 2009).

5.1.3 Theme 3 – Participation by the policy maker in the process had to be managed
The Key informant explained that there was interference from the policy maker throughout the entire process of establishing an interconnection regulatory regime for India. However the Key Informant also believes that although the process unfolded over time it was essential that the relationships with DoT and the Ministry were well managed.

The Key Informant reminded the Researcher that TRAI was an independent regulatory body. DoT issued policy and the Telecoms Act made TRAI responsible for issuing regulations. DoT did not have a mandate to change the regulation mandate of TRAI. They had to go to court to do this if they so desired. Practically speaking it took a lot of time for the both to go to court. “In 2000 the entire TRAI was sacked as they were accused of being pro private sector because of the CPP issue” (Key Informant India, personal communication, 29 October 2009). The Key Informant believed that in time they learnt to work together. DoT had the power to nominate people onto TRAI and in fact DoT first appointed people in TRAI. In time there was a realisation that with all the litigation only the legal community benefited (Key Informant India, personal communication, 29 October 2009). In time they recognised that a fair interconnection regime needed to prevail. Meanwhile the mobile industry too was a powerful body as well with lots of money and influence. Lobbing was taking place in the background. Some of the mobile companies belonged to old, well connected and established Indian conglomerates (Key Informant India, personal communication, 29 October 2009). The Key Informant shared a strong opinion that today there is much competition due to the successes with interconnection. Retail prices according to the Key Informant are not regulated except for rural fixed at IR 100/month. TRAI only regulates quality of service (QoS) and interconnection usage charges. The Key Informant expounded on some interconnection costing models that were considered. There are two ways of regulating the price of interconnection as per the World Bank model. Models can be cost based for example, Bill and Keep. However Bill and Keep will only work if operators are the same size. If there is asymmetric traffic then Bill and Keep usually will not work. Cost based charges could also be fully distributed costs (FDC) or based on Long Run Marginal costs.

5.1.4 Theme 4 - Skills is an issue for Regulators

Although by and large Respondents were satisfied with the quality of skills of TRAI personnel some Respondents commented that the Regulator needs good skills to understand the cost models i.e. economic skills, political skills and stakeholder management skills to be able to regulate interconnection issues. One Respondent pointed out that the interconnection issues were complex and officials responsible for its regulation needed to "thread this minefield carefully" (Respondent 5 India, 27 October 2009). Regulators need the relevant skills to sort out problems amicably (Respondent 5 India, 27 October 2009). This Respondent described a situation in neighbouring Bangladesh where the strategy not to interconnect "backfired as was the case with the Bangladeshi incumbent". The incumbent refused to interconnect with Grameen phone. Grameen's Muhammed Yunus developed a SME business model to empower rural women (Respondent 5 India, 27 October 2009). Rural women helped people make calls and used the mobile phone as a business tool to help people. This model was so successful that roles have reversed and now the incumbent is requesting Grameen to interconnect. The Respondent cautioned that one has to learn from the Bangladeshi experience; the market is dynamic so big companies need to be fair as the "tables can be turned on them very quickly" (Respondent 5 India, 27 October 2009). The regulator needs skills to understand the dynamics of the market that they find themselves in and should be able to communicate this to all stakeholders effectively (Respondent 5 India, 27 October 2009).

5.1.5 Theme 5 – Market structures in India will change

In India Circles coincide with state lines and licences are granted accordingly. Many Respondents shared the view that spectrum is the constraint to having many operators in each circle. Too many operators can put the costs up as each operator needs expensive spectrum. They need to recover these costs and they can only do that by charging higher prices. "Consolidation in India will happen. "Mergers and acquisitions will take place" (Respondent 5 India, 27 October 2009). The Respondent further explained that what is optimum a priori and the number of companies operating in each circle now is the question that needs to be asked. Two operators are probably too little as the opportunity for collusion is great. In fact the competition policy document of TRAI says that there should be a minimum of four

operators. An opposing view that was expressed is that one must take into account that fragmentation sometimes increases costs. It is easier to collude with two operators; with four it will be more difficult. However one must have a strong regulator though if there are going to have fewer operators.

5.1.6 Theme 6 - A cost-oriented approach is the basis for Interconnection Usage Charges

Respondents expressed the view that the Indian interconnection regime is far ahead of the world as this is a well-established interconnection regime based on sets of rules and regulations. In essence interconnection prices are cost based (Respondent 1 India, 30 October 2009). In India there are two kinds of operator i.e. government as the legacy operator with high sunken costs and private companies with the latest technologies and methods whose costs are somewhat lower than government operators (Respondent 1 India, 30 October 2009). MTNL and BSNL (Previously DoT) are government operators. Private operators are companies such as Reliant, Airtel, Aircel, Vodaphone, Idea and Tata Docomo (Respondent 1 India, 30 October 2009).

"The cost models of both types of operators are examined and there is a moderation process that TRAI uses that establishes a cost somewhere in between the costs of both types of operators" (Respondent 1 India, 30 October 2009). TRAI uses a LRIC model that they have developed. TRAI also looks at operators current costs. They want to give a reasonable return to new entrants and providers. TRAI respondents believe that in this way there are no losers. This regime was started in 2003 and there have been many revisions since then. Right now interconnection usage charges (IUC) are 20p for local/national calls and 40p for international calls (for received calls in 2009).

According to the Respondents from the Regulator there was a well thought out structure and plan to deal with interconnection (Respondent 1 India, 30 October 2009). Right now there only issues that are regulated are interconnection and QoS issues. Respondents confirmed that initially a Bill and Keep regime was in place. Respondents expressed a view that there was a very high price initially. A respondent shared with the Researcher the explosive growth in India where India is

adding about 14 million users every month. Again respondents confirmed the importance of the CPP model. However respondents further added that to implement such a system all the network elements need to be known i.e. the makeup of a call's components needs to be understood. The respondents further explained that once you have the total cost you add a fair rate of return of say 15%. As you know the number of minutes called you can then work out costs per minute. When operators give their costs these can be easily verified. Accounting separation is in place and the costs are audited. There is then an open consultation and all stakeholders are given an opportunity to comment before an order is issued. A respondent expressed an opinion that India has proved to the world that economic principles can be applied (Respondent 2 India, 30 October 2009).

A Respondent pointed out that with the reduction in costs the volume of minutes consumed in India has increased exponentially. According to Respondents the Indian consumer is very price sensitive. The Respondent shared with the Researcher that "when prices were reduced from 16 rupees to 1 rupee the minutes consumed went up 16 fold" (Respondent 1 India, 30 October 2009). The Respondent further informed the Researcher that the operators had accepted this basic economic principle that with the reduction in costs basic minutes will go up disproportionately. The Respondents from the regulator added that TRAI has proved to all stakeholders that this is the case. The Respondents opinion was that India's tariff is the lowest in the world yet growth is the highest in the world. Only China is almost equal to India in this regard.

Respondents pointed out that TRAI recognised that Interconnection is a fundamental requirement for growth for the telecoms sector and this has been accepted by operators, government, policy makers, and regulators alike. TRAI levelled playing fields by establishing rules and regulations. Costs have been reduced by 96% in the last 10 years according to some Respondents. Other positives outcomes that were quoted were that there has been an increase in teledensity (mobile). More minutes are consumed and both operators and consumers are happy. An example cited was that not so long ago it was 106 rupees to make a UK call. Now it is just 4 rupees. Respondents explained that this has happened over a period of time from 2000 to 2009 coinciding with moving from a Bill and Keep (Receiving Party Pays) regime to a

CPP regime. The Respondent explained that the interconnection regime is revised every six months to a year (Respondent 1 India, 30 October 2009). The Respondent drew attention to the fact that the cost of the network is reducing due to the network effect and that the price of technology is decreasing.

According to some Respondents there were many rejected calls under the Bill and Keep method. Respondents explained that when the call did not mature, no one made any money and the consumer also did not get what he wanted i.e. to make a call (Respondent 2 India, 30 October 2009). With the cost based regime CPP was a natural progression. “With CPP the receiver does not pay. This changed everything in India” (Respondent 3 India, 27 October 2009).

Access deficit charges (ADC) was raised as an important aspect to the interconnection regime in India by some Respondents. With liberalisation there were now more private players and government suffered a setback therefore ADC was introduced because government operators had to continue to meet government’s objectives such as universal service and other social and political goals (Respondent 3 India, 27 October 2009). The Respondent explained that the compensation for government operators was the ADC regime introduced in 2003 (Respondent 3 India, 27 October 2009). However there was another mechanism for this as well i.e. the universal service obligation (USO). USO was for areas that were not developing and where facilities were lacking. The Respondent reminded the Researcher that the ITU principle was that “telecommunications is for everyone” (Respondent 3 India, 27 October 2009). The principle was that ADC was phased out over time and was replaced by the USO. The mechanism that India introduced was 5% of operator revenue went to the USO fund. This is managed by DoT (Respondent 3 India, 27 October 2009). The Respondent explained the process that was followed - a tendering process was issued to take the lowest cost service provider to be reimbursed from the USO fund for fixed rollout. The Respondent further explained that this was also done for mobile and that the towers business will be reimbursed from this fund as well. The towers business has been separated in India. Mobile operators have a choice of whether they want to install their own towers. However the towers business can lease services to the operators but there are rules and regulations that apply to infrastructure leasing.

5.1.7 Theme 7 – Infrastructure rollout is progressing now that interconnection issues are resolved

To counter claims by operators that they need to cross subsidise rural infrastructure rollout the approach that India is taking is to subsidise rural rollout by using a universal access fund. As has been mentioned five percent (5%) of revenues go into this fund. India used reverse auctions to get bidders for rural rollout and some bids came in at zero for phone subsidies (Key Informant India, 29 October 2009).

The towers business is a separate business in India. Companies install dark fibre towers that at least three operators can use together. Operators' have the choice of having their own towers business. With Government's policy of opening up the economy to competition, electricity and rail infrastructure was offered to private companies. Towers can be shared in rural areas by different operators thus bringing down costs for rural infrastructure rollout (Respondent 3 India, 27 October 2009). TRAI has issued regulations called "Shared Infrastructure" (Respondent 3 India, 27 October 2009). The Respondent informed the Researcher that once the interconnection issue was sorted out the network started growing (Respondent 3 India, 27 October 2009). Growth in the telecoms market took up momentum by itself. In urban areas penetration is now pervasive (Respondent 3 India, 27 October 2009).

Many Respondents were unhappy with the progress with broadband rollout in India. Some reiterated the importance of a solid interconnection regime to enable broadband because there is a view that broadband will only be possible in India over mobile networks. In India fixed line is declining and the future of broadband lies in mobile. Fixed lines have in fact seen a decline from 50 million in 2005 to 35 million lines in 2008 (Respondent 3 India, 27 October 2009).

During discussions it was pointed out repeatedly that broadband is a failure thus far and India is lagging far behind (Respondent 3 India, 27 October 2009). "Broadband will have to thrive on mobile in India hence the importance of having a good interconnection regime" (Respondent 3 India, 27 October 2009). The Researcher was informed that there is not enough optic fibre to support fixed broadband. Respondents shared the view that broadband will take a mobile route and it must be on 3G spectrum. Respondents agreed that the Indian private sector will innovate and

this won't be a constraint to rollout broadband on mobile networks (Respondent 6 India, 19 October 2009). The root-cause to broadband failure, explained Respondents is the failure of the implementation of 3G spectrum. Government has been unable to decide whether 3G should be a "tool for development or a cash cow" (Respondent 3 India, 27 October 2009). Hence spectrum auctions have been delayed by three years. Government has not been able to put this out to auction as yet. Government wanted a reserve price at one stage. Then it could not decide who should get what (Respondent 3 India, 27 October 2009). Elections in the meantime have happened in the middle of the process resulting in further delays. Government has a fiscal deficit and can use telecoms as cash cow (Respondent 3 India, 27 October 2009).

5.2 Review of legislation, regulations and other materials

The documents that were inspected consisted of the New Telecom Policy 1999, the TRAI Act of 1997, the TRAI consultation paper of 1998, the Telecommunication Interconnection Usage Charges (IUC) Regulation 2003 (The Main Regulations), the IUC (10th Amendment) Regulations 2009, the Explanatory Memorandum to the Telecoms IUC 10th Amendment and other materials.. These particular documents that were reviewed were identified through the interviews conducted in India and must be read in conjunction with section 5.1 above.

5.2.1 The New Telecom Policy 1999 (NTP 99) sets objectives for telecommunications in India

The telecoms industry in India is governed by the New Telecom Policy 1999 (NTP 99). In India telecommunications is legislated by the Indian Telegraph Act of 1885 (ITA), the Indian Wireless Act of 1933 (IWA), the Telecom Regulatory Authority of India Act of 1997 (TRAI Act) and the Information Technology Act of 2000 (IT Act) and the rules made thereunder from time to time (Smale ed, 2011, p 76).

The objectives of the NTP 99 are to "promote competition, ensure the availability of affordable and effective communication facilities to Indian citizens, provide equal opportunities and a level playing field to all players and achieve efficiency and transparency in spectrum management" (Smale ed, 2011, p 76). More importantly

the NTP 99 provided for the restructuring of DoT separating policy making and licensing from operations and providing for the corporatisation of BSNL, MSNL and VSNL by 2001 the government owned telecommunications service providers (Republic of India, 1999).

The NTP 99 also clarifies the role of TRAI especially in the context of the restructuring of DoT. It reiterates the objective of TRAI i.e. to provide an effective regulatory framework and adequate safeguards to ensure fair competition and protection of consumer interests. Therefore TRAI is mandated to issue directives to government in its role as service provider however government in its role as policy marker and licensor is not obliged to implement the recommendations of the TRAI on other matters.

5.2.2 The TRAI Act of 1997 created an independent sector regulator for telecommunications in India

Prior to the creation of TRAI, regulation was the domain of the DoT. With the passing of the TRAI Act an independent body was created and policy making was separated from regulation. Broadly speaking the TRAI's role is divided into providing recommendations which do not necessarily have to be implemented by DoT and the issuing of regulations and dispute resolutions between service providers which is statutory in nature.

TRAI can recommend the need and timing for the introduction of new service providers, recommend the terms and conditions of new licences and recommend revocation of licences for non-compliance of terms and conditions. More importantly TRAI is obliged to ensure effective interconnection between service providers, facilitate competition and promote efficiency so as to ensure growth in services, protect the interest of consumers, and maintain a register of all interconnection agreements and levy fees and other such charges as necessary (Republic of India, 1997).

Furthermore the Telecom Dispute Settlement and Appellate Tribunal (TDSAT) was created under the TRAI Act where any direction, decision or order made by TRAI

can be heard by the TDSAT (Republic of India, 1997, p.76). The TDSAT will also consider interconnection and access related disputes (Smale, 2011, p. 77).

5.2.3 The TRAI Consultation paper of 1998 proposed rules for interconnection regulation

This is document is widely believed to be a watershed document that set the path for reform of the telecoms sector in India. The Consultation paper tackled the very controversial matter of rate re balancing thereby setting the path for cost based pricing for retail and interconnection charges.

The main aim of this paper was to propose a restructuring of telecom tariffs and to provide consistent and transparent frameworks for regulating these tariffs in order to amongst other things achieve cost based prices through regulation and or competition, enhance transparency of subsidies and to provide a basis for enhanced competition in the near future (Republic of India, 1998).

The Consultation paper further sets out important principles for interconnection such as non-discrimination, transparency, timeliness, mandatory interconnection at any technically feasible point in the network, unbundling of the elements of the network and cost based interconnection charges (Republic of India, 1998).

- *Rules for cost based interconnection charges take shape in the Consultation paper*

The framework for cost based interconnection rates propose that set up costs incurred for establishing interconnection should be fully taken into account when calculating interconnection costs. Incremental costs arising due to usage of the network facilities should be included in the costs. Finally a margin should be added to the cost estimates to cover the joint or common fixed costs involved (Republic of India, 1998).

The paper further re-affirms from past consultation papers that set-up costs should be borne by the operator seeking interconnection. For locals calls the present system of Bill and Keep is to remain. For international and long distance a revenue sharing regime is proposed.

For long distance calls asymmetry is introduced as revenue will be shared between new entrants and incumbent in the ratio of 60 to 40 respectively. For international calls the ratio will be 45: 55 between the new entrant and the incumbent (DoT) respectively. When more than two operators are involved in long distance calls then the terminating operator will not share in the revenue streams. The rationale for this is that over time there should be a balance between terminating and originating long distance calls for any operator. The revenue sharing system was to be re-examined when more detailed cost information became available (Republic of India, 1998).

Furthermore the Consultation paper proposes that from here on mobile calls do not have to only interconnect through the DoT network. Calls can go directly from one mobile operator to another. The interconnection charge between these mobile operators is to be settled through bilateral negotiations. Another watershed feature of the Consultation paper is that now the fixed network operator (DoT) will pay a termination fee to the mobile operators when calls from the fixed operator are terminated on the mobile network in a revenue sharing scheme in the ratio of 15:85 in favour of the mobile network (Republic of India, 1998).

5.2.4 The Telecommunication Interconnection Usage Charges (IUC) Regulation 2003 (The Main Regulations)

The main objective of the regulation is to regulate interconnection usage charges to be paid between service providers of basic telecommunications services, wireless in the local loop service providers, cellular mobile services and long distance service providers (National and International) (Republic of India, 2003, p. 1).

As per the regulations IUC are broken down into Transit, Origination, Carriage, and Access Deficit charges.

- Termination Charges

  Termination charges are set at IR 0.30 for all types of calls e.g. basic, wireless in the local loop, cellular mobile and long distance.

- Origination Charges

The regulations regarding Origination Charges stipulate that the originating service provider shall retain the amount left over after paying for termination, carriage and access deficit charges (Republic of India, 2003, p. 9)

- Carriage Charges
    - Carriage charges for Long Distance

Table 11 : Carriage Charges for Long Distance Calls in India

Carriage charge per minute for long distance calls (IR)	Distance			
	Below 50km	50-200km	200-500km	Above 500km
	0.20	0.65	0.90	1.10

Source: Republic of India, 2003, p. 10.

- *Transit charges for intra- Short Distance Charging Area(SDCA)*
  Direct connection between service providers is mandatory; charges can be mutually negotiated but should be lower than IR 0.20 (Republic of India, 2003, p. 10).
- *Carriage charges for International Long Distance*
  The regulations allow the service providers to negotiate a rate however any surplus may be shared between service providers on the approval of the regulator (Republic of India, 2003, p. 10)

- Access Deficit Charges (ADC)

  Access deficit charges are specified for certain categories of calls such as fixed to fixed, fixed to wireless in the local loop (limited mobility) (WLL) (M) and vice versa, cellular to cellular, cellular to fixed and vice versa, cellular to WLL(M) and vice versa. The charges range between IR 0.30 to IR 0.80 (Republic of India, 2003, p. 10). Methods for and collection and distribution of the ADC are also set out in the regulations.

5.2.5 The Interconnection Usage Charges (10th Amendment) Regulations 2009

A number of Amendments were issued to the Main Regulations issued in 2003. These Amendments culminated in the 10th Amendment issued in 2009.

The 10th Amendment further reduced termination charges from IR 0.30 to IR 0.20 per minute for all local and national long distance calls. The termination charge for incoming international calls was set at IR 0.40 per minute (The Republic of India, 2009a, p. 2).

Transit charges for intra- Short Distance Charging Area (SDCA) was set to be lower than IR 0.15 from being lower than IR 0.20 per minute (The Republic of India, 2009a, p. 2).

IUC for short message service (SMS) was to be negotiated between service providers as long as the charges were non-discriminatory, transparent and reciprocal (The Republic of India, 2009a, p. 3).

5.2.6 The Explanatory Memorandum to the 10th Amendment

The Memo explains how cost effective telecoms charges will aid in India's development. It explains further that the issue of interconnection as a barrier to entry for new service providers needed to be resolved and hence the 10th Amendment. It is the objective of the Authority as well to ensure that service providers recover their costs and that transfer of charges takes place correctly (Republic of India, 2009b, p. 5).

The Memo goes on to set out how the various inputs from stakeholders during the consultation process were dealt with. It also revisits the history of the various Amendments in a chronological order. The call costs are broken down into origination, carriage and termination charges.

During the Stakeholder engagements three models for calculating interconnection charges were suggested. They were Forward Looking Long Run Incremental Costs (FLLRIC), Bill and Keep (BAK) and Fully Allocated Costs. The Regulator goes on to explain why none of the models could work in the prevailing situation. The regulator dismisses the use of the FLLRIC by suggesting that it is difficult to compute and requires high regulatory overheads. The regulator goes on to suggest that a hybrid FLLRIC model may even lead to higher termination costs (Republic of India, 2009b, p.23).

The regulator is not in favour of BAK at all as it is of the opinion that it is not suitable if traffic flows between operators is disproportional as would be the case between established operators and new entrants (Republic of India, 2009b, p.23). The regulator also made it quite clear that it did not want to revert to a regime where the Receiving Party pays for incoming calls.

The FAC regime was dismissed as it divides operator's costs between all the services that it provides which could mean that operator inefficiencies could be passed on to the interconnection service providers which would be unacceptable (Republic of India, 2009b, p.23).

In the end, although the regulator agreed that a FLLRIC models needs to be implemented it is not in favour of doing so immediately. It will continue to use

a proxy cost together with the information from BSNL to get to a cost based tariff for interconnection usage charges. Although the information from BSNL was not reliable in certain instances the regulator was able to benchmark with a high level of accuracy the cost for termination and carriage. The regulator specifically excluded CAPEX charges to determine termination charges and only used OPEX and it was based on the audited financial statements of 25 mobile operators (Republic of India, 2009b, p.23).

Table 12 : Interconnection Usage Charges India (2009)

Service	New (IR) per minute	Previous (IR) per minute
Termination Charge domestic	0.20	0.30
Termination Charge International (incoming)	0.40	0.30
Carriage long distance	0.65	0.65
Origination Charge	Not Specified- service provider to retain after paying other IUC	
Transit/Carriage charge from level II trunk automatic exchange (TAX) to SDCA (short distance call area)	0.15	
Transit Intra SCADA and TAX	Less than 0.15	

Source: Republic of India, 2009, p. 66

5.3 Summary

India's telecommunication reform process identified three issues to be resolved i.e. tariff rebalancing, interconnection and quality of service regulation. India began with tariff rebalancing between long distance and local call costs. While this was happening the status for interconnection remained and was heavily biased toward the incumbent which was the DoT. The interconnection regime was Receiving Party Pays where the mobile companies paid the incumbent when calls were terminated on mobile networks.

All respondents agreed that the changeover to Calling Party Pays (CPP) paved the way for a more equitable interconnection regime. This led to many challenges from the incumbent but eventually there was acceptance of the CPP regime. At one stage the entire TRAI staff was fired. The situation in India however was changing where completion was being introduced in other network industries such as rail and electricity.

India's approach to interconnect charges dubbed Interconnection Usage Charges (IUC) was a cost based approach. IUC was broken down into origination, carriage/transit and termination charges. The incumbent, the corporatised DoT's (now called BSNL's) information was used to benchmark some of the costs. India did not choose one of the popular costing models such a LRIC, BAK or FACs. Rather they chose to use a proxy to determine actual costs for termination and carriage. Origination charges are not regulated and operators are allowed to keep the origination charge after paying the termination and carriage charge. Interconnection charges were eventually settled at IR 0.20 across the board in 2009. On a pure exchange rate basis this is equivalent to R0.03 (3 cents). The South African interconnection rate by contrast in 2011 is R 0.73 for mobile R 0.20 for fixed within 0N and R0.28 between 0N areas.

CHAPTER 6

SOUTH AFRICA MARKET REVIEW APPROACH CONTRASTS WITH INDIA'S COST-ORIENTED APPROACH

South Africa followed a market review process promulgated in the ECA which was modelled on the European Union Framework Directive. India on the other hand went through a rigorous cost determination exercise to prescribe termination charges. India's process yielded low retail prices whereas South Africa has yet to see the retail pricing benefit of this exercise.

6.1 ICASA neglected to use interconnection strategically to reduce retail prices

The literature has shown that interconnection is a key regulatory issue for enabling competition in a liberalised telecommunications sector. Melody's iconic statement that "interconnection is a cornerstone of competition" is testimony to the importance of interconnection in a liberalizing telecoms industry (Melody, 1997, p. 53). In 2007 ICASA commenced with a process to regulate interconnection rates but failed to complete the process. This inertia demonstrated by ICASA gives little comfort that the Authority had a strategic view on using interconnection to introduce competition despite overwhelming evidence that it does. South Africa remains a country with one of the highest telecoms prices in the world impacting on South Africa objectives articulated in the white paper of giving affordable access to all.

India on the other hand had a strategic view on interconnection from the outset. They targeted interconnection to reduce retail rates as set out in the Consultation paper of 1998 and pursued this relentlessly using cost exercises to determine the true costs for interconnection. India not coincidentally has the cheapest retail rates in the world.

6.2 ICASA correctly followed a market review process as defined in the literature but did not achieve the desired outcome

The Authority followed the processes prescribed in the ECA meticulously in arriving at the interconnection regulations of April 2010 and the call termination regulations of October 2010. The processes were modelled on the European Framework directive on telecommunications costs. However the literature shows that there are different views on how markets may be defined. The literature cautions that markets could be defined too narrowly if substitute products and complementary services are not taken into account. Although ICASA determined correctly that there are no substitute product for call termination on each operators networks there is no evidence to suggest that ICASA considered complements when defining markets. Although there is support for the definition it would have been interesting to understand ICASA's thinking in this regard.

The market review process initially was not followed correctly through a variety of reasons. Some of the reasons include the fact that the previous Telecommunications Act of 1996 did not deal with the issue sufficiently as it was only concerned with the regulation of Telkom's monopoly in the market at that time. It is widely agreed that the process that was finally engaged in was a robust process and the process itself had support from the operators. The processes itself have their roots in the European Union Framework for interconnection regulation and are indeed very complex by nature. It was a necessary however to go through the market definition processes to get to a point where the processes could not be challenged by the large operators despite very strong views prevailing in 2009 from leading legal minds such as Advocate Gilbert Marcus SC that in fact it sufficient work had been done in defining markets in 2007 and that it was not necessary to conduct a further market review before interconnection rates were prescribed.

There is reason to contend however that the processes could have been simplified in the legislation and could have taken place in an ex-post process rather than in the ex-ante way that it was conducted which would not have resulted in the nearly sixteen years of delay before interconnection rates were regulated. The delay has had serious developmental consequences for the consumer as there has been a

sustained period of high telecoms prices in South Africa lasting this entire period. That the processes that have been legislated were onerous but necessary is not disputed. However the implementation could have prescribed rates in parallel with market analysis being performed.

The one criticism levelled at the process was that the rates that emerged after the process was concluded were not based on the underlying costs of interconnection. One could contend then that the process did not yield the outcome that was hoped for. There was a political process that ran in parallel to determine the rates

The Indian experience is that interconnection usage charges were prescribed in 2003 and more in-depth cost based exercises are continued to be performed. Officials from TRAI have stated quite openly that interconnection rates could be raised if the market demands it. The processes followed by the Indian authorities are not steeped in statute. The TRAI Act gives the regulator sufficient tools to prescribe regulations but the approach has been to move towards cost-based pricing. To this end the Authority has spent a considerable number of years understanding the costs of making a call in India. Costs that make up a call in India are divided into origination charges, carriage charges and termination charges collectively called interconnection usage charges (IUC). Regulation takes place at the level of these cost components. It seems to be a far more simplified process to get to regulated rates but it requires superior technical and financial skills within the regulator.

A disadvantage of the onerous process defined in the ECA is that the skill set needed to achieve finality to these complex processes that have been prescribed, is not readily available. It has been put forward during the interview process that the skills at ICASA are either lacking entirely or not deployed optimally to undertake a market analysis of this nature. The institutional problem at ICASA over the years including acrimony between the CEO and the chairperson of the Council has not been conducive to prescribing interconnection rate regulation timeously. There has been a lack of continuity with councillors and staff since the days of SATRA and this has impacted on regulations. Internal strife has resulted in the key issues not being dealt with appropriately. Staff retention is a major issue at ICASA and effort needs to be devoted to attracting and retaining key staff. Many of the respondents employed

by the major operators and that were interviewed for this research project are in fact previous ICASA employees that had left for greener pastures.

6.3 The literature points to asymmetrical interconnection charges as a means to support new entrants

South Africa's interconnection rate regime has not always favoured new entrants. The experience of Cell C in entering the South African telecoms market was often quoted as being how not to regulate for new entrants. In the absence of interconnection regulation the two mobile incumbents were allowed to raise their interconnection prices by 500% just before Cell C's entry into the SA market. Representatives from the major operators respond that the rates were merely being aligned to the Telkom tariff at that time and that they were not being raised to keep Cell C out. However interconnection regulation or the lack thereof is blamed for Cell C's poor market share to date as interconnection is one of the highest cost components for new entrants. The regulations of 2010 addresses this issue but it is not without controversy. The new asymmetric rate regime is described in chapter 4 of this report and gives new entrants Cell C, Neotel and 8ta an opportunity to charge slightly higher interconnection prices on a decreasing sliding scale over a three year period.

Some of the controversy surrounds Cell C having been given an asymmetric rate because the view is that it is an established operator and also the fact that Cell C's client base consists mostly of younger people for e.g. students and that in fact Cell C has been a net receiver of interconnection rate income over the ten years it has been in operation. It is argued that Cell C has been a net receiver of calls rather than a net originator of calls because of the profile of its subscribers. The other controversy surrounds 8ta. 8ta is a Telkom subsidiary and it is stated as being ironical that Telkom now demands an asymmetric rate for its subsidiary whereas it had refused to allow asymmetric rates for other operators in the past. It is also believed that 8ta has the backing of the monopoly fixed line service provider and therefore this does not warrant paying 8ta higher interconnection rates.

Barriers to entry for new entrants are compounded by having to pay high interconnection rates or by not having a regulatory process that makes provisions for asymmetric charges favourable to new entrants. This is now by and large addressed in the call termination regulations issued in 2010. There is also a limited period of three years whereby this opportunity for new entrants exists. This limited period is seen as fair from the point of established operators as inefficient new entrants will not get this benefit beyond a 'honeymoon' period. Asymmetry however was contested during the stakeholder engagements, with operators having opposing views on whether asymmetry should apply. However an outcome was reached whereby operators other than MTN, Vodacom and Telkom could charge higher rates within certain boundaries and under certain conditions that have been described previously and for a limited period only. This achieved a balance between opposing views and seemed to be a fair outcome.

A point made by many of the respondents however is that reducing barriers to entry can only be achieved by a combination of regulations that incorporate access to efficient spectrum, carrier pre-selection, number portability, local loop unbundling and asymmetric rate regulation. Therefore the processes regarding entry into the telecommunications sector needs to be more clearly integrated and defined.

The Indian Authority having introduced asymmetric rates in 2003 have also ensured that the incumbents get paid an access deficit charge (ADC) in the earlier years. This allowed incumbents to continue to rollout services to rural areas. The ADC however is slowly being replaced by fund from the Universal Services Obligation (USO) fund.

6.4 Influence by the policy maker in the regulatory processes was largely seen as counterproductive

Patricia de Lille, Member of Parliament and leader of the Independent Democrats at the time led a charge in Parliament to review interconnection charges. Belief at the time was that telecoms cost in South Africa were unacceptable high due to high interconnection rates. The Parliamentary Portfolio Committee led by Ismail Vadi and of which Ms de Lille was a member picked up the issue and intervened citing lack of

direction at ICASA to deal with the issue as raison d'etre. This drew protestations from Telkom, MTN and Vodacom who insisted that the process as prescribed in the ECA should be completed. The process was complicated further by the intervention by then Minister Nyanda who called the main operators into a meeting to discuss reduction in charges.

The Ministry's intervention through the Portfolio Committee (PC) was not seen as helpful to the process. The Ministry and the PC were reacting to a major public outcry on interconnection charges and the cost of communications in the country. The Minister issued a policy directive to ICASA to have call termination rates reduced to 50% above cost by the end of November 2009 (Comninos, *et al*, 2010, p. 11). However, ICASA still had to follow the process as prescribed by the Act. The operators did reduce their charges but this was not based on any regulation that could be upheld in law.

With regard to the new call termination rate regulations that were issued the entire process was influenced politically especially by then Minister Nyanda who forced the operators into reducing their rates despite the process that was required to be followed as prescribed in the ECA. Therefore ICASA did the right thing and continued with the process to its logical conclusion. If the Ministry had continued, the process would have eventually been unenforceable and open to challenge in court. Many respondents share the view that interference by government is a major stumbling block to success of the telecoms sector in South Africa.

India too has been grappling with state intervention in the telecoms sector. The DoT's service arm was corporatized in 2000 leaving the policy making section still ensconced with the Ministry of Communications and Information Technology. However it has been difficult for the Ministry to extract themselves completely from regulatory decision making and had at one point relieved the entire TRAI members from their duties. They have also spent an inordinate time in court challenging some of the decision made by TRAI.

6.5 The rates prescribed in the new call termination regulations seem to be arbitrary in nature

ICASA found that there is inefficient pricing in the wholesale call termination markets and thus prescribed pro-competitive price control measures that include cost-oriented call termination prices (Refer to Table's 8 and 9, Chapter 4). The rates are prescribed on a glide path reducing to R0.40 for mobile and R0.12 for fixed voice call termination. To clear up any misunderstanding the price controls imposed have not been done to directly reduce retail pricing but rather to reduce barriers to entry thereby allowing new players to enter the market and thus improving competition. It is envisaged that in the outcome will be reduced retail pricing (Republic of South Africa, 2010c, p. 31).

Although the Authority makes a point that price controls are cost-oriented there is no evidence to suggest how regulated rates were derived, other than to express that charts of accounts were used. The risks are that rates could be understated or even set too high. For rates that are set too low this could have a serious consequence to the financial sustainability as interconnection revenue makes up at least 20% of the revenue of a mobile operator. This could result in what is called the waterbed effect where other component prices increase to compensate for the decrease in interconnection revenue. This could also result in reducing investment in infrastructure over time. If on the other hand interconnection rates are set too high then prices remain inefficient and consumers do not receive the full benefit of reduction in retail prices.

When drawing parallels with the India it seems that the Indian process followed to arrive at cost oriented interconnection rates was somewhat more structured. Whereas market definition was the central process in arriving at a regulated rate in South Africa, the Indian process was focused on arriving at a fair interconnection usage charge. The theme in the Indian process was "…sound economic basis…" for IUC (Republic of India, 2009, p. 54). Jain (2006) confirms that TRAI started with an inefficient pricing regime but eventually arrived at a more reasonable interconnection pricing regime (Jain, 2006, p. 183).

To recap IUC is made up of termination, carriage and origination costs. In summary, to arrive at a mobile termination rate (MTR) the Authority used the total relevant OPEX of the wireless industry divided by the total number of minutes handled by the wireless network in the same period. The Authority used the accounting separation reports of the mobile industry and profit and loss statements and made projections with regard to Average Revenue Per User (ARPU) an the earnings before interest, tax, depreciation and amortisation to arrive at the relevant OPEX per user for future years. This yielded in the end a MTR of Rs 0.20 per minute (Jain, 2006, p. 59).

In arriving at a fixed termination charge the Authority used the data of the largest fixed line provider BSNL to arrive at a fixed termination charge (FTC). The Authority took the cost data provided by BSNL, estimated the EBITDA and ARPU and using 905 minutes of use arrived at an FTC of Rs 0.20 per minute (Jain, 2006, p. 63).

For carriage charges the Authority used a method of calculating return on capital employed for the national long distance operators but also took in account the difficulties of infrastructure rollout because of remote geographic areas and hilly terrain to keep the ceiling at Rs 0.65. Other transit charges for Level-II Trunk Automatic Exchange to short distance charging area (SDCA) and intra SDCA and TAX were also regulated to Rs 0.15 and less than Rs 0.15 respectively. Lastly Origination charges will not be regulated and will be retained by the originating company after all other termination charges were paid.

In conclusion the Indian authorities took a more systematic approach in determining cost oriented interconnection pricing and most of the regulatory effort was focused on this element. In the South African situation most regulatory effort was placed on the market analysis processes. The market review process versus the rates that were finally issued does not tie up. This probably can be attributed to the fact that the Authority's process was paralleled by a political one as the process was characterised by interventions of the PPC and the Minister at the time. From a Promotion of Administrative Justice Act (PAJA) perspective this was possibly non-compliant but it did yield at outcome that goes towards improving the consumer’s welfare. The ICASA process, long, rigorous and complex as it was, never actually

yielded the proper result in terms of cost-based wholesale voice call termination rates.

6.6 Pro-competitive measure imposed by ICASA did not consider other bold options

ICASA correctly defined Telkom, MTN and Vodacom as having SMP but also that they had benefitted previously from more efficient spectrum and from a market share of more than 25% for total minutes terminated. The additional competitive remedies imposed on these operators were the submission and publication of a reference interconnection offer, submission of COA/CAMs and symmetric price controls on interconnection rates. However the literature suggests that divestiture should be considered for companies that operate in both a horizontal and vertical market. Telkom, MTN and Vodacom provide fixed and mobile backbone services respectively and also service other horizontal markets such as data services, internet access and voice services. There is no evidence to suggest that ICASA investigated this option of separating these lines of business so that they work independently of each other. Although collusion cannot be ruled out completely, as the literature suggested, Directors are governed by the Companies Act and will have to make decisions independently. This would have created companies that genuinely competed with each other. Divestiture has been very successful in introducing competition as in the AT&T case in the USA.

Wholesale cost imputation is also an additional measure that may have been imposed to prevent vertical price squeezing. Although more in the domain of competition law, ex-ante measures could have been introduced for incumbents to show that vertical price squeezing is not taking place before prices are imposed on unregulated interconnection charges e.g. for data access on each other's networks.

Finally excluding Cell C from providing COA/CAM information to ICASA in the new regulations is seen as departing from the processes promulgated in the ECA. It is argued that ICASA followed the process as defined in the ECA to a point but then made certain adjustments that could be viewed as being biased. All operators were

identified as having SMP and despite the arguments set out by ICASA that Telkom, Vodacom and MTN were advantaged earlier, it is argued that COA/CAM from Cell C would ensure cost transparency and would prove that Cell C did not deserve an asymmetric rate.

6.7 Delays in arriving at new interconnection and call termination regulations was caused by a combination of factors

Telecommunication regulation in general was slow to start as the talks during the Convention for a Democratic South Africa (CODESA) focused on the control of broadcasting. Control of broadcasting would allow the various political parties vying for power to have access to the South African voting public. Hence telecommunication regulation took a back seat until after the democratic government came into power.

When the Telecommunication Act was promulgated the main focus was the managed liberalization of telecommunications in South Africa. The interconnection issues focused primarily on interconnection with Telkom. Telkom had been declared a Major Operator (Republic of South Africa, 2005b, p. 8) and any proposed interventions by SATRA and ICASA were challenged by Telkom. This contributed to the long delays as well. However respondents believe that the long delay from when the Telecommunications Act was in force and the promulgation of the Electronic Communications Act set interconnection regulation back by a few years. Both ICASA and the operators were aware of the ECA being imminent and therefore failed to move to finalise on interconnection regulations under the Telecommunications Act before the ECA was promulgated.

Other delays mooted by the respondents included the onerousness of the market definition process defined in the ECA. Lack of skills at ICASA, poor deployment of the skills and lack of continuity of key staff had a negative impact on the interconnection processes. The general lethargic nature of the ICASA as an institution certainly did not assist matters.

Some have argued that if it was not through parliament's direct intervention because of media pressure, in the regulatory processes the interconnection and call termination regulations would have been delayed much further.

6.8 The LRIC model to determine cost of an efficient operator might not be suitable for a developing country context

The literature suggests that a marginal cost model needs to be chosen so that costs may be determined for an efficient operator. ICASA has not shown any evidence that it in fact has used any cost model to determine interconnection charges. A popular model to be implemented is the LRIC model. A caution to be considered is that the LRIC in its pure form might not be suitable for the South African context. The LRIC model is based on an efficient operator and investments in infrastructure (capital cost) is smoothed out over a number of years. However operators are investing heavily in infrastructure at the moment to cater for the surge in data usage with the adoption of smart phones and they are anxious that they will not be able to recover costs if the LRIC model is adopted. The other weakness with the model is that most capital for the telecommunications industry is dollar based and operators will not be compensated using the LRIC model for any volatility of the rand against the dollar. India has implemented its own version of LRIC to cater for some of the inherent weaknesses described here.

6.9 Lessons learnt

The ECA's competition prescriptions in Chapter 10 are onerous and should be amended to ensure that rate regulations are not subject to a market review exercise being carried out before rates are prescribed. The market review process could have been expedited had ICASA implemented an ex-post approach to some of the elements of the market review for example the exercise to determine pro-competitive measures.

Interconnection impacts on competition, therefore the regulator needs to recognise interconnection regulation as a strategic imperative to drive retail prices down. In the

absence of a cost-oriented exercise being carried out popular opinion is that the current glide path has still not achieved the aspiration of cost based charges. Some respondents believe that the costs should be closer to 25 cents. Therefore there is opportunity to further reduce wholesale call termination rates after 2013. Furthermore delays in implementing asymmetric rates for especially Cell C has resulted in low market share for this company. Although this has been addressed in the current regulations the damage caused by inaction has set Cell C back in terms of market share.

Some pro-competitive remedies could have been bolder for example divestiture of some lines of business within Telkom and possibly MTN and Vodacom could have been alternative measures to introduce competition quickly. A caution has been raised with LRIC in that on implementation South Africa should consider a hybrid form of the model to suit the South African situation. Delays in finalising wholesale call termination and interconnection rates is a factor of poor skills at ICASA, dis-continuity of key staff and poor use of existing skills. Further review of interconnection and wholesale call termination will result in further delays if skills at ICASA are not addressed. Finally government interference and ownership in the telecommunications industry is debilitating and impacts negatively on development objectives.

6.10 Summary

South Africa's process for interconnection regulation was based on the European Union market review approach. India on the other hand addressed the root of the problem by identifying interconnection as a strategic issue to reduce retail prices and proceeded to engage in an in-depth cost-oriented process for interconnection regulation exercise. Rates are regulated at this level. A number of lessons learnt have been identified that will be explored further in the following chapter.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

Affordable telecommunication access is a developmental issue and policy and regulatory decision making has an impact on how telecommunication is utilised for development (Cardilli and Spiller, 1997). The impact of telecoms access is felt in the field of agriculture, travel, small business, medicine, security and education but most importantly on how developing economies can integrate into the world economies by trading their knowledge, research and skills with the rest of the world (Mansell, 1998). Affordable and accessible telecommunications enables this. However South Africa is falling behind the rest of Africa in how telecommunications and information technology is utilized for development. One of the main contributory factors is the high costs of communications as reported in the Genesis Analytics Study of 2005 (Genesis Analytics, 2005, p. 1). Efficient and effective policy and regulatory processes therefore are key to realising developmental goals (Cardilli and Spiller, 1997).

This paper set out to analyse processes for interconnection as interconnection is identified as one of the contributory factors for high costs in South Africa as articulated by *inter alia* the previous Minister of Communications, General (Ret) Siphiwe Nyanda. The paper also undertook to draw some lessons from a jurisdiction that has some of the lowest telecoms costs in the world.

7.1 Final conclusions

South African Respondents concurred that the ECA promulgated a complex and onerous process. However Respondents agreed that the process needed to be followed as per the ECA or ICASA would have faced legal challenges from the telecoms operators. The Promotion of Administrative Justice Act (PAJA) could have been used to declare the process as procedurally unfair. Respondents therefore concur that the intervention by the Minister of Communications could have given cause to declare the process procedurally unfair in terms of PAJA.

Some Respondents were more vocal and suggested that government almost scuppered the process by intervening in a heavy handed way which covertly earned the ire of the regulator and the major operators. This had the makings of a court challenge had government preserved with the high handed approach to impose wholesale call termination rates outside legislation and the regulatory processes. This according to some Respondents would have set the process back a further few years.

However an opposing view from some Respondents suggests that the intervention by the Minister expedited the regulatory process by firmly placing interconnection rate regulation on the national agenda at the highest level possible. This gave impetus to ICASA and Operators to find an amicable solution. They question whether ICASA would have been catalysed into eventual action had government not intervened in the process.

The literature points to cost based interconnection rates. The ITU Study group suggests that interconnection rates should be based on underlying costs (ITU-D study group 1, 2004). This is supported by the World Trade Organisation's (WTO) 1997 Agreement on Basic Telecommunications Services. Respondents pointed out that they could not reconcile the new rates that were issued to any costing exercise carried out by ICASA. The Indian Authority on the hand, as has been shown, based Interconnection Usage Charges on a cost based exercise by benchmarking costs of the incumbent operator amongst others. This had the effect of dramatically reducing retail prices.

The conceptual framework (Fig 3) that was developed set out the processes to be analysed by examination of how legislation enables interconnection rate regulation, how market definition was concluded using appropriate economic models, assessment of the market for competitiveness using Porters five factors and how anti-trust and competition models were used to impose anti-competitive measures. The research questions were developed to unravel the processes for interconnection regulation (chapter 3) and in summary sought to document the processes for interconnection regulation followed in South Africa and to investigate its strengths

and weaknesses. Parallels were drawn with similar processes engaged in by Indian Authorities.

The conclusions drawn from interviews with Respondents was that the eventual processes followed by ICASA were thorough and had the support of the Operators because of the meticulous way that ICASA conducted the process in line with the ECA. However the view held by some Respondents is that the process yielded very arbitrary wholesale call termination rates as there was no evidence of a cost based exercise being performed and therefore seemed to defeat the purpose of this long and complex exercise. Although opinion prevailed from respected Senior Council that it was not necessary to conduct a further market definition exercise, had ICASA not done that, Respondents held the view that the process would have been challenged in court resulting in further delays. So ICASA acted correctly in following the process defined in the ECA to the letter.

There are criticisms from some of the Respondents that suggest that the process could have been made more efficient by allowing some of the market review processes to be conducted ex-post. They believe that the European process on which the South African process is based did not mean that a Market Review process needed to be conducted before rates were to be issued. The view is that the review could have been done in parallel or after rates were issued.

There are some opposing views on acceptance of how asymmetry is imposed in the regulations. Respondents that are not supportive of asymmetrical rates for Cell C and Telkom nevertheless are prepared to support the process because of the glide path that eventually levels the playing fields.

In drawing parallels with India it was noted from the interview with Indian Respondents that India did not engage in long drawn out market definition processes but cut to the core of the problem by investigating the actual and projected call costs by breaking down interconnection usage charges into origination, carriage and termination rates. Regulation of rates takes place at this level. The process itself was marred by the DoT and its corporatised entity BSNL taking TRAI to court on numerous occasions but TRAI persevered and eventually gained reluctant support

from government. This has resulted in India's mobile call termination rates being equivalent to just over three South Africa cents using the current exchange rate (3rd Nov 2011). South Africa's mobile termination rate by comparison is currently fifty cents (2011).

India engages in reviewing this determination regularly and is not disinclined to increasing rates if necessary.

7.2 Lessons learnt and recommendations

A number of lessons were learnt and are summarised from the interviews conducted and documents analysed. Recommendations that emanated from interviews and the document review are captured as well.

Amendments to the ECA need to be promulgated

Respondents suggested that the ECA's competition prescriptions in Chapter 10 of the ECA are onerous and should be amended to ensure that rate regulations are not subject to a market review exercise being carried out before rates are prescribed. An ex-post process will speed up the processes in the future. The ECA calls for another review of market determinations before pro-competitive measures are changed. This means then that consumers will be subjected to a further long drawn out process before rates are adjusted to get to close to underlying costs. Experts believe that rates should be closer to 25 cents (ZAR). Respondents cautioned that an amendment to the ECA will be appropriate and should ensure that any new rate to be regulated will not be subject to another market review before rates are adjusted but rather that rates are adjusted subject to a benchmark exercise as was achieved in India.

Interconnection must be treated as one of the strategic pillars for cost reduction

Some Respondents agreed that ICASA should treat interconnection as a strategic pillar to reduce retail rates. To achieve this it has to issue draft regulations to be implemented in 2013 to reduce rates to get closer to underlying costs. Respondents

alerted the Researcher to ICASA's institutional inertia and warned that the exercise will not be conducted in a timely fashion and will once again be a stumbling block, preventing consumers from improving their wellbeing. The regulator therefore needs to recognise that interconnection regulation is a strategic imperative to drive retail prices down. In the absence of a cost-oriented exercise being carried out opinion from Respondents is that the current glide path has still not achieved the aspiration of cost based charges. As stated some Respondents believe that the costs should be closer to 25 cents. Therefore there is opportunity to further reduce wholesale call termination rates after 2013.

An opposing view however held by at least one Respondent is that ICASA needs to make its intention very clear that it wants to reduce retail rates. It is the Respondents view that ICASA has not done this. This then will give Operators an opportunity to work with ICASA to look for alternatives to meet this objective. Some Respondents believe that reducing interconnection rates, due to the waterbed effect, as has been explained will not achieve a reduction in retail rates.

An asymmetric rate is not sufficient to assist new entrants

View from respondents is that asymmetric rates should be complemented by regulations ensuring successful number portability implementation, local loop unbundling, access to efficient spectrum and carrier pre-selection so that new licensees get the benefit of easy entry into the sector. Although this has been addressed in the current regulations, some Respondents believe that the damage caused by this inaction has set Cell C back in terms of market share.

Pro-competitive measures needed to be bolder

A conclusion drawn from the literature suggests that some pro-competitive remedies could have been bolder; for example divestiture of some lines of business within the incumbents e.g. Telkom, MTN and Vodacom could have been alternative measures to introducing competition more rapidly. Telkom in particular is the monopoly backbone services provider to the sector. However it is also a service provider in downstream markets e.g. internet service provision. Even though a court ruling, favouring Altech Autopage has allowed other operators to self-provide they will have to obtain network services from Telkom because of high capital costs to roll-out

infrastructure of their own. It is opportune that with the market review exercise that was conducted that ICASA together with the Competition Commission put plans into place to functionally separate Telkom's wires business from other services. This could mean that the licensing regime would have to be re-examined.

Institutional problems at ICASA have impacted on developmental goals

Some Respondents were adamant that delays in finalising wholesale call termination and interconnection rates is a factor of poor skills at ICASA, dis-continuity of key staff and poor use of existing skills. Respondents expressed an anxiety that any further review of interconnection and wholesale call termination will result in further delays if skills problems at ICASA are not addressed. The literature shows that delays in issuing regulations have impacted negatively on developmental goals such as aspirations for South Africa to enter the call centre market, like India has done. At least one Respondent suggested that past acrimony between the CEO of ICASA and the Chairperson of the Council due to role clarity contributed to delays in the issuing of key regulations. Skills according to a head of regulation at a large operator are not deployed optimally. In some instances institutional skills are lacking to interpret COA/CAM data. The other problem that ICASA faces is that they are not able to retain skills for a sustained period to conclude on finalising key regulations. The Researcher in fact found that most of the Respondents were erstwhile ICASA employees/councillors having occupied key positions at ICASA previously. ICASA will have to improve working conditions to enable retention of key staff. Furthermore as one Respondent pointed out ICASA has a budget of R280 million to regulate an industry with a turnover of R100 Billion. "They are hopelessly underfunded and cannot retain or hire the staff required for the complex task at hand" (Vella, 2011, p.58).

Respondents agree that since the ECA requires regular review of market dynamics, it is opportune that ICASA resolves skills issues immediately.

The interconnection rates prescribed in the new regulations has not yielded the correct result

Some Respondents were annoyed that there seemed not to have been as thorough a costing exercise to get to the rates as specified in the glide path rates that have been prescribed. The rates seem to be arbitrary in nature. The market review process and the rates that were finally issued do not correlate. This according to some Respondents can be attributed to the fact that the Authority's process was paralleled by a political one as the process was characterised by interventions of the PPC and the Minister at the time. From a Promotion of Administrative Justice Act (PAJA) perspective this was possibly non-compliant but it did produce an outcome that goes towards improving the consumer's welfare. The ICASA process, arduous, rigorous and complex as it was, never actually yielded the proper call termination rate result based on cost based charges.

Intervention by the policy maker in regulatory processes was counterproductive

From the interviews conducted with Respondents there is little doubt that the focus on interconnection rates by the media, the PPC and Ms De Lille in particular galvanised ICASA into finally concluding on interconnection and wholesale voice call termination regulations. However some held the view that the intervention by General (Ret) Siphiwe Nyanda had the potential of setting the process back a few years. Had the Minister continued with the heavy handed approach it was inevitable that the regulations would have been challenged using the Promotion of Administrative Justice Act citing lack of compliance to due process.

However one can understand the actions of the Ministry as they were "frustrated by the lack of progress between the operators and ICASA" (Comninos, *et al*, 2010, p. 11). However this intervention by government also did not do justice to the new rates that were prescribed. The rates that were prescribed did not seem to be based on any rigorous costing exercise being conducted. The full value therefore has not been extracted and rates are a fair distance away from the rate of 25 cents that has been estimated as the true cost of interconnection in South Africa.

Table 13 : Summary of Research Questions and Conclusions drawn

No	Research Question	Conclusions drawn
1.	To what extent does the approach to regulating interconnection rates adopted by the South African Regulator present a favourable outcome with reference to the approach adopted by the Indian Regulator?	The approach taken by the SA authorities yielded arbitrary interconnection rates. The Indian process however achieved cost based rates that were used to drive retail costs down. The SA process was also overtaken by a politically driven process that overshadowed the ICASA driven process. The market review process could have been a combination of ex-ante and ex-post rather than ex-ante only.
1.1	To what extent has the approach to market definition promoted an effective regulatory process?	The process was onerous but needed to be conducted as per the ECA. This revealed a weakness in the ECA that did not clearly define an ex-ante or ex-post process. Literature points to a balance between the two.
1.2	To what extent has the review of the effectiveness of competition provided a valuable component of the regulatory process?	The process revealed that all operators are dominant in the call termination market. However the process itself was long drawn out and could have been conducted in parallel with a cost based exercise
1.3	How does the determination of pro-competitive remedies strengthen the regulatory process?	Pro-competitive measures could have been bolder and could have included divestiture of certain lines of subsidiary businesses of incumbents
1.4	How does the process for determining interconnection rates strengthen the process?	Processes have gaps in them. The ECA unnecessarily bogs down the process because of a requirement for an ex-ante market review process
1.5	What lessons can be learnt from the approach to interconnection regulation adopted in India?	The process should be cost based. Conduct benchmarks of costs and determine rates. Adjust rates as information becomes more concrete.

7.3 Key Recommendations

The literature strongly points to cost based interconnection rates. This is corroborated by views held by Respondents. Therefore a cost based exercise for interconnection needs to be performed urgently along the lines of that which was accomplished by India authorities. As in the Indian case the costing exercise should use the costs of Telkom for fixed and MTN and Vodacom for mobile costs to develop some benchmarks that will be close to actual costs that are incurred. The Indian Authorities used publicly available information for listed companies to estimate actual minutes terminated and estimated costs accordingly.

This exercise needs to be completed before 2013 before the glide path rolls itself out. However three key issues have been identified from the interviews conducted with the Respondents as critical success factors.

The first is that amendments need to be made to the ECA to make the interconnection processes less onerous particularly with the market review process. The market review process should give way to a pure interconnection cost determination exercise to determine actual interconnection usage charges. Interconnection rates should be based on these costs.

Secondly the institutional problems at ICASA need to be resolved. Attraction and retention of key regulatory, financial, technical and legal skills should be developed and exchange programs for employees should be developed with TRAI. The Ministry should intervene by ensuring a representative budget for ICASA to enable it to obtain the skills and the capacity necessary to regulate a R100 billion industry.

Thirdly divestiture of lines of business within Telkom, MTN and Vodacom will accelerate competition in the South African telecommunications sector and will enable developmental goals as articulated in the White Paper of 1998 to be met.

7.4 Limitations of this study and opportunities for further study

This study focussed on the efficacy of the processes for interconnection rate regulation in the Republic of South Africa. Perspectives were drawn from similar process in India. However Respondents questioned whether reducing interconnection rates would in fact have the effect of reducing retail rates in the long run. Respondents drew the Researchers attention to the waterbed effect amongst others. An opportunity therefore exists to research whether indeed the new Interconnection and Call Termination regulations issued in 2010 have the effect of reducing retail rates in the long run.

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APPENDIX 1 QUESTIONNAIRES

The discussion with the South African Key Informant translated into a set of questions that were developed to inform the further discussions with experts in ICASA, government, operators and with consultants in the telecommunications sector. The introduction of the research topic to the participants and the set of questions developed are set out below:

Dear Sir/Madam,

My name is Sagie Chetty and I'm a student at the Graduate School of Public and Development Management at the University of the Witwatersrand (student number 0617514V). My research topic is "Analysing processes for regulating interconnection rates in India and South Africa." My supervisor is Luci Abrahams, LINK Centre at Wits. Thank you for agreeing to participate in this interview.

Interconnection is a very topical issue in our country and high costs of telecoms calls have often been attributed to high interconnection rates. William Melody is quoted as saying that 'Interconnection is the cornerstone of competition". Keith Weeks and Steve Esselaar in a paper on 'the case for the regulation of call termination in SA…' quote a "famous saying in the industry: telecoms is about three things, interconnection, interconnection, interconnection".

My research paper thus focuses on the processes for interconnection rate regulation in SA. Parallels will be drawn with similar processes in India and whether there are any lessons to be learnt will be investigated. India's call costs are arguably the cheapest in the world.

South African regulatory processes including that for interconnection regulation have been defined in the ECA and the ICASA Act. In summary the processes require that the Authority (ICASA), before prescribing regulations:

1.1 define the markets or market segments,

2.1 assess the level of competition in that market after defining the methodology to be used,

3.1 establish pro-competitive tools to improve competitiveness,

4.1 has a system of reviewing whether the competitive environment changes and taking appropriate action to ensure alignment.

The questions that follow are in the context as described above. Comments are not expected on the rates that ICASA have prescribed in the final Call Termination Regulations issued in 2010 and respondents can be described as Respondent X, Y, Z if necessary.

Question1: Can you please describe, from your own perspective, the regulatory process that ICASA followed with respect to interconnection from about the year 2005 leading finally to the gazetting of Interconnection Regulations and Call Termination Rate Regulations in 2010.

Question 2: In hindsight, what were the strengths and weaknesses of the processes that were followed? Please comment on strengths and weaknesses with respect to:

(a) definition of the market
(b) assessment of the level of competition
(c) establishing pro-competitive tools
(d) review of the competitive environment
(e) taking appropriate action to promote competitiveness with respect to interconnection
(f) the regulatory process in general

Question 3: Do you think that ICASA has a strategic view on interconnection rates, for example, was interconnection rates targeted as a means to get call costs down. Please give us your insights.

Question 4: Why do you think it has taken such a long time to finally regulate interconnection or call termination rates ie 16 years from 1994 to 2010, what were the hold-ups and what do you think did not work for ICASA?

Question 5: How did the operators participate in the process of getting to the final rates and how did ICASA respond to this?

Question 6: How did the policy-maker participate in the process of getting to the final rates and how did ICASA respond to this?

Question 7: Are there any changes to the regulatory processes themselves that you would propose?

Question 8: Are there any improvements that you would like to see to the current ECA as amended so that regulatory processes may be improved?

Question 9: Can you please explain why telecoms regulation was slow to start as opposed to broadcasting regulation in democratic South Africa?

The discussion with the Indian Key Informant translated into a set of questions that were developed to inform the further discussions with experts in TRAI and other Institutions in India

Masters Research Questionnaire India
(Qualitative – semi-structured interviews + examination of documents policies, regulations, gazettes,)
DATE OF INTERVIEW:

1. Name of respondent:
2. email address:
3. Position:

4. Do you think that the Indian telecommunications' industry (mobile, fixed, internet, broadband) is a competitive industry?

5. Why do you think so?

6. What are the main institutions that have an influence in the telecommunications sector

at national level?

at provincial level?

7. Who are the main/big operators?

8. Are the operators/companies powerful and do you think that they engage in strategic behaviour to profiteer? (are the operators always fighting battles in the courts – do the courts/competition commission have to intervene to sort out issues)

9. Do you agree that Indian telecommunications prices are about the lowest in the world?

10. Why do you think this is so?

11. Do the authorities have any influence in keeping prices low?

12. In your opinion is interconnection a strategic issue here in India (is it spoken about / is it in the newspapers or media as an important issue)

13. What is your opinion on what processes were engaged in to reduce interconnection rates to the low levels that they are in India?