

# **An Investigation Into the Optimum Way Forward for the South African Telecommunications Industry**

Thesis

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by

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## **Abstract**

This paper aims to investigate the current state of the South African telecommunications market as well as discussing the effects of the Telkom monopoly on the industry and business in general. The effects of telecommunications liberalisation on the industry and the economic environment are examined with reference to various case studies from around the world including Taiwan and the United States. The liberalisation processes of these countries are discussed and analysed with respect to the South African context. The different cases are then compared and the similarities and differences between them are highlighted. The conclusions drawn are that the South African telecommunications industry is on the right track with regards to liberalisation, although there is still much to be done. Increasing bandwidth is important for the development of the South African telecommunications sector and economy in general. Also found was that the South African economy and businesses have been held back by the long standing Telkom monopoly.

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# Chapter 1

## Introduction

Trade in services, such as telecommunications, is a rapidly growing area of international trade. Since the implementation of the General Agreement on Trade in Services in 1995, many services have been liberalised throughout the world. There are however still significant barriers to trade in services in many countries around the world (Verikos et al). South Africa is one of the countries which stand to benefit from the liberalisation of its telecommunications industry.

### 1.1. Problem Statement

This study aims to investigate the expected gains from liberalisation of the South African telecommunications sector as well as assessing the effects of the long standing Telkom monopoly on the South African economy and South African businesses in general.

This study makes use of case studies from around the world including Taiwan and the United States. Their pre-liberalisation state, liberalisation process and gains from liberalisation are discussed as well as their relevance to South Africa.

Included in the findings will be advice to the South African telecommunications industry regarding further actions towards the goal of complete liberalisation as well as the benefits of doing so.

## 1.2. Document Structure

In Chapter 2 the design considerations of the investigations are discussed and the chosen approach is described and the reasons for adopting it are explained. The cases are presented in the 3 following chapters, Chapters 3, 4 and 5, giving insight into the background and process through which liberalisation was achieved in these countries. Each chapter is summarised in the last section to provide an overview of what was discussed. In chapter 6 the implications of liberalisation are discussed from a consumer perspective as well as an economic perspective. In Chapter 7 the cases are compared with similarities and differences in the approaches and results of the countries being highlighted. The conclusions drawn from the investigation are presented in Chapter 8.

# Chapter 2

## Design Considerations

### 2.1. The Case Study Approach

The aim of this project is to give the “big picture” of the South African telecommunications industry in relation to other countries around the world and to allow the author to assess the implications of liberalisation of the telecommunications industry. It was with this in mind that the case study approach was chosen for conducting the investigation. The case studies allow one to analyse the separate countries experiences in isolation and then compare the results achieved by their respective approaches to liberalisation. It was also this “big picture” approach that led to not examining the individual laws limiting the telecommunications industry in detail but rather giving the reader a broader understanding of the problems and issues at hand.

Another reason for adopting this approach was the likelihood that the laws regulating telecommunications were likely to change during the course of the project. This was thought of as likely due to the current transitional telecommunications environment in South Africa. This would have resulted in time spent researching laws and their implications which would not apply by the end of the investigation. As expected this did indeed happen. The law banning the use of the voice over internet protocol (VoIP) was rescinded and VoIP has now been legalised, effective as of February 2005.

## 2.2. The Case Studies Chosen

The countries chosen as case studies were chosen for their broad spectrum representation of countries around the world as well as their different stages in successful telecommunications liberalisation. Also, both Taiwan and the United States have, because of their approach to the liberalisation problem, been researched and documented well. Each one has been covered with background, liberalisation processes and results of liberalisation being taken into consideration. At the end of each case study a summary is given for clarity on the individual lessons taken from the case.

The cases are then compared and the similarities and differences are highlighted and discussed. This is important so as to provide insight into what would in fact be the optimum way forward for the South African telecommunications industry. This is also important because it highlights successes and failures that other countries have already made and should be useful in ensuring that South Africa doesn't repeat mistakes that have been made by other countries elsewhere around the world.

The cases chosen were Taiwan and the United States, an African example was intended but there are very few cases that could match the cases chosen as far as success is concerned.

# Chapter 3

## South Africa

### 3.1. Background

The South African government which is regarded as highly interventionist began to scale down its activities within the economy. State intervention in South Africa had resulted in the appearance of monopolistic public corporations known as parastatals which operated in many of the countries economic sectors. Telecommunications is just one of these sectors, which included electricity, transport and steel production, where state intervention was marked.

### 3.2. The South African Posts and Telecommunications (SAPT)

The SAPT was a post, telephone and telegraph provider operating under conditions perfect for a natural monopoly such as high barriers to entry. It monopolised the postal and telecommunications services legally and operated a system characterised by internal cross-subsidies. An example of a cross subsidy is that from telecommunications to post. With the parastatal forbidden from making either a profit or a loss the successful telecommunications arm funded the loss making postal services. The SAPT was placed under the control of the Minister of Transport and Communications.

Because of the SAPT being a “state business enterprise” it generally experienced close financial oversight which resulted in it generally suffering a shortage of capital since it had to compete with other government projects for funds. Also, a result of this oversight, the SAPT did not base its call charges on marginal costing principles so as to cover its costs in supplying the service, but rather set its costs well below the level

that would have allowed it to meet demand beneficially. If increased tariffs were seen to contribute to inflation or be politically difficult they were adjusted downward to the detriment of the SAPT. This system changed in 1968 when the SAPT's finances were separated by law from the exchequer and placed under its own control with the SAPT becoming responsible for managing its revenues with the government remaining responsible for capital expenditures. In 1972, however, the SAPT was granted permission to seek its own local or offshore financing (Horwitz, 1996).

**Table 3.1: Access Lines per Employee in 1989**

Country	Access lines / Employee
South Africa	45.4
South Korea	226.3
United States	130.6
Mexico	95.6
Turkey	65.9

Source: Coopers and Lybrand, 1992

From this data it can be seen that South Africa falls well behind other countries with regards to productivity and it can be reasonably deduced that the SAPT served as a repository for public employment. This can be understood in a South African context when regarding the behaviour of the interventionist government. In particular was the practice of giving unemployed whites, mainly Afrikaners, jobs with the state or its parastatals. Also of significance was the awarding of contracts by the SAPT to domestic equipment manufacturing companies which were required by law to employ whites.

The relationship between the SAPT and domestic equipment providers was in the form of an industrial policy whereby local purchasing requirements and high domestic content requirements were enforced. By the mid-1990's the South African electronics sector was largely constituted by telecommunications manufacturers.

### 3.3. Liberalisation

#### 3.3.1. Early Developments

A combination of forces, some common to other telecommunications administrations and some unique to South Africa resulted in the separation of the post and telecommunications arms of the SAPT. They were also set free from direct ministerial control. These forces included lobbying by prominent users who were unhappy with service, wanted freedom of choice and had a desire to compete. As well as this was, due to the rapid technological advancements within the telecommunications sector, the erosion of the conditions which provide the opportunity for a natural monopoly. Most important, however, was the decisions by the government to privatise its public corporations and enterprises. This came as a result of the declining state of the economy and the logical belief that privatisation was a better option than operating loss-making enterprises.

These changes were a result of an investigation by Dr. W.J. de Villiers into the major South African parastatals which included the SAPT. The findings were that the telecommunications sector was characterised by heavy debt resulting from over forecast demand and too hasty a conversion to digital technology, this was, however, later challenged by experts who believed the change from analogue to digital to be good decision. The large debt stemmed from the large capital injection, obtained through the international capital market, needed for telecommunications infrastructure expansion into non-white areas. The annual capital expenditure increased five-fold between 1980 and 1987. The debt situation was made worse by the rapid decrease in the value of the Rand over this time period. Such came about the privatisation of the SAPT.

The disapproval of the Post and Telecommunication Workers Association (POTWA) and the ANC halted the privatisation plans and as a result it was decided that instead of full privatisation, commercialisation (usually a precursor to privatisation) would be used.

Telkom was registered in October 1991 and the state remained the sole shareholder. Commercialisation, however, meant that Telkom could, in contrast to being a state owned enterprise, generate profits and pay taxes. Also, it received no state funding and was responsible for obtaining its own financing. The SAPT relinquished its formerly conflicting roles of operator and regulator with Telkom becoming the sole operator and the Department of Posts and Telecommunications acting only as an interim regulator but its exact responsibilities and scope were not however spelt out in the Post Office Amendment Act of 1991.

The problem of restructuring the telecommunications sector needed the resolution of pressing problems including the boundary between a monopoly and competitive services, the restructuring of the tariffs and questions regarding the management of a lively telecommunications sector which now showed new competitiveness. Also of concern were the earlier mentioned inequalities in telephone penetration according to race, this is still a concern of the South African government. These inequalities are a result of a lack of infrastructure which is evident in townships and rural areas. Many efforts have, however, been made by the government and Telkom to address these inequalities (Horwitz, 1996).

### **3.3.2. The Continuing Monopoly**

In 1994 South Africa signed the World Trade Organisation General Agreement in Trade and Services which then committed South Africa to the opening of its telecommunications market. The South African government however, after partial privatisation of Telkom, with 30 percent of the company being sold to investors, decided that allowing the monopoly to continue would be more beneficial to achieving their goals, increasing the number of phone lines, than allowing private businesses to enter into the market and thus introducing competition. This however was not the case and it is estimated that of the phone lines Telkom installed to meet governments targets up to two thirds were disconnected soon after installation (Laing, 2004).

### **3.3.3. The Second National Operator (SNO)**

In March of 2001 the Communications Minister Ivy Matsepe-Casaburri announced the intentions of the government to allow the introduction of a second national operator (SNO) which could compete with Telkom and hopefully bring prices, which have been rising constantly over the last decade, into check. This has not only resulted in making it difficult for poorer South Africans to make phone calls but it also impacts negatively on the business environment where fixed lines are important for accessing the internet and email as well as making cheaper local telephone calls (Laing, 2004). And in July of 2001 a second policy directive was issued announcing that a third network operator would be licensed and thus producing an even more competitive, customer-oriented telecommunications environment (Laing, 2004). Cabinet, however, backtracked on this decision on the 15<sup>th</sup> of August 2001 after much lobbying by existing network operators who stand to lose from the introduction of more service providers (CTUF Press Release, 2001).

On the 2<sup>nd</sup> May 2002 Telkoms exclusive rights over services came to an end but we are still waiting for the SNO, which was awarded to a conglomerate made up of Eskom, Transnet, Nexus and Communitel and Two Consoritum, to appear (Laing, 2004). This, however is expected to happen in the early part of 2005.

## **3.4. Cellular Communications**

In 1993 the South African government set the terms for the applications for two cellular licenses and appointed a board to review the applications. Among other things candidates had to justify their choice of technology and detail the benefits this would have regarding cost and penetration for all consumers including the poor. Vodacom, which included a fifty percent share held by Telkom, was awarded the first license. The second license was fought over by three applicants but was eventually awarded to Mobile Telephone Network (MTN) in September 1993 which was a consortium consisting of M-Net, Cable and Wireless, NAFTEL (a black empowerment group)

and Transtel. The downfall of the other two applicants is widely regarded as being the fact that although allocations had been made for black empowerment groups at the time of application the spaces were still unoccupied. The two licensees would both be using the Global System for Mobile Communications (GSM) standard which were purported to be the best for servicing the underprovided communities.

These two cellular providers have been incredibly successful with the number of users as of June 2004 reaching 18.7 million users of which about 80% are active users. This figure has far exceeded the year 2000 estimate that the country would have only 11 million users by 2005. The industry is estimated to be worth 23 billion South African Rand annually and is expected to grow to 54 billion Rand by the year 2007. Vodacom alone covers with its GSM network 60% of the country and switches 30% of the country's telephone volumes. Also of importance is the fact people living in previously under serviced areas are making a total of 35 million calls per month on the Vodacom network alone. Cellular communications is expected to grow significantly with over 9000 people signing up for cellular services daily.

The third cellular provider, Cel C, was announced in 2001 and already it has 3 million subscribers and looks to be competing well against the two original network operators.

Although the amount of cellular subscribers has increased at this phenomenal rate the average talk time per subscriber has dropped steadily. This is as a result of the steadily increasing prices which customers are becoming less and less willing to pay (Laing, 2004).

### **3.5. Other Points of Interest**

#### **3.5.1. The Independent Communications Authority of South Africa (ICASA)**

It is the opinion of some authors that important as deregulation in the telecommunications industry, is re-regulation (Hsieh et al, 2003). It is with this thought in mind that in October 1997, it was announced that the Independent Broadcast Authority (IBA) and the South African Telecommunications Regulatory Authority (SATRA) were to be merged into a single regulatory authority. It was not, however, until 2000 that they actually merged and became the main regulatory body the Independent Communications Authority of South Africa (ICASA) (South African Consulate General, 2004). “Its key functions are to:

- make regulations and policies that govern broadcasting and telecommunications
- issue licenses to providers of telecommunication services and broadcasters
- monitor the environment and enforce compliance with rules, regulations and policies
- hear and decide on disputes and complaints brought by industry or members of the public against licensees
- plan, control and manage the frequency spectrum and
- protect consumers from unfair business practices, poor quality services and harmful or inferior products” (ICASA, 2004).

#### **3.5.2. Voice over Internet Protocol (VoIP)**

“A new report suggests that South Africa's government is currently undermining the country's position as a technology leader in Africa by its restrictive ICT legislation. While countries such as Algeria, Mauritius, Mali, Nigeria and Kenya all embrace the use of new technologies like VoIP and WiFi, South Africa prohibits this for the short-term protection of jobs” (Weidemann, 2004).

It was sentiments such as this that lead to the announcement by Minister Ivy Matsepe-Casaburri in August that VoIP would eventually be legalised. The change comes into effect on the 1<sup>st</sup> of February 2005. This should help South Africa catch up to other countries in Africa, and indeed the rest of the world, which have shot ahead of us with new technologies such as VoIP, a technology which allows calls to be routed via the internet. Value Added Network Service Providers (VANS) will be allowed to offer these services to the public and consumers can expect the cost of calls to drop as more choice is given to them and Telkom and the individual VANS fight for market share.

The effects of this decision on Telkom are not clear at present and there are mixed views as to what these effects will be. There are those who think the new legislation could benefit Telkom and on the other hand are those who think that Telkom's profit margins will decline significantly. Also of concern is the effect this will have on the prospective SNO and questions have been raised about the viability of the second operator if VANS will be able to provide voice services (Anderson, 2004).

### **3.6. Conclusions**

It can be seen from this study that although South Africa has taken steps towards liberalisation there is still a long way to go to ensure that the South African public is offered the best and cheapest services possible.

It was evident that the Telkom monopoly has resulted in more expensive and, in some cases, sub-standard services. The exact effects of this on the economy are

beyond the scope of this investigation but the basic economic ideas surrounding this are discussed in Chapter 6.

The announcement by Minister Ivy Matsepe-Casaburri regarding the legalisation of the VoIP protocol is an example of the forward thinking changes that are needed. The second national operator is also of importance but unfortunately the consortium has taken a long time to appear and we hope to see its appearance early next year. This alone should bring prices down to a more affordable level but many more changes and more competition will be needed to compete with the likes of the United States and Taiwan.

# Chapter 4

## Taiwan

### 4.1 Background

Taiwan's national government has traditionally been a facilitator, creating conditions which are beneficial to its small and medium-sized businesses. As a result of this they have done extremely well. This was achieved by concentrating on three things: policies designed to encourage business, the construction of a good infrastructure and protecting new companies and industries from competition in their formative stages.

The first step in this direction was an investment encouragement statute in 1960, which aimed to increase the establishment of new firms, profit reinvestment and most importantly the development of companies concentrating on export oriented products. Since then the Taiwanese government has embarked on many large development plans including the Ten Major Developments project in 1973, large schemes in years following that and also the Six-Year National Development Plan, which was to be run from 1991 – 1996 with an intended US\$304 billion being spent on the project. All these development projects had the intention of turning Taiwan into an Asia-Pacific Regional Operations Centre (APROC) for multinational business.

Taiwan continued to place emphasis on the importance of becoming an Asia-Pacific regional operations centre for business. Taiwan concentrated on developing its high tech industrial parks, which are numerous, providing better port facilities, expanding Kai-shek International Airport and introducing large reforms to finance, banking, the media and telecommunications. All of these areas required large liberalisations initiatives so as to open them to foreign investment if Taiwan was to see its goal of becoming an Asia-Pacific regional operations centre.

Taiwan's government also encouraged the development of large firms instead of relying constantly on its very successful small and medium sized businesses. Larger firms can exploit economies of scale by mass production, as well as conducting significant research and development programmes. For the establishment of these large businesses a good technological infrastructure has been made available to make the location look more attractive to investors.

One of the main reasons for liberalising the telecommunications sector was to improve the current services which became dilapidated under the state controlled monopoly. Along with this were threats from existing large corporations pulling out of Taiwan if the telecommunication infrastructure was not improved upon. It was the opinion of Acer, Taiwan's largest producer of computers, that the telecommunications infrastructure on the island was not sufficient for the operation of a multinational company.

Also of concern was the ability of a single company to cope with the range of technologies and skills that would be needed to develop Taiwan's telecommunications infrastructure to the degree that would be targeted. By allowing competition to enter into the sector specialisation would be encouraged with some firms becoming experts in certain fields and thus the betterment of the sector as a whole. (Taiwan's Telecommunications Reforms, 1996).

The government owned enterprise privatisation programme started in the late 1980's and aimed to privatise most of Taiwan's government owned enterprises. This was, however, done very slowly and was nowhere near the expected targets by the end of 1996 at which stage only six government owned enterprises had been privatised. The decision was taken to set a standard for privatisation with Chunghaw Telecom Co. which could be used as a template for privatisation in other sectors.

## 4.2 Liberalisation Process

Cheng analysed and discussed the Taiwanese reforms in detail as well as discussing different approaches to privatisation and the effects of the political economic environment. He argues that there are a number of political-economic interactions influencing privatisation in Taiwan. It is also important to have a regulatory government to enforce regulatory rules and ensure that contractual obligations of contractors are seen through (Cheng, 2003).

The Taiwanese government saw the importance of the liberalisation of the telecommunications industry in developing their economy and catching up with other major industrialised nations. In 1996 three telecommunications acts were introduced which effectively “paved the way for industry privatisation, deregulation and – equally important to maintaining a fair and competitive market – re-regulation.” (Hsieh et al., 2003). The enactment brought about the privatisation of the formerly state owned Chunghwa Telecom and reduced the Directorate General of Telecommunications to a regulator of the industry instead of it performing the dual role of both operator and regulator (Hsieh et al., 2003).

The liberalisation bills’ main points were:

- There must be a separation of regulator and operator, as mentioned above. Chunghwa Telecom would continue to operate as the service provider for basic and mobile services. It would however be privatised at a later stage.
- Telecommunication services were divided into two types:
  1. **Type 1:** These are classified as primary infrastructure and basic services. Largely operated by Chunghwa Telecom with foreign companies being allowed no more than a 20% share of any company involved in a Type 1 project.
  2. **Type 2:** These are classified as value added services, including data communications, Internet services, and domestic satellite communications. No restrictions were made on ownership of companies entering into Type 2 businesses.

- Services not covered by the bill would need to be examined by the DGT for classification as either Type 1 or Type 2.

The reason for splitting the services into Type 1 and Type 2 was so that they could be controlled independently of each other, with certain laws applying to both but with the ability to make laws that only apply to one or the other. This gives the regulator more flexibility in controlling what happens in the different telecommunications sectors.

### 4.3 Results of Liberalisation

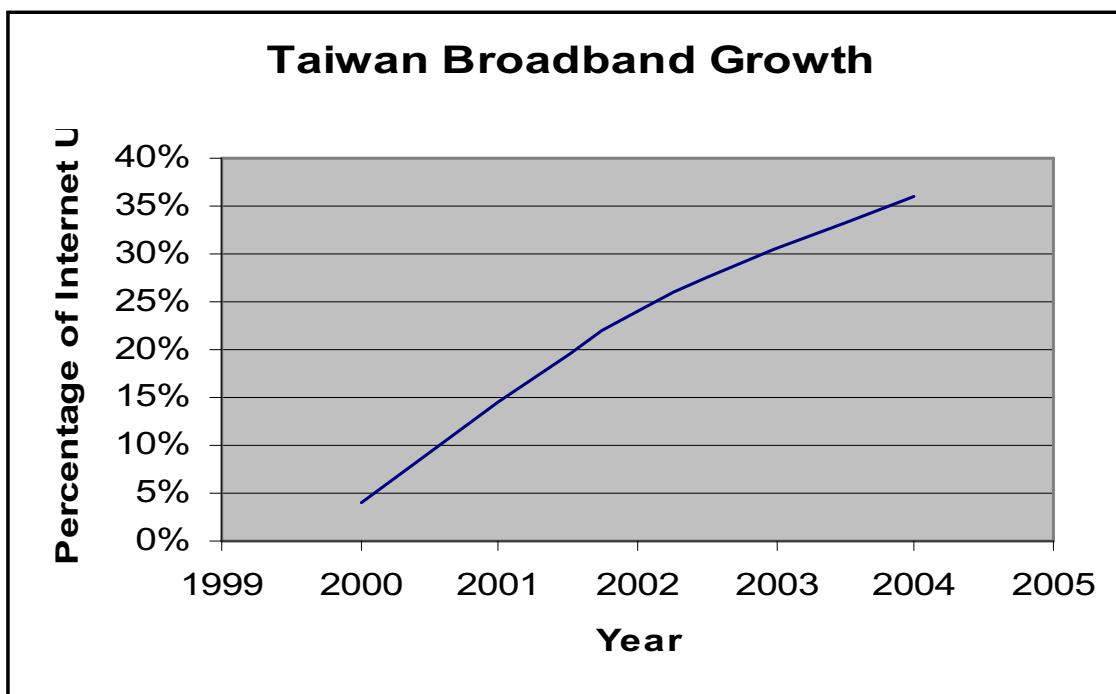
Since the passing of these laws the Taiwanese telecommunications industry has flourished and the government has since liberalised other businesses, including 3G mobile communications, as a means to reach its telecommunications liberalisation objectives. Stiff competition by companies entering the market resulted in the rapid growth of communication services, especially the cellular phone industry. Taiwan jumped from twentieth to first in the world with respect to penetration rate of cellular telephones (Cheng, 2003). The rapid growth of both Type 1 and Type 2 companies is evident in the **table 4.1** below.

**Table 4.1: Growth of the Telecommunications Operators**

	Type 1	Type 2
July, 1996	1	67
Dec, 1999	36	207
Dec, 2002	73	380

Source: Telecom Database on [www.dgt.gov.tw](http://www.dgt.gov.tw)

Taiwans' internet population has also grown rapidly and continues to grow. The government also decided to boost broadband usage by decreasing the operating costs. This resulted in an increase in the number of broadband users from 262,800 in 2000 to 2,116,000 in December of 2002 and has increased to 3,170,000 in June 2004 (Cheng, 2003). See **Figure 4.1**.

**Figure 4.1: Taiwan's Broadband Growth**

Source: Cheng, 2004 and [www.internetworldstats.com](http://www.internetworldstats.com)

#### 4.4. Conclusions

From the Taiwanese case study it is evident that their liberalisation process has been one of the more successful worldwide. This is because of the determination of the Taiwanese government in becoming a centre for economic activity in Asia. The large increase in customers of cellular communications and internet, particular broadband, in recent years speaks volumes about the success of the liberalisation process.

Also gleaned from the case study is the importance of a advanced telecommunications infrastructure in establishing and operating large multinational corporations. This was evident in the threat by Acer of leaving Taiwan in search of better telecommunications.

Also of interest is the concern of the Taiwanese government in the ability of one company to provide the many different telecommunications services needed. In stead of this, specialisation is encouraged.

High bandwidth internet access is also considered as being important to the Taiwanese government and it is being actively promoted.

## Chapter 5

### United States of America

#### 5.1. Background

The telecommunications network in the United States is different from the other cases considered in the fact that it has never been a state owned enterprise, it has, however, been subject to heavy regulation. The Federal Communications Commission (FCC) has long been the implementer of communications policy that protected monopolies at both a state and national level. The tools with which this was achieved were ownership and service restrictions. Also involved in the setting of these policies were state public utility commissions and the federal courts' enforcement act of 1984, which was responsible for the splitting up of the Bell System into the companies which became known as the "Baby Bells".

The 1984 antitrust decree ordered that AT&T be broken up from its local telephone monopolies, the Bell companies. Also specified was that the seven Bell companies, or "Baby Bells", allow national companies and service providers access to their local telephone networks. The Bell companies were also legally excluded from participating in the long distance telephone market, information services and the manufacture and sale of telecommunications equipment. This act clearly showed that the US government was dedicated to the liberalisation of the telecommunications sector and were actively encouraging competition within industry. Although this worked effectively in the long distance communications market there remained dominance on a localised scale with the regional operators finding little competition.

## 5.2. The 1996 Telecommunications Act

A major event was the telecommunications act of 1996 which implements further deregulation of the telecommunications sector. The main purpose of the act was to remove court ordered barriers to entry from the sector with the aim of allowing all players within the industry to compete fairly. This includes the Baby Bells, long distance carriers, cable companies, and broadcasters. As with any liberalisation this would allow for increased innovation, consumer choice, lower prices and competitiveness in the market. The law disputes the long accepted belief that the communications sector is perfect for a natural monopoly and promotes an environment in which different segments of the telecommunications industry can compete with each other. The FCC is left with the power to deregulate further as liberalisation takes place with the mandate that further changes should be in the public's best interest.

The telecommunications act allowed the Baby Bells to provide long distance services outside their respective regions with immediate effect and within their regions once carrying out certain steps to remove barriers to entry for those wanting to compete in the local telephone market. There were also “universal service” rules put in place to facilitate the subsidisation of services among rural and low-income customers as well as schools, libraries and other public institutions. The 1984 antitrust decree was repealed but the requirement that equal access to services within the long distance market is maintained. The seven regional Bell operating companies were once again allowed to produce and sell telephone equipment.

The law effectively blurred the lines between sectors of the telecommunications industry that were previously separated, such as cable television and telephone services and thus increasing, as mentioned earlier, competition in all sectors with many companies offering more than one of these services.

The act was received with strong support from all and the voting in congress was a convincing 414 to 16 in the passing of the act. It was described by Vice-President

Gore as “a historic event that would change forever the way every American lives, works, learns and communicates” (Jerram et al, 1998). This enthusiasm was shared by almost all the players in the telecommunications industry including Bell Atlantic and AT&T. One of the concerns of consumer groups that the result of the act would not be stronger competition but rather control of telecommunications ending up in the hands of a few. This concern was in the face of merger talks between some of the large telecommunications companies.

### **5.3. Developments Since the 1996 Telecommunications Act**

It is the FCC that is responsible for regulating the American interstate and international radio, television, wire, satellite and cable communications and it is therefore their responsibility to control the implementation of the Act (FCC Home Page, 2004).

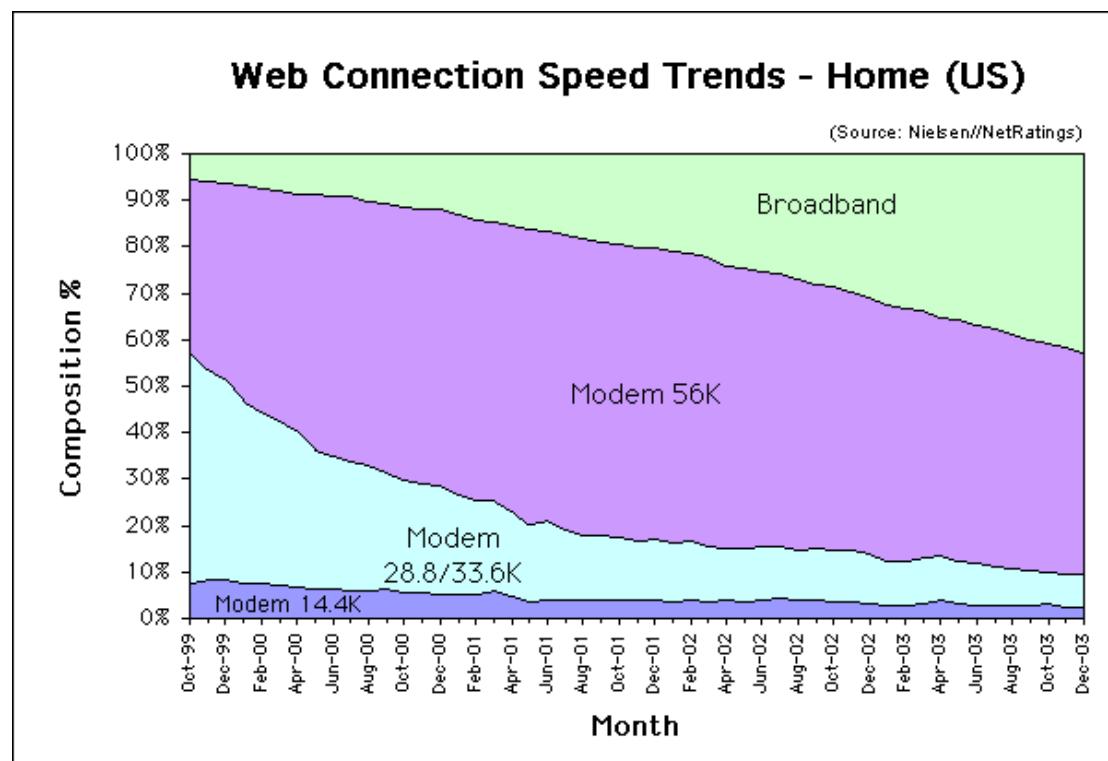
Today America offers services that are competitive and fairly priced. Since the cost of using the internet is most commonly a combination of the service charge paid to the service provider and the local phone call to reach that provider internet usage in the United States is very affordable. This has in turn promoted the use of the internet and e-commerce in general (Belize North, 1999). Internet usage has grown rapidly at a rate of 111% for the time period 2000 – 2004.

Along with this growth in the use of the internet in the United States comes a change in the way people are accessing the internet with a move away from standard 56 and 28.8/33.6K modems towards faster and more efficient means of data delivery. This migration can be seen in both homes and businesses.

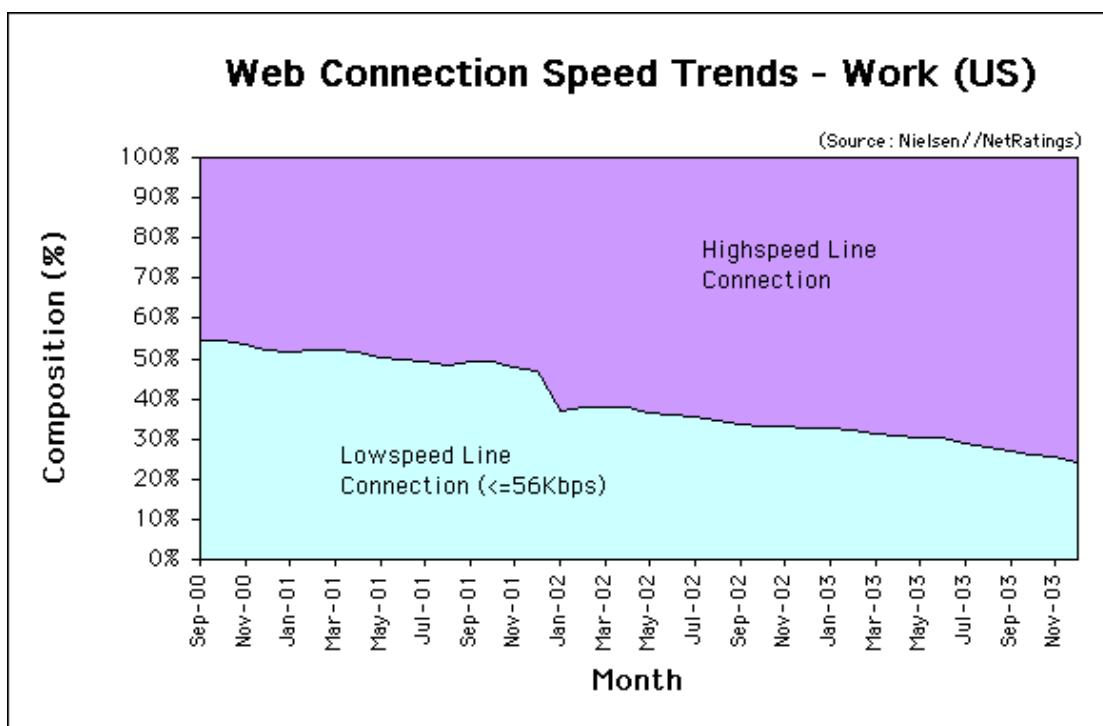
Broadband use in homes has grown from little over 5 percent in 2000 to about 40 percent in 2004. The vast majority of the remainder of all internet connections is made up of 56K dial up connections with slower connections making up only about 10 percent. This growth in broadband can be expected to continue as the demands of users become greater (**figure 5.1**).

In the business environment high bandwidth connections have become the norm and only about 20 percent of businesses are using low bandwidth connections. This emphasises the importance of bandwidth in operating a business in modern times (**figure 5.2**).

**Figure 5.1: Web Connection Trends In Homes: Oct 1999 – Dec 2003**



Source: [www.websiteoptimisation.com](http://www.websiteoptimisation.com)

**Figure 5.2: Web Connections Trends in Businesses: Sept 2000 – Nov 2003**

Source: [www.websiteoptimisation.com](http://www.websiteoptimisation.com)

#### 5.4. Conclusions

An important observation in the American scenario is that the existing telecommunications monopoly was never a government owned enterprise as was the case in both South Africa and Taiwan. This, however, does not mean that important lessons cannot be learned from their experiences.

The United States revised its telecommunications laws to allow for increased competitiveness within the industry. The lines between the different parts of the sector, telephone, broadcasting etc, were blurred thus many companies compete in many different parts of the telecommunications market.

Liberalisation in the United States has lead to a fiercely competitive market that has promoted development of new technologies as well as bringing prices for services down considerably to a point where services are accessible to most people. This is evident in the high penetration rate, with more than half the population having regular access to internet and other telecommunications services.

The government also saw the importance of getting telecommunications services to the previously neglected poor and rural areas. This was achieved by locating computers with internet access in public libraries and other public institutions around the country as well as developing their telecommunications infrastructure.

# Chapter 6

## Effects of Liberalisation

### 6.1. Economic Effects

Trade in services is a rapidly growing industry and when control is shifted from government to the private sector it is the desire to make profits that governs the actions of the telecommunications industry rather than doing what government dictates. It is this profit targeting that brings the economic benefits of liberalisation in that firms attempt to deliver better products at lower prices in the attempt to capture a large share of the booming telecommunications market.

Liberalisation, which can be described as the direct reduction in trade barriers or the easing or elimination of policies that indirectly restrict or distort trade, especially policies that protect local production, and restrictive licensing regulations and practices of government owned enterprises is a topic that has been widely studied and most studies confirm that it is beneficial to countries concerned. Liberalisation of government owned enterprises in different sectors differ considerably from each other. In liberalising the telecommunications sector it has been found that:

- Barriers to trade in developing countries such as South Africa are higher than they are in developed countries. This can be seen in the large amount of legislation governing the amount of foreign participation in the telecommunications sector as well as the large amount of laws that protect Telkom. Laws, however, are not the only barriers to entry into the telecommunication sector; setup capital for most services is very high and largely unaffordable, this is especially true in the provision of core services such as fixed lines and submarine cables. In the provision of value added services the cost of entry into the market is markedly less.

- The complete liberalisation of telecommunications throughout the world would result in an estimated increase in world real gross national product (GNP) of US\$ 48 billion (R 296.2 billion). The effect, however, will be considerably different in different countries around the world.
- Regions with significant barriers to trade in the telecommunications industry stand to gain the most from liberalisation as there are more opportunities will be made available to them. The gains come from increased foreign direct income and a greater variety of products. Countries with low barriers will gain less from liberalisation and in some cases they can even make a loss.
- The presence of foreign firms also makes the country more attractive to firms seeking investment in other sectors and therefore a further increase in foreign direct income (Verikos et al).

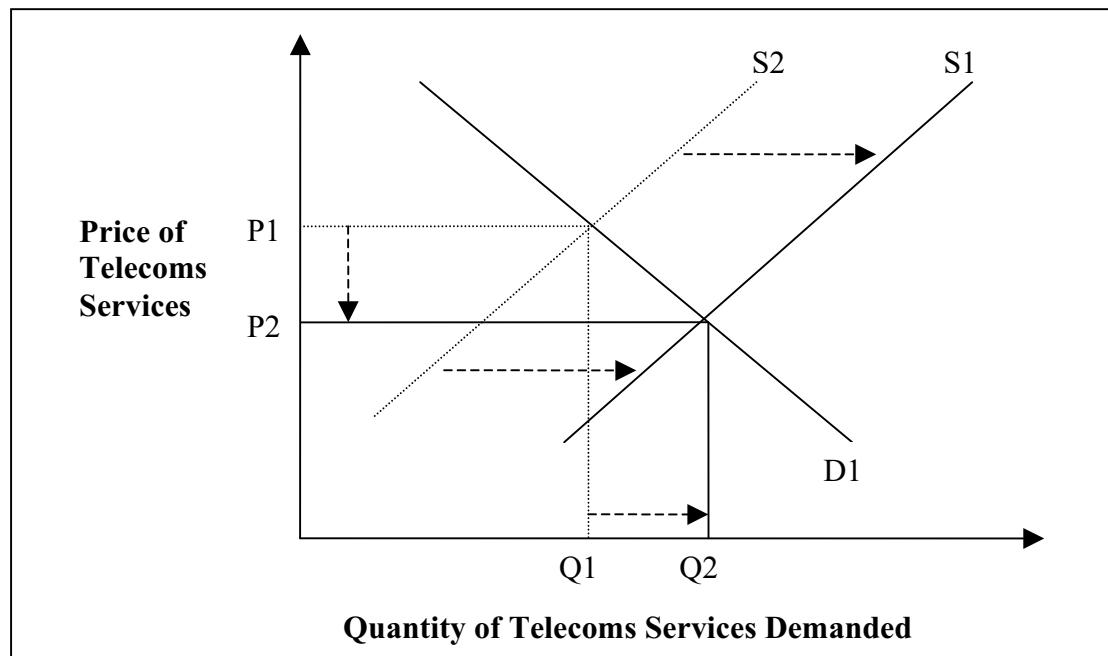
It is with these advantages in mind that one must consider the loss to the economy and the country as a whole of having a monopoly situation in the country for many years.

It is the increase in supply of services arising from increased competition among entrants into the market that will bring down the prices of services for the average consumer. This can be seen in the simple supply and demand graph shown in **figure 6.1** below which shows the price of services on the y-axis and quantity of that service demanded on the x-axis.

The equilibrium point, which represents the volume of services consumers will use at a certain price, is at P<sub>1</sub>, Q<sub>1</sub>. The initial price is P<sub>1</sub> and the initial quantity demanded is Q<sub>1</sub>. As the number of service providers in the market increase, the supply of the services increases. This is represented by a rightward shift in of the supply curve from S<sub>1</sub> to S<sub>2</sub>. This shift in the supply curve puts downward pressure on prices and the price falls from P<sub>1</sub> to P<sub>2</sub>. The lower prices increase the quantity demanded by consumers and as a result the quantity demanded moves from Q<sub>1</sub> to Q<sub>2</sub>. And a new equilibrium point for the market is attained at P<sub>2</sub>, Q<sub>2</sub>. The new equilibrium point

represents lower prices and an increased demand for telecommunications services (Lipsey et al, 1999).

**Figure 6.1: Supply and Demand: Illustrating the Effect of More Competition Within the Telecommunications Market**



# Chapter 7

## Comparison of Case Studies

### 7.1. Pricing of Services

It can be seen from the table below that broadband access in the form of an ADSL connection is much more expensive in South Africa than the other countries surveyed. Also to be taken into consideration is that the prices are converted to South Africa Rand and the actual prices in foreign countries own currency represents a much smaller proportion of their monthly income than it does ours.

**Table 7.1: Comparison of Prices for Basic Internet Services**

	Telkom SA	Taiwan	USA	England
<b>ADSL</b>	+-R800.00 pm	R133.00pm	R251.00 pm	R280.00 pm
<b>ISDN</b>	R198,00 pm	Installation = R40, thereafter pay per minute with minimum of R20 pm.	R129.25 pm	R316.33 pm
<b>Data/56K</b>	R79.00 pm	N/A	R58.15 pm	R163.00 pm

Source: Individual websites of service providers in the countries concerned.

Integrated Services Digital Network (ISDN) services are reasonably competitive, in Rand terms, with the United States and cheaper than the same service offered in England. Taiwan, however, offers the service at a fraction of the cost with the minimum amount paid per month being only R20 and further use of the line being charged at a nominal rate per a set time period with a connection fee of just R40.

Modem connections are also competitive with the United States but customers in the United States do not pay for their local telephone calls and R58.15 is the only monthly payment to be connected to the internet. The high cost of telephone calls in South Africa will likely erode away the cost advantage seen over England.

## 7.2. Internet Penetration and Growth

With regards to internet penetration rates, the percentage of the population that has access to a computer equipped with an internet connection, South Africa is a long way behind the United States, Taiwan and England which all have penetration rates of over 50 percent (Refer to **Table 7.2**). The penetration rate for South Africa is only, according to the latest figure, 7.4 percent. South Africa's penetration rate is not, however too dismal, when looking at the rest of the African continent which has an average penetration rate of 1.4 percent. Egypt has a penetration rate of just 3.9 percent and Nigeria, which has been making rapid advances in telecommunications and other industries in recent times, has a rate of just 0.5 percent. Poverty and unemployment along with a lack of infrastructure are largely to blame for the low penetration rates on the African continent and in South Africa. The liberalisation of the telecommunications industry would result in more jobs throughout the country and allow more individuals the opportunity of accessing the internet.

Also of interest is the rate of growth (refer **Table 7.2**) in the number of internet users in between 2000 and 2004. South Africa's growth rate of 46.8 percent is well below that of any of the other countries surveyed. Of special interest is the rate of growth of internet users in Egypt, where the rate of 500 percent is in excess of ten times quicker, and Nigeria where the rate is about 6 times quicker than South Africa. South Africa,

which is seen as one of the, if not the, most successful countries in Africa could be

	<b>Population (Est, 2004)</b>	<b>Internet Users (2000)</b>	<b>Internet Users, Latest</b>	<b>Use Growth (2000 - 2004)</b>	<b>Penetration (% Population)</b>
<b>South Africa</b>	47,556,900	2,400,000	3,523,000	46.80%	7.40%
<b>Taiwan</b>	22,689,300	6,260,000	11,602,523	85.30%	51.10%
<b>United States</b>	293,271,500		201,661,159	111.50%	68.80%
<b>England</b>	59,595,900		34,874,469	126.50%	58.50%
<b>Egypt</b>	68,648,500	450,000	2,700,000	500.00%	3.90%
<b>Nigeria</b>	154,491,100	200,000	750,000	275.00%	0.50%

overshadowed by others that might be more determined to make the changes necessary to catch up with developed countries like those in America, Asia, Europe and Australia.

**Table 7.2: Internet Penetration and Growth**

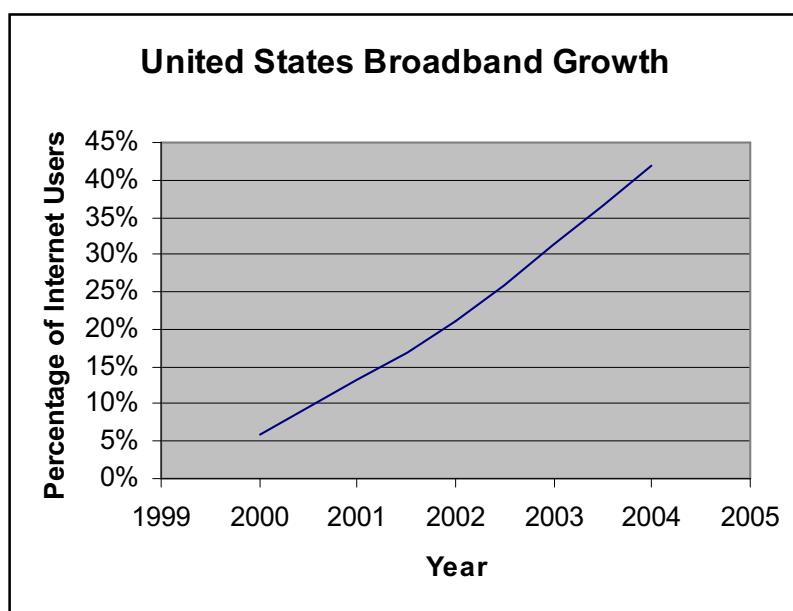
Source: [www.internetworldstats.com](http://www.internetworldstats.com)

### 7.3. Broadband Growth

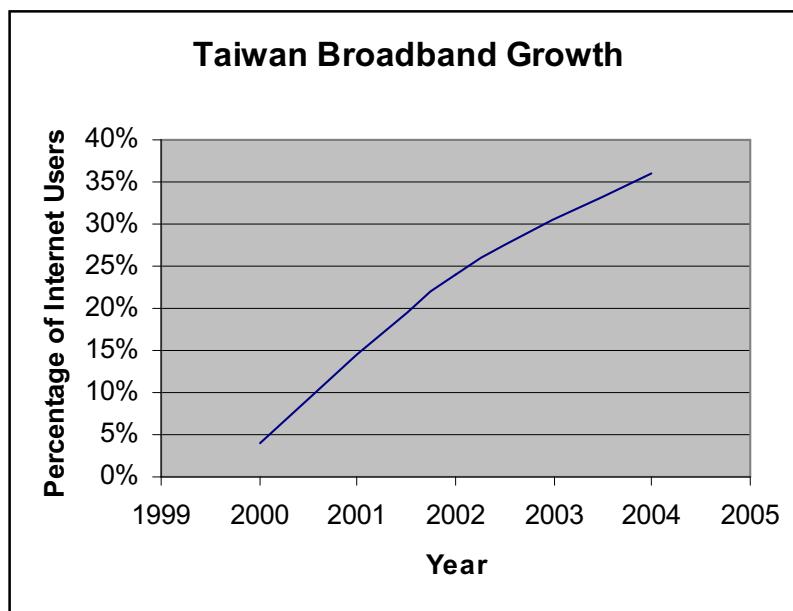
Internet connection via broadband is a common concern of all the countries studied. Taiwan, in particular, has invested large amounts of money in promoting its use and improving the infrastructure needed to accommodate the needs of the consumer. The initiative have been successful in increasing the number of people using broadband services as can be seen in Figures 7.1 and 7.2 below.

In contrast to the growth curve for the United States which is still getting steeper, the growth curve for Taiwan is starting to level out suggesting that Taiwan has reached a plateau with the ending of the initial boom. America's broadband percentage of internet users is very high at almost 45 percent; this however can be attributed to the variety of different types of broadband on offer in the United States. Many Americans already have cable television in their homes and this can be used to give access to broadband internet services. Many of the television companies offer the service so one can get you television and internet services from the same provider. South Africa, however, does not have this sort of infrastructure and are indeed, for now, dependent on Telkom for the installation of the ADSL line. There is also the option of satellite broadband but coverage of the country is not very good at the moment and the technology may need time to mature.

**Figure 7.1: United State's Broadband Growth**



Source: [www.websiteoptimisation.com](http://www.websiteoptimisation.com)

**Figure 7.2: Taiwan's Broadband Growth**

Source: Cheng, 2003 and [www.internetworldstats.com](http://www.internetworldstats.com)

#### 7.4. Regulation

The importance of a regulating authority cannot be denied. It is imperative that fairness in the industry is maintained with regard to competition and legislation. Also, the welfare of consumers should be of the utmost importance. All three cases already have strong regulatory bodies in the form of the FCC (United States), DGT (Taiwan) and ICASA (South Africa). ICASA can learn from the success of the other regulatory bodies with regard to implementing laws and maintaining a fair market.

## 7.5. Specialization or Diversification

Taiwan on the one hand has encouraged its service providers to rather concentrate on one aspect of the telecommunications industry rather than branch into several types of service. This is in strong contrast to the American scenario where the Telecommunications Act of 1996 purposely blurred the lines between the different services and thus encouraging companies to offer various services. This is evident in the fact that one is able to subscribe to for example, subscribe to broadband internet, cable television and telephone services from one company.

South Africa's regulator, ICASA, would have to decide which approach is better and think about necessary legislation to enforce this. Already one is able to get telephone services as well as internet connections from Telkom who have been diversifying their operation in recent years to maximise profits. Satellite television is another opportunity for diversification in South Africa as opposed to cable television in the United States.

## Chapter 8

### Conclusions

In the final analysis it is apparent from the study of Taiwan, the United States and other countries around the world that liberalisation is beneficial to consumers and the industry as a whole. This is evident in the lower prices of services offered elsewhere in the world. It can be reasonably deduced from the study that the Telkom monopoly has had a negative effect on the telecommunications sector and the South African economy as a whole. The prices are, however, likely to come down to a level more aligned with those in other countries elsewhere as more changes in the laws regulating the telecommunications industry are changed. The first step in this direction has already been taken in the form of the liberalisation of VoIP which affords VANS and consumers many opportunities previously denied to them. This is a good start but further liberalisation needs to take place to increase competition and help South Africa realise its telecommunications objectives.

It is also evident from the investigation that greater bandwidth should be a large concern of the South African government as it is in many countries around the world. A high standard of telecommunications services is important in attracting foreign investors which will boost the economy. This is especially true in the case of multinational firms which need good telecommunications infrastructure as well as greater bandwidth to conduct their everyday operations.

Of concern is the lack of services to previously disadvantaged and rural areas. There should be a movement to bridge this divide between those who have access to services and those who do not. This should include programmes that would facilitate bringing telecommunications services to the masses, thus improving the internet penetration rate of the country. Such programmes were evident in many countries, especially the United States. One such move is the announcement that, in South Africa, schools will pay less for internet connections and therefore more people will

be given the opportunities associated with this. There are also considerable, and successful, efforts from the cellular service providers to reach those areas.

## 8.1. Future Work

A possible extension to this investigation could be a in depth study of the laws and regulations limiting the liberalisation of the South African telecommunications industry as well as a more detailed discussion of the economics surrounding the argument for liberalisation. The rapidly changing telecommunications industry does, however, make such a study difficult as was mentioned earlier. There are also many other liberalisation scenarios from around the world that could be studied, these include India, the United Kingdom, Japan and many others from which many valuable lessons can be learned.

## References

**Anderson, B.** *The Day the Monopoly Died*, Moneyweb, 2004. Accessed 12 September 2004. Available online:

URL <

<http://m1.mny.co.za/BBStks.nsf/0/C2256A2A0053166642256F0A0057363F?OpenDocument> >

**Belize North.** *The Bell Telephone Monopoly vs BTL*, 1999. Accessed: 25 March 2004. Available online:

URL < [http://www.belizenorth.com/bell\\_telephone.htm](http://www.belizenorth.com/bell_telephone.htm) >

**Cheng, K.** *Telecommunications Privatisation in Taiwan: A Beautiful Mistake?* University of Manchester, 2003. Accessed: 24 March 2004. Available online:

URL

< <http://www.devstud.org.uk/publications/papers/conf03/dsaconf03cheng.pdf> >

**Federal Communications Commission.** *About The FCC: A Consumer Guide to our Organisation, Functions and Procedures*. A Concsumer and Government Affairs Publication. Acessed: 28 April 2004. Available online:

URL < [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-229127A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-229127A1.pdf) >

**Horwitz, R.** South African Telecommunications: History and Prospects. Accessed 2 October 2004. Available online:

URL < [http://communication.ucsd.edu/people/f\\_horwitz\\_ch1.html](http://communication.ucsd.edu/people/f_horwitz_ch1.html) >

**Hsieh,V., Hsu, V., Chen, E., Chaio, R., Weng, L., Su, P.** Taiwans *Telecommunications and Broadcasting/Media Industries: The Legal and Regulatory Environment*. Winkler Partners, 2003. Accessed: 24 March 2004. Available online:

URL < [http://www.winklerpartners.com/htmlfiles.english/Publications/articles/WP\\_Telecom\\_Env2913.pdf](http://www.winklerpartners.com/htmlfiles.english/Publications/articles/WP_Telecom_Env2913.pdf) >

ICASA Homepage. About ICASA, Overview, 2004. Accessed: 23 June 2004. Available online:  
URL <<http://www.icasa.org.za/Default.aspx?page=1009>>

**Internet Solutions.** *News and Events: VoIP Policy Announcement.* 14 Septmeber 2004. Accessed: 19 September 2004. Available online:  
URL <<http://www.is.co.za/datafile/default.asp>>

**Jerram, R., Hodges, M., Turner, L. and Kurz, R.** *Political Environment for Global Business.* London School of Economics and Political Science, Department of International Relations, 1998. Accessed: 24 September 2004. Available online:  
URL: <<http://www.mega.nu:8080/ampp/PEGB/index.html#metatop>>

**Laing, R.** *Special Report: The Mobile Decade.* ITWeb Brainstorm, Vol. 3, Issue 6, February 2004. Accessed: 20 March 2004. Available online:  
URL <<http://brainstorm.itweb.co.za/online/ReadStory.asp?StoryID=140215>>

**Lipsey, RG., Courant, PN. and Ragan, CTS.** *Economics, 12<sup>th</sup> Edition.* Reading, MA: Addison-Wesley. 1999.

South African Consulate General. News and Media, 2004. Accessed: 20 June 2004.  
Available online:  
URL <<http://www.southafrica-newyork.net/consulate/news.htm>>

Taiwans Telecommunications Reforms. Background Briefing of the Telecommunications Infotechnology Forum, 1996. Accessed: 24 March 2004.  
Available online: URL <<http://www.trp.hku.hk/tif/papers/1996/960304briefing.pdf>>

**Verikios, G. and Zhang, X-G.** *Global Gains from Liberalising Trade in Telecommunications and Financial Services,* Productivity Commission Staff Research Paper, AusInfo, Canberra, October 2001. Accessed: August 2004. Available online: URL <<http://www.pc.gov.au/research/staffres/ggflt/ggflt.pdf>>

**Weidemann, R.** *South Africa Losing Role as Technology Leader*, ITWeb News. 27 May 2004. Accessed: 2 November 2004. Available online: URL < <http://www.afrol.com/articles/12786> >