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CHAPTER ONE

INTRODUCTION

The privatisation of government-owned assets or government-controlled activities became a popular issue during the past couple of decades. The aim of this study is to determine why the telecommunications (telecoms) industry in South Africa became a candidate for privatisation. The telecoms industry is analysed with special emphasis on its nature, to determine why privatisation became an option. Economic theory is used to argue the case for privatisation. The evolution of telecommunication, the economic analysis of the telecoms industry and experiences of other countries with regard to telecoms privatisation can serve as important indicators in determining whether the privatisation of the South African telecoms sector is successful or not. The problem tackled by this dissertation is predominantly on the characteristics of the telecoms industry.

1.1 Defining the problem

The rapid development in electronic technology over the past few decades makes the telecoms industry a very complex industry. Defining the industry today is not a straight forward exercise. As a result, the development of appropriate criteria to determine why the telecoms industry became a candidate for privatisation requires that the following questions be answered:

- ◆ **Is the telecoms industry a natural monopoly or not?**
- ◆ **Should the public or private sector provide the telecommunication service?** This question requires that the roles of these sectors should be clearly defined with regard to both the provision and the production of the service. The answer to this question may depend on whether the telecoms industry is a natural monopoly or not. It may also depend on the type of service provided by the industry.
- ◆ **Can privatisation of telecommunication promote efficiency?** To answer this question it is important to deal with the definition of efficiency. Irrespective of who provides the telecommunication service, it is important that the privatisation process should lead to high performance by the industry or an efficient allocation of resources. Since each country has its own

unique needs and problems, the criteria to determine the success of a privatisation policy may differ from country to country. A thorough analysis of a country's needs and problems is thus necessary for the application of any privatisation policy.

- ◆ **Is regulation of the telecoms industry necessary after privatisation?** It is important to note that new regulation measures may need to be introduced or existing measures may need to be changed once the company has been privatised. More importantly, the privatised institution may be very large and may abuse its market power if not regulated. Privatisation can therefore be done with or without regulation depending on the characteristics of an industry and a country's preferences.

Answering these questions should clarify uncertainties with regard to the **characteristics** of the industry in which telecoms firms operate, such as, who should be responsible for the **provision** of telecoms services, what **privatisation** (partial or full) should entail and whether there would be a need for **regulation** after privatisation or not. The order of these questions is important because answers to subsequent questions may be influenced by previous questions. For example, if the argument reveals that the industry is not a natural monopoly, then it may not be a problem for the private (or government) sector to provide the service. If the private sector is given the opportunity to provide the service, it may be necessary to regulate its operations. In this dissertation telecommunication and privatisation are two important concepts around which the discussions evolve. These concepts must therefore be distinctly defined from the onset.

1.2 Definitions of telecommunication and privatisation

1.2.1 Telecommunication

The word "telecommunication" consists of two terms: *tele* and *communication*. The term *tele* is defined in the *Concise Oxford Dictionary of English* as a word that originates from Greek that means far off. *Communication* on the other hand is defined in several ways. It is defined as the act of imparting news, social intercourse or the act of transmitting information. An important definition, however, states that communication is the science or practice of transmitting information via electronic media. This is a specific definition suitable for this dissertation. Communication may also be defined in a broader sense as liaison through a spoken language, signals or writing. Telecommunication is therefore defined here as

communication that occurs over a distance via a telefax, telegraph, fixed telephone, mobile or cellular telephone, cable or broadcasting.

Telecommunication has increasingly become an important aspect of the modern economy. The focus of this dissertation is on **point-to-point, two-way voice telecommunication**. Voice telecommunication has seen a lot of changes since it came into existence and most of the largest telecoms firms are those operating in voice telecommunication. The analysis excludes broadcasting and automated communication between electronic equipment such as telefax. Telecommunication is discussed in more detail in chapter two.

1.2.2 Privatisation

Privatisation covers a range of activities that could be aimed at improving efficiency, the redistribution of wealth, enhancing domestic financial markets and which, therefore, should strengthen the economy of a country. This is normally done through altering the balance between the private and the public sector ownership of assets. It may also involve foreign investments that may come into a country.

According to Veljanovski (1987:1-3) privatisation constitutes the withdrawal of the state from the production of goods and services. This definition is narrow and it only emphasises production and ignores other aspects such as financing and control. This is an indication that the concept “privatisation” can be interpreted very broadly or narrowly. Veljanovski further states that to privatise a government asset is to render it private or to bring it into the private sector. Savas (1987:3) stresses the level of roles played by the public and the private sectors because he defines privatisation as making private or changing from public to private control. Dinavo (1995:5) states that privatisation is the process of transferring assets from the public sector to the private sector. The government may or may not keep some of the equity.

Truu (1988:253-257) defines privatisation as the process characterised by the transfer of assets from government to private ownership. According to Truu, government planning is replaced by competitive markets and there may be a need to reformulate public policy during privatisation. Brynard (1995:27-39) states that privatisation involves changes between the state and the private sector with regard to control, ownership, production and finance of assets. These changes normally lead to a reduction in the size and

activities of government.

For the purpose of this study, privatisation entails the transfer of goods and services from the public to the private sector. Privatisation is therefore regarded as a partial or full transfer of goods and services that ensures a major cession of rights and control to the private sector. The private sector will be accountable with regard to the performance of the privatised institution. Full privatisation may assist in making it easier to analyse the efficiency gains of a privatisation exercise and comparison of public and private performances.

There are, however, different models of privatisation (Peters 1991:54-55; Dinavo 1995:6). The most common types are the following:

- ◆ Total or partial sale of state assets to the private sector.
- ◆ Contracting out the delivery of services (e.g., postal services in some developed countries where ownership, planning and financing rest with government, but the provision of the service is done by a private institution).
- ◆ Contracting out the operational aspects of the enterprise (e.g., management is done by a private institution while ownership rests with government).
- ◆ Subsidies and vouchers (e.g., government specifies, through subsidising and issuing vouchers, who is eligible to provide and purchase the service).
- ◆ Load shedding (e.g., government abandons some activities and thus creates room for the private sector to participate).

It must be noted that even if the focus may be on full privatisation, a partial transfer of government goods and services should also be viewed as a step towards full privatisation. Although government may have good reasons for selling only a portion of its assets, the long-term result should almost always lead to improved efficiency, redistribution of wealth, enhanced domestic financial markets and a stronger economy of a country. Privatisation is analysed in more detail in chapter four.

Privatisation is the opposite of nationalisation. Nationalisation may be broadly defined as the government act of taking over assets from the private sector. As a direct opposite of privatisation, nationalisation can

be regarded as the phenomenon that preceded privatisation and thus created the need to privatise.

1.3 Study outline

A brief exposition of the study is given in this section. The first two problem questions (as outlined in section 1.1), *viz.*:

- ◆ Whether the telecoms industry is a natural monopoly or not and why?
- ◆ Which sector (public or private) should provide the telecommunication service and why?

are addressed in chapters two and three. Chapter two discusses the evolution of telecommunication. This is a detailed analysis of significant changes in the industry. The discussion covers aspects such as the development of the telecoms industry and technological advancement in voice telecommunication. Chapter three tackles the economic classification of the telecoms industry because in the past telecoms industries in most countries were seen as a responsibility of government.

Chapters four and five address the third problem question outlined in section 1.1, *viz.*:

- ◆ Whether or not privatisation can promote efficiency in the telecoms industry?

Chapter four also focuses on explaining the concept of privatisation further and dealing with the experiences of other countries with regard to the privatisation of telecoms firms. This chapter seeks to identify useful lessons that may be used as a guide in the analysis of the South African situation, which is done in chapter five. The last question, *viz.*:

- ◆ Whether or not there is a need to regulate the telecoms industry?

is addressed on a continuous basis in chapters three, four and five. This question is constantly examined in these discussions.

CHAPTER TWO

THE EVOLUTION OF TELECOMMUNICATION

2.1 Introduction

The telecoms industry is one of the most rapidly changing industries in the world due to advancements in technology. This chapter examines the evolution of the industry and the major technological changes that have taken place in the industry since the early 20th century. This information is an essential prerequisite to enable an economic analysis of the industry.

Section 2.2 briefly traces the history of communication by telephone from invention to the present. Section 2.3 deals with some of the most important technological advancements that occurred in voice telecommunication over the past century or more. As mentioned in chapter one, the emphasis here is on voice telecommunication.

2.2 Development of the telecoms industry

Robert Hooke, an English scientist, was the first to suggest in the 17th century how speech might be transmitted over a distance. Huth, a German scientist, suggested the use of acoustical telephony in 1796. Charles Grafton Page of Massachusetts discovered the correlation between rapid changes on the frequency of magnetism of iron and the pitch of a musical note in 1860. A frequency is a flow of alternating electric current. These, in brief, are the early discoveries in voice telecommunication (Waterford 1978:11-15; Van Duuren et al 1992:121-129).

According to Waterford (1978:11-15), two Americans, Elisha Gray (1835-1901) and Alexander Graham Bell (1847-1922), were working independently on telephone transmission in 1875. The recognition and patent was given to Bell in 1876 because he applied for a patent a few hours earlier than Gray on the same day. Bell's breakthrough was when the first sentence was uttered over the telephone in March 1876. His company, *Bell*, tended to be monopolistic due to patent rights and the make-up of the industry (Hatfield 1994). During the early years of introduction, the expansion of the telephone was relatively slow due to

three factors (Coddling 1984:5). Firstly, the already existing services, *viz.*, telegraph and post, were preferred to this new service. Secondly, telephone expansion was only regional and national since there was not yet a method to connect different continents. Lastly, the early carrier methods (i.e., bare wires) were not capable of carrying large amounts of signals across. However, initiatives by farmers later helped to extend telephone lines through constructing and maintaining private rural lines (Hatfield 1994). The next two subsections identify the different components of telecoms networks and the evolution of the system respectively.

2.2.1 Components of a telephone system

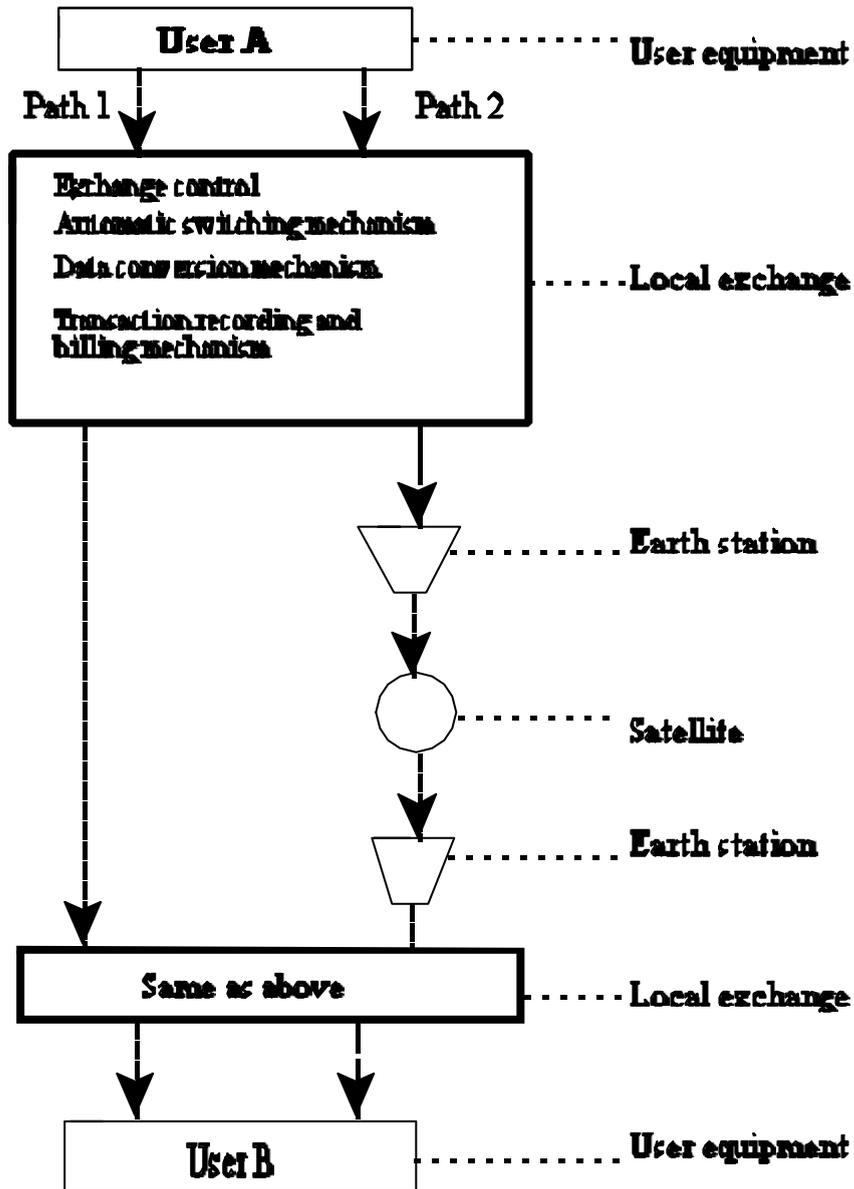
A typical telephone network is divided into different components, *viz.*, the telephone exchange or switching system, the transmission equipment and systems and the end-user or customer equipment (Kaplan 1990:3-12). The **switching system** is responsible for interconnecting called and calling lines. The **transmission system** is responsible for carrying the communication signal across. The transmission system may be divided into wireline and wireless agents that connect different networks. Networks differ relative to the area they cover (Waterford 1978:38-43). There are private, local, national and international networks. The latter three are usually available for usage to the general community and are therefore also known as public switched telephone networks (PSTNs). The type of telephone exchange that is used depends on the type of network (Van Duuren et al 1992:51).

A private automatic exchange (PAX) interconnects subscribers in a private telephone network, for example, inside a building. A private automatic branch exchange (PABX) interconnects subscribers in a private telephone network and also allows access to a public network. A public local exchange is operated by companies in the public communication business. Such companies are normally owned by government or by private entities and they operate public local networks that normally cover relatively small areas. Unlike a public local exchange, toll exchanges are used to interconnect national and international subscribers in big networks that cover large areas.

The **user equipment** offers various features such as identifying a caller by displaying his/her telephone number or picture, answering calls if there is no response and diverting calls to other places. Figure 2.1

below is used to illustrate the components of a telephone network.

FIGURE 2.1
COMPONENTS OF A TELEPHONE NETWORK
(A SIMPLE ILLUSTRATION)



Adapted from: Waterford (1978:27-43), The Open University (1976:12-24) and Mabey (1984:322)

This simple illustration of a telephone network uses two paths of data transmission. Path 1 represents analog data and Path 2 represents digital data. This separation is only done for illustration purposes. In reality data can be converted along the way from one form to the other as many times as required. Subsection 2.3.1 delves into the analysis of analog and digital communication systems. Between User A and the local telephone exchange there is a local loop or line circuit which has a small voltage of direct current (DC). A line circuit is a closed electrical path with conductors and transistors to carry an electric current. It ensures that the user is connected to the local exchange at all times.

User A can initiate a call from a domestic phone (house or office), a cellular telephone or a public phone (booth on the street) to user B, who can be using any of these three types of telephones. A telephone exchange is accessed through the line circuit that provides an interface between the local exchange and the user equipment. The line circuit detects a service request when a handset is lifted from the hookswitch on the telephone receiver. A hookswitch is a group of open or closed contacts that switch circuits inside the phone. Generally, the line circuit connects the calling line to a register in the local exchange that returns a dial tone and accepts dial pulses (Weinhaus & Oettinger 1988:17-22, 43-44; Van Duuren et al 1992:69-72).

The exchange control, which is the brains of the exchange, interprets the dialled number and instructs the switching mechanism circuits to connect the calling and called lines. Depending on the availability of the called line and the type of user equipment on the other end, the data will be converted as per the transmission system and processed. The transaction will be recorded and the responsible party billed accordingly.

The early telephone exchange consisted of a wired logic control, where assemblies of electromechanical relays wired in fixed patterns were used. A switching system called the space division switching system, where each call occupied its own path, was used. Telephone operators were responsible for connecting calls manually on a switchboard on behalf of callers. As the telephone traffic became heavier, it was apparent that there would be neither space in the switchboard nor enough operators to handle the volume. As the number of subscribers increased, the cost of telephone exchange also increased because more operators had to be hired. Improvements on the switching system were inevitable. A shift had to be made from the wired logic to computerised programmes (Waterford 1978:23-43; Kaplan 1990:5-18).

Electronic exchanges were later developed and stored programme controlled (SPC) special purpose digital computers were established. No fixed switching matrices are used and this control is called a digital switching system. This control brought with it a whole range of features like call forwarding, number tracing and automatic billing. Time division multiplexing (TDM), a method of transferring data, was also brought into play. In this method conversations are sampled in time intervals and converted into pulses that are switched between the two communicating parties. The data can pass through several telephone exchanges, satellites and earth stations before it reaches the called party.

The downward arrows in figure 2.1 represent the transmission mechanism, *viz.*, wireline and wireless. There are several options for wireline transmission. Data can be transmitted through open-wire lines, twisted pair, coaxial cables and optical fibre (Saadawi et al 1994:51-57). The transmission mechanism is an essential factor of a telecoms network. Each of these carrier methods is defined briefly. The sequence of definition corresponds roughly to the pattern of development of the various carrier methods.

Open-wire lines are bare uninsulated pairs of wire. A twisted pair consists of individually insulated wire pairs enclosed in a common protective sheath. Coaxial cables consist of four to twenty-four coaxial tubes. Optical fibre uses light-waves to transmit data. Wireless transmission also has a few mechanisms, *viz.*, microwaves and satellites. Microwaves utilise electromagnetic waves, normally through line of sight stations, to transmit data. Extremely high and super high frequencies (EHF and SHF) are used in satellite transmissions.

2.2.2 Evolution of telephone systems

From early times communication through spoken languages, signals or writings has always been an important characteristic of mankind. However, it was not until the 19th century that the telephone was invented. Table 2.1 shows some important dates in the history of telecommunication. It is interesting to note that the telegraph was in use for more than thirty years before telephones were developed. It took half that time to develop both the electronic telephone switching system and the personal computer after the integrated circuit was built. This is evidence of the fast development pace of telecoms technology and activities due to continuous improvements in technology.

TABLE 2.1
HISTORY OF TELECOMMUNICATION

YEAR	EVENT
1820	Hans Christian Oersted shows that an electric current produces a magnetic field.
1831	Michael Faraday discovers that changing magnetic fields produce electric fields.
1838	William F Cooke and Sir Charles Wheatstone build the telegraph.
1844	Samuel B F Morse demonstrates the Baltimore, MD, and Washington, DC, telegraph lines.
1876	Alexander Graham Bell develops and patents the telephone.
1878	First usage of telephones by the public.
1894	Oliver Lodge demonstrates wireless communication over a distance of 150 yards.
1945	The ENIAC electronic digital computer is developed.
1947	Walter H Brattain, John Bardeen and William Shockley devise a transistor at Bell Laboratories.
1950s	Microwave telephone and communication links are developed.
1958	The first integrated circuit (IC) is built by Jack Kilby of Texas Instruments and the first silicon IC is produced by Robert Noyce of Fairchild.
1964	The electronic telephone switching system is placed into service.
1965	The first commercial communication satellite, Early Bird, is placed into service.
1976	Personal computers are developed.
1998 - present	Era of digital signal processing, integrated service digital networks (ISDN), cellular telephone and increased usage of satellites.

Adapted from: Couch (1990:2-4); Waterford (1978:15)

2.3 Technological advancement in voice telecommunication

Rapid developments in technology have been occurring in various sectors of the telecoms industry, particularly in voice telecommunication. Four main development areas are discussed in the following subsections. Note that the improvement in carrier methods, as discussed in subsection 2.2.1, played a very important role in facilitating these four developments discussed.

2.3.1 Analog and digital communication systems

A notable change in telecommunication was the improvement from an analog to digital communication system. An analog system transmits continuous streams or waves of frequencies. This system deals with audible signals. A digital system, on the other hand, can transmit both audible signals and electronic data pulses or bits.

In order to comprehend the change from analog to digital, a brief explanation of audible signals is made. Humans can only hear sounds above 30 hertz and below 20 000 hertz. For reasons such as cost implications, ability to pack together or multiplex signals and maintenance of high fidelity, communication industries do not transmit signals between 30 and 20 000 hertz. Signals are normally transmitted at very high frequencies (Roden 1991:67-70; Van Duuren et al 1992:155). A caller's voice is raised to a very high frequency and another caller's voice using the same path raised to an even higher frequency and so on. This ensures that one channel carries as many signals as possible and the signals do not interfere with one another. This is known as frequency division multiplexing (FDM) and it is normally used in analog systems (Maley 1984:471). Although different signals may be sent through the same line, senders of such messages use separate equipment and frequencies for that purpose.

Most telephone companies evolved using analog transmission (Waterford 1978:45; Van Duuren et al 1992:132-133). Digital transmission found its way into the telecoms industry in the late 1970s. In this system the pulse code modulation (PCM), which converts voice and other analog signals into a stream of electronic pulses or bits, is used. Voice transmission is costly and sometimes not very clear, hence the usage of modulators to convert data into digital form (Becker 1984:273). The major advantage of digital

transmission is the fact that noises in the signal are minimal. Unlike the analog system, repeaters in the digital system do not amplify the original signal sent but generate a new signal. In that way the fidelity of the signal is maintained. Time division multiplexing (TDM) is normally used in digital transmission. TDM packs different signal streams and assign a time slot for each stream in a set. The introduction of computers in telecommunication was easy because the signals or pulses are similar to those of a computer. Advancements in the rapid changing digital world spill over to the telecoms industry.

2.3.2 *Micro-electronics*

The most important occurrence in the telecoms industry was the development of a micro chip, the most celebrated discovery in micro-electronics in the late 1950s (Rada 1980:1-2). This is a silicon-integrated circuit which is a semiconductor with many components in it. Micro chips, with up to more than a million transistors in one chip, were later improved to have microprocessors and microcomputers (processor, memory and interface) in a single chip. A micro chip is only a few square millimetres, but contains a large number of electronic components.

Micro chips enhanced the speed, productivity and ability of many components of the telecoms network (Rada 1980:41). The usage of chips made it possible to use microcomputers as stand-alone machines or with other communication links such as telephone networks and satellites. Improvements in micro electronics spill over to the telecoms industry very quickly. As a result, the telecoms industry is able to cope with rising needs of customers. The introduction of micro chips in the industry also created an opportunity for other firms, such as those manufacturing chips, to be involved in the telecoms industry.

2.3.3 *Cellular telephone*

A cellular telephone may be regarded as an advanced two-way-radio type of telecommunication. Unlike fixed telephony, cellphones¹, as they are known in South Africa, can be carried around when people move in cars or on foot. Consumers buy cellphones from service providers or other companies that are authorised dealers. There are two purchasing options available. One is to pay upfront (prepayment system) for airtime

¹In many other parts of the world, cellphones are known as mobile telephones or mobiles.

and the other to pay after the service has been provided (contract system).

The cellular concept was conceived in the early 1980s by Bell Laboratories (Johnston 1999:1-6). Cellphone companies are given specific geographic areas that they cover. These areas, which form various cellular networks, sometimes overlap and are sometimes far apart. An important note here is that these companies must be able to extend their services from one to the other, a concept called interconnection. A country is divided into geographical cells with each cell having its own base station (Brewster 1986:179-180). On average, cell sizes have to be selected so that the maximum number of cellphones in each cell is 1500. Of course, with the rapid development of the industry, this number is more often exceeded. This will ensure a satisfactory service to users. Smaller geographic cells are created in clustered urban areas and larger geographic cells are created in sparsely populated rural areas.

According to Calhoun (1988:12-17) the need for cellular telephone arose from the fact that on-land lines are sometimes unable to reach some parts of the world, e.g., on-land telephones cannot be used while travelling on an aeroplane or a ship. The introduction of digital communication enhanced cellular communication because signals were much clearer. Developments in digital technology and transmission mechanisms enhanced the development and usage of satellites for cellular telephone communications (Waterford 1978:46-56). Transmission mechanisms such as light-wave communication and fibre optics, where laser and light are used as conveyors of signals, became useful for cellular telephone communication. Similar to the invention of the cellular concept, the usage of satellites for cellular communication was brought about by the fact that it is not always possible to have terrestrial stations, e.g., on sea.

An international body called *Groupe Spéciale Mobile* (GSM) was formed in 1982 to look after the development of high volume, mass-market products in cellular services, ensuring fraud-protection of data and the introduction of integrated services in the cellular world. The first generation of cellular communication covered basic mobile services. The second generation had these services enhanced. The third and latest generation ensures that users receive consistent voice, data, graphical, multimedia and video-based information services, regardless of the location on the network. Another international body that ensures the smooth operation of the third generation of cellular communication, the *Universal Mobile Telecommunication Service* (UMTS), was established in the late 1990s. These are two important

institutions that ensure that cellular protocol is adhered to.

As a cellphone passes from one geographic cell into another, the base station of the next cell takes over the responsibility of providing the communication channel. This happens automatically and with almost no interference in the conversation. This is called the handover process (Walker & Gardner 1990:63; Roden 1991:478). According to Mehrotra (1994:343) the signal handoff between cellular networks is more than just a change of base stations. It requires that the cellular protocol should clearly outline the procedure of such a handoff. Cellphone companies utilise mobile switching centres (MSC) to connect cellphone users with public switched telephone networks (PSTNs), other cellphone companies and other cellphone users.

There is a continuous supply of a communication signal between the base station and the user equipment. Cellphones normally register themselves with new base stations when they enter into new networks. A signal interchange between overlapping networks is much simpler because there are no gaps between the cells. After the called subscriber has been located, the voice circuit is established between the two networks. The new MSC of the network in which the cellphone has entered will then command the calling cellphone to switch over to the newly established voice channel (Mehrotra 1994:348-353). A signal interchange becomes complicated when two networks that are far apart must be connected. The gap is normally bridged by using a PSTN. For instance, the MSC of the calling party sends the signal via a PSTN to the MSC of the called party. Because the cellphone has registered itself, the PSTN is able to identify and communicate with it.

Although each cell is allocated its own frequency to prevent interference between base stations, two types of signal interference are still prevalent. These are called adjacent channel interference and co-channel interference (Flack & Gronow 1990:34-36; Mehrotra 1994:345). Adjacent channel interference occurs when base stations are close to each other and the cellphone picks up signals from various stations. Co-channel interference occurs when several cellphones from different cells use the same frequency spectrum. Enlarging cell sizes may ease both these interference problems.

Over the past ten years cellphone usage in the world has surged and exceeded that of fixed-line telephone. Ownership in the sector is spread across people with different standards of living from the poor to the rich.

More than 90 000 new subscribers join the world's cellular phone sector every three days and this figure is increasing (*Economist* 1999:78, *Groupe Spéciale Mobile* 2004). There are more than 9 000 subscribers that join the network every day in South Africa (*Cellular* 2004). This threatens to worsen the existing levels of signal interference. The pre-payment system, in which subscribers purchase talk-time in advance, is one of the factors that help to improve the cash flow and hence the development of cellphone operators.

Importantly, the introduction of cellular networks did not necessarily mean that companies will stop to use their fixed-line networks or PSTNs in the short to medium term (*Economist* 1998:76-78; Hodge 2003; *WESGRO* 2003). The demand for communication services such as the Internet and large data transfer promote the need for fixed-line networks. Huge investments were made on these PSTNs and many firms still enjoy the market power they have in local telephone loops. Note, however, that this is changing rapidly due to the fast growth in cellular telephone technology. People are finding it increasingly convenient to own and utilise cellphones for all their electronic data requirements instead of fixed-line telephones. The coverage, quality and cost of the cellular telephone are of utmost importance and may need to be enhanced or reformulated if cellular telephones are to displace fixed-line networks. In order to displace fixed-line networks, cellular telephone should offer more facilities than fixed-line networks to users and suppliers at competitive rates.

The fact that it is possible to call from a cellular network to a fixed-line network or vice-versa indicates that there is harmony between the two types of networks and that the current fixed-line networks will still be important for some time. So it makes sense to improve the existing fixed-line networks. The cellular network analysis further indicates that it is not easy to monopolise the provision of cellular telephone services. It is possible to permit a limited number of cellular networks to operate in the market. Simultaneous with issues such as profitability and interconnection, which may play a role when making the decision to enter the market, barriers to enter the market may be used to limit this number.

2.3.4 *Satellite communication*

Satellite communication consists of a satellite and earth stations. These are also known as the space and earth or ground segments. The evolution of satellite communication corresponds roughly to three types of

satellites, *viz.*, point-to-point communication satellite, distribution satellite and broadcasting satellite (*Unesco* 1972:8-12). In most cases a combination of these three satellites is used to give a better communication mode. According to the International Institute of Communications (1982:22-24) communication satellites have been in use since the early 1960s.

A point-to-point satellite transmits a signal from one specific source to one specific destination. Point-to-point satellites cover a third of the earth's surface. Due to technical constraints, there is a limit to the electric energy that a point-to-point communication satellite can carry. This and the fact that a large area is covered by the satellite results in a weak signal arriving on earth. The earth stations needed for this type of satellite are quite large, about four metres, thus costing over US\$3 million in the 1970s. Today these stations can easily cost more than US\$10 million.

A distribution satellite may carry a single or many signals to one or more specific destinations. Distribution satellites are convenient when used to transmit a signal from one terrestrial area to another, e.g., telephone and television. The earth coverage of a distribution satellite is normally less than a third of the earth's surface and therefore a stronger signal is transmitted. That is because the smaller the earth coverage, the stronger the signal. As a result of the smaller coverage, earth stations for a distribution satellite are relatively small and less expensive.

Broadcasting satellites send signals directly to groups or individuals. It is important to ensure that the satellite signal is in the same frequency as that of the user's receiving device, e.g., UHF. The main reason for this requirement is the fact that the signal goes straight from the source via the broadcasting satellite to the end-user device, without any earth station in-between. Thus if different frequencies are used, the end-user device will not be able to detect the signal.

The main advantages of satellites are that:

- ◆ satellites are flexible to use, (e.g., point-to-point and point-to-multiple point communication);
- ◆ satellites furnish broadband services, (i.e., they provide the capacity for simultaneous use of many channels for various services such as telephone and broadcasting, e.g., television, videophone, etc.

Communication satellites can be used for any kind of electronic communication); and

- ◆ satellites are able to cover a very wide geographical area.

The main disadvantages are that;

- ◆ the frequency spectrum is already heavily committed and therefore further demands may lead to interference with terrestrial systems
- ◆ satellites are much more vulnerable and sensitive to interference than terrestrial systems
- ◆ satellites have a shorter lifespan than terrestrial systems. Satellites are replaced more often than ground stations. This may change in the 21st century as space technology improves.

Satellites are generally placed in geosynchronous or geostationary orbits (GSO). In this position a satellite orbits such that it appears from earth to be in the same position all the time. This is achieved by making the orbit correspond with the rotation of the earth. The satellite's orbit location should be approximately 36 000 kilometres above the equator. Although the costs of satellites today make it possible for private institutions to own satellites and transmit without requiring ground networks, the above mentioned orbit position may reach full capacity and frequency bands for adequate transmission may be exhausted (Hegener 2002). Government may be required to intervene and compel market incumbents to share their facilities, limit the number of participants, deal with allocation efficiency and introduce competition. All these factors are revisited in the next chapter.

2.4 Conclusion

The telecoms industry has been evolving since the invention of telephones. Telephone expansion started slowly and grew gradually across the globe. Developments in the industry are interconnected and integrated. There are three main components of a telephone network, *viz.*, the switching system, transmission equipment and the end-user equipment. A signal from one point to another may change several times along the way.

Some of the important technological developments identified in the telecoms industry are the improvement from analog to digital signals, the discovery of micro chips, the introduction of cellular telephone and the

discovery and usage of satellites in telephony. Although they created the opportunity for firms to operate competitively or monopolistically in the various segments or components of the industry, these technological changes led to uncertainties with regard to the market characteristics of the telecoms industry, the sector (private or public) that should provide the telecoms service, whether privatisation is feasible in the industry and whether there is a need to regulate the industry if privatisation is feasible. The next chapter examines the telecoms industry from an economic perspective. It seeks to clarify these uncertainties caused by technological developments and thereby identify important characteristics of the industry and also identify the sector(s) that should provide the telecoms service.

CHAPTER THREE

ECONOMIC ANALYSIS OF THE TELECOMS INDUSTRY

3.1 Introduction

This chapter examines some of the theoretical aspects of the telecoms industry. In order to decide if it is necessary for government to apply policies such as privatisation and/or regulation of telecommunication, it is essential to identify the nature or characteristics of the telecoms industry. Its nature of business largely determines whether a telecoms firm should be privatised, regulated or both. This chapter aims at examining the situation in the telecoms industry before and after the major technological advancements (discussed in chapter two) took place in the industry, to determine whether important economic aspects of the telecoms industry changed.

There are three important questions that need to be addressed in this chapter. Firstly, why many telecoms industries were publicly owned in many countries? Secondly, do the technological developments in telecommunication allow telecoms firms to be privatised? Thirdly, is government involvement (e.g., through regulation) still required in the industry? To identify the nature of the telecoms industry and therefore answer these questions, it must first be determined whether the telecoms firm is a natural monopoly or not and whether the telecommunication service can be produced and/or provided by the public sector or the private sector.

Sections 3.3 and 3.4 enquire whether services that are supplied by the telecoms industry are private, public or mixed services and whether important externalities occur in the industry. Section 3.5 briefly outlines the notion of equity and how government may address equity problems through privatisation. Section 3.6 determines whether or not the telecoms industry is a natural monopoly and explains the relationship between the industry and the public utility concept. Section 3.7 discusses the production and provision of the various services (i.e., public and private) as discussed in sections 3.3 and 3.4. The effect of technological advancements in the industry is delineated in these discussions. Section 3.8 summarises the previous discussions and draws conclusions as to what type of economic entity the telecoms industry is (or has become), what type of a service it supplies, whether it can be privatised or not and if it can be privatised,

whether regulation is necessary or not. Before embarking on the discussions, it is important to briefly define efficiency since it is an important concept that will appear in the discussions that follow.

3.2 Allocation efficiency

According to welfare economics a perfectly competitive market will ensure the efficient allocation of resources if it complies with the following assumptions (Brown & Jackson 1990:22-24; Herber 1971:24-26; Stiglitz 1988:132):

- ◆ There are many sellers and buyers.
- ◆ There are at least two goods.
- ◆ All firms have a profit-maximisation motive and all consumers have a utility-maximisation motive.
- ◆ Perfect information is available to all parties involved.
- ◆ Risk and uncertainty with regard to technology and tastes are absent.
- ◆ Externality effects are absent or taken into account when assessing the supply and demand curves.
- ◆ Production factor supply is given and all production factors are fully utilised.

In a perfectly competitive market Pareto optimality will be obtained. Pareto optimality refers to an economic allocation of resources where it is impossible to improve the welfare of one party without worsening another party's welfare. This simply means that the allocation have reached a position where it is impossible to make one community member better off without making another community member worse off.

Three conditions are necessary for Pareto optimality to occur (Brown & Jackson 1990:18-19; Miller & Meiners 1986:330-339; Rosen 1992:69-78; Stiglitz 1988:131-133). The **first** condition is that the marginal rate of substitution (MRS) between any given pair of goods should be equal for all consumers who use both goods. Assuming these two goods are a and b , and there are two consumers, 1 and 2, then MRS_{ab} represents the amount of b that a consumer must surrender to compensate for the gain of one more unit of a . Graphically, the MRS is indicated by the slope of the indifference curve. In order to maximise utility, a consumer sets the marginal rate of substitution of a (MRS_a) equal to the relative price of a (P_a) divided by the relative price of b (P_b). Relative prices therefore enable consumers to make rational choices. This

condition can be presented in the following equation for the two consumers:

$$MRS_{ab}^1 = MRS_{ab}^2 = \frac{P_a}{P_b}$$

The **second** condition is that the marginal rate of technical substitution (MRTS) between any given pair of factors, such as capital and labour, C and L , should be the same in the production of all goods in which such factors are used. Graphically, the MRTS is indicated by the slope of the isoquant curve. The $MRTS_{CL}$ represents the amount of labour (L) that must be surrendered to compensate the usage of capital (C) during production or *vice versa*. Using these two factors, the following equation represents equality between their MRTS:

$$MRTS_{CL}^a = MRTS_{CL}^b$$

The **third** condition states that the marginal rate of substitution between any pair of goods for any consumer should be the same as the marginal rate of transformation (MRT) between the two goods. Graphically, the slope of the production possibilities curve indicates the MRT and is derived from the contract curve which shows all the different positions where $MRTS_{CL}^a = MRTS_{CL}^b$. MRT_{ab} represents the rate at which b can be transformed into a or the amount of b that must be given up to produce one extra unit of a . This is a Pareto-optimal condition and ensures that any reallocation of production between a and b does not make someone better off while making no one else worse off. In terms of marginal costing, the MRT is equal to the ratio of marginal cost for the two goods. This third condition, *viz.*, the MRS between any pair of goods for any consumer should be the same as MRT between the two goods, will be satisfied if price ratios of the two goods equal marginal cost ratios. This means the marginal rate of transformation of a (MRT_a) is equal to the marginal cost of a divided by the marginal cost of b . It follows therefore that if:

$$MRS_{ab}^1 = MRS_{ab}^2 = MRT_{ab}$$

then

$$MRT_{ab} = \frac{MC_a}{MC_b} = \frac{P_a}{P_b}$$

Institutions that operate in a perfectly competitive market environment normally produce where price equals marginal cost (i.e., $P = MC$) which ensures allocation efficiency. The competitive equilibrium is, therefore, at the efficient level since market forces will drive the economy towards this position.

The tools provided by welfare economics may then be used to determine whether government policies promote efficiency or not. In real life, the market is not perfect and market failures such as public goods (e.g., free rider problem), externalities and imperfect competition occur. An example of imperfect competition is natural monopolies. Natural monopolies exist due to large capital outlays which cause increasing returns, i.e., falling average costs, in the production of certain goods and services. In such a case the natural monopoly will produce where $P \neq MC$ and allocative efficiency does not occur (see section 3.6). This happens because one firm can produce the total quantity demanded and due to its economic power, will increase prices, and as result, the quantity demanded will decrease. If the efficiency requirement, $P = MC$, is violated, intervention by government may be required to steer the markets towards the allocative efficient level. Government may nationalise such an industry or use regulation and/or subsidisation policies to intervene.

It should, however, be noted that government failure may also occur. Government failure usually refers to actions by politicians, bureaucrats and interest groups to further their self-interests at the expense of the interests of the broader community. This implies that government intervention may produce greater distortions than the economic imperfection such an intervention was intended to correct (Lebel 1999:1). Government intervention may therefore not necessarily promote efficiency.

Market economies may also lead to inequality due to differences in individuals' abilities and opportunities. This creates room for government to promote equity, since most communities will at least strive to guarantee a minimum living standard for all its members. However, there may be a trade-off between efficiency and equity which may cause further problems for government if it decides to intervene in the markets. Government may therefore strive to obtain a balance between efficiency and equity. The trade-off between

equity and efficiency receives further attention in sections 3.5 and 3.6.

Conventionally, the concepts goods and services are used together in economics. Although some physical products, e.g., receivers, are generally supplied by telecoms industries, the term “services” is used in this dissertation instead of the conventional phrase. The reason for this approach is the fact that the focus is on the service provided by the telecoms industry and not on the equipment used in the industry. In the past the terms “public service” and “private service” implied that the service was provided by the public sector or the private sector. However, due to changes in technology and views on the efficiency of the public sector, these terms today do not necessarily say much about which sector owns, provides and/or produces these services. For example, the removal of garbage can be provided by the private sector who will be paid by municipalities through levies or taxes collected from home owners. A more detailed analysis of the production and provision of services is made in section 3.7.

3.3 Public vs private services

In this section the analysis of public and private services is taken further. It is necessary to focus on market failure since it may help in the analysis of these types of services. As indicated earlier, when the conditions that are necessary to achieve allocative efficient levels of production and provision of goods and services fail to exist, for example, due to the occurrence of externalities and public goods, there is room for government intervention. An analysis of market failure and the distinction between public and private services may be useful in the discussion of the theoretical classification of the telecoms industry and in identifying the type of service that is supplied by the telecoms industry.

Public economists use certain concepts to categorise different types of services (Bish & Nourse 1975:116; Brown & Jackson 1990:36; Buchanan 1970:23-30; Head 1972:3-6; Herber 1971:32-33; Musgrave 1959:43-44; Rosen 1992:67; Stiglitz 1988:123). Rivalry in consumption and the feasibility of exclusion from usage are generally the main factors used to determine whether a service is a public or private service (Samuelson 1966:1223-1225).

Table 3.1 below depicts the categories and some characteristics which can be used to classify services as

private, mixed or public services. A service can be categorised as a private service if it is rival in consumption and exclusion of non-payers is feasible. An example of rivalry in consumption is buying a pie. If an individual buys a pie it is not available to other consumers. Furthermore, other consumers can be excluded from the benefits of the pie. A service is a public service if it is non-rival in consumption and exclusion of non-payers is not feasible. A classic example of a public service is national defence. Using the benefits does not limit the availability of the service to other consumers and no one can be excluded from such benefits. Some services are rival in consumption, but exclusion is not feasible and others are non-rival in consumption with exclusion quite possible. These are usually called mixed services. Examples of mixed services are using a public swimming pool or a national road. Each of these different kinds of services is discussed in the following subsections.

TABLE 3.1
CATEGORIES OF SERVICES

Consumption	Exclusion	
	Feasible	Not Feasible
Rival	<i>Private Service</i>	<i>Common Pool Service</i>
Non-rival	<i>Club Service</i>	<i>Public Service</i>

Sources: Musgrave and Musgrave (1980:57), Bish and Nourse (1975:119-120), Cornes and Sandler (1986:7)

3.3.1 Public services

The theory of public services dates back to the 19th century. Two important seminar papers are those by Samuelson published in the mid 1950s and Musgrave published in 1959 (Head 1972:3). Authors differ with regard to the definition of public services. Sharkey (1982:45) defines a public service in terms of its attributes. According to him a public service is one that is consumed by many people collectively. This is known as **collectivity in consumption**, a concept similar to non-rivalry in consumption (see below). It simply implies that the consumption of the service by one individual does not prevent others from consuming the service. In other words, the service will still be available for other consumers as well. To return to the example used earlier, the protection provided to the citizens of South Africa by the South African National Defence Force (SANDF) can be consumed by one person without limiting the amount available to other individuals.

Each consumer's portion of consumption of the service is equal to the total amount of the service. Thus if the total amount of a public service is x_j , then each of the i consumers' portion will be represented by $x^i = x_j^i$. Brown and Jackson (1990:34) seem to agree with Samuelson when they reaffirm that a pure public service is one whose consumption by one person does not reduce the consumption satisfaction of another person. According to Brown and Jackson, non-rivalry in consumption of a service arises from indivisibility of that service. Indivisibility occurs when it is impossible to subdivide a service among consumers. A public service is indivisible over any given set of individuals. The following equation represents indivisibility:

$$x_{n+j} = x_{n+j}^i$$

Every one of the i individuals consumes the total amount x_{n+j} of the public service. Once the service is produced, it becomes inefficient and impossible to exclude others from its consumption (Buchanan 1968:49). Rosen (1992:67) warns that even though the same quantity of the service is consumed by everyone, that does not necessarily mean that the consumption is valued equally by all. This is true, for example, in the case of the South African Police Services. The perceived value for police services for residents of the violent Cape Flats who are not involved in gangs may be higher than the perceived value for

the same services for some folks living peacefully in the countryside. According to Due (1968:25-27), consumers' tastes and the availability of information influence their preferences for public services. Depending on their tastes and preferences, individuals may value public services differently. The availability of information regarding a public service may have an influence on the demand for that service, since it is unlikely that individuals will have a high demand for a service of which they know little. Consumers normally use information readily available to them to weigh their options and preferences.

Stiglitz (1988:119) defines a public service in terms of two properties, *viz.*, the **feasibility** and the **desirability** to ration usage. This is similar to the excludability concept (see below). According to him a public service is one in which it is neither feasible nor desirable to ration its usage. In this context rationing the usage of a service means allocating a portion of the public service to each individual involved. The government decides the rationing criterion by, for example, charging a minimum fee for usage. The inability to ration the usage of public services may lead to refusal by individuals to make their preferences known and as a result not to pay for such services and therefore to free riding. Free riding is discussed later on (see subsection c).

It appears that there may be minor differences in the definition of a public service. Like most economists, Buchanan (1968:87) holds the view that very few services fit the extreme polar case definition of a public service. Most services can only come very close to this definition. The classification of a service as a public service is therefore not absolute. It depends on market conditions, legal arrangements and technology. As mentioned earlier, the most appropriate example of a service classified under the public service category is national defence. The categorisation of services in table 3.1 also indicate that the following characteristics of public services, *i.e.*, non-excludability and non-rivalry in consumption should be taken into account.

(a) Non-excludability

The above definitions of public services show that excluding other parties from consuming such services can be either too costly or not technically feasible. Musgrave and Musgrave (1980:55-56) state that there are certain instances where it is possible to exclude non-payers, *e.g.*, charging a toll on crossing an uncrowded bridge or cutting transmission to receivers who do not pay for their television or radio licences, provided that

adequate technology exists.

The degree of exclusion depends on the resources available to the producer to prevent non-payers from consuming the service. It also depends on the technical characteristics of the service in question. It must be possible to implement means of excluding non-payers from consuming the service. If these factors are not present or are weak, exclusion becomes very difficult if not impossible. Services that are not excludable in nature are also not rejectable. For example, no individual can refuse to be protected by the SANDF. It is simply not a feasible option. Although people may value the service differently, it is made available to all persons irrespective of their preferences (Head 1972:5).

Telecommunication service providers are able to exclude potential users through user charges and connection fees or to cut existing connections if users fail to pay for the service. Owners of domestic telephones and cellphones are also able to exclude other people from benefiting from these phones. It can therefore be concluded that telecommunication services are excludable in nature and therefore not public goods or services.

(b) *Non-rivalry in consumption*

A service is said to be non-rival in consumption when the additional cost for one more consumer is zero (Brown & Jackson 1990:35). Some authors refer to this as the jointness in supply as all parties must consume the same service provided (Head 1974:70-82). This means that there is an equal potential availability of the service to all. As long as full capacity has not been reached, no marginal cost is incurred by adding one more person to consume the service. Cornes and Sandler (1986:6) refer to this as the indivisibility of benefits. As a result of the capacity constraint, it is essential to note that non-rival services are not necessarily non-excludable. An example of a service which can be affected by the full capacity aspect is a highway.

There is a limit to the number of new telephone connections that a telecoms network can accommodate given a certain fixed level of infrastructure. Thus adding line connections may eventually result in a poor service when full capacity is reached. This is also true when making a phone call. Therefore, the consumption of

telephone services is rival in nature when full capacity is reached. So it may be further concluded that telephone services are excludable and could be rival in consumption during peak hours. According to table 3.1 such services should be categorised as private services (see below). There is no room for free riding because a minimum user fee is charged for using a telephone and therefore individuals can be excluded. But what happens if exclusion is not possible?

(c) *Market failure*

Difficulties to exclude non-payers from consuming a service or non-rivalry in the consumption of a service may cause market failure, which imply that the market may be unable or unwilling to provide such a service (see also section 3.2). Market failure occurs when the conditions that are necessary to achieve efficient levels of production and provision of services fail to exist or are contravened in one way or the other (Brown & Jackson 1990:28-36). Factors that generally cause market failure are incomplete information, the existence of externalities and public services, uncertainty, imperfect competition and large sunken costs. Market failure necessitates the consideration of some intervention to ensure allocative efficiency. Individuals are unable to cooperate effectively when markets do not exist or are inefficient and there may be limited or no competition. These are some of the reasons why it has been argued in public economics that one of the reasons for governments to intervene in economies is market failure.

The most common market failure that affects public services is the free rider problem. According to Rosen (1992:75) it is the incentive to let others pay for the service while one enjoys the benefits. This happens because individuals cannot be excluded from enjoying the benefits. Consider the example of installing a television signal amplifier in a residential neighbourhood for the users who pay for their licences. People who do not pay cannot be excluded from receiving the signal, unless such a signal is encoded and requires a specific decoding device.

As indicated above, in certain circumstances the free rider problem can occur irrespective of whether suppliers charge for a service or not. Free riding could therefore lead to an inefficient or sub-optimal supply of a service because people do not reveal their preferences for a service, i.e., how much they are willing to pay. The supplier of the service is therefore not able to determine how much to supply. This could result

in shortages and deteriorations in the quality of the service in question and no individual would be willing to incur the cost of improving the situation because it may be too costly. Even if someone would be willing, a large number of other users could gladly benefit from this.

Coercion may be a useful tool when trying to overcome the free rider problem. The institution in charge of the production of the service may induce cooperation from free riders by threatening to decrease the supply of the service. However, the producer has to have powerful influence or legal power in order to be able to do so. As mentioned earlier, free riding is not applicable to the telecoms service because it complies with the characteristics of a private service. For comparison purposes the following subsection briefly discusses the notion of private services.

3.3.2 *Private services*

A private service is a direct opposite of a public service. The sum of all individuals' portions of consumption is equal to the total service. This can be expressed as:

$$x_j = \sum_{i=1}^n x_j^i$$

The total service x_j , is divisible amongst the different consumers x_j^i . Benefits from this type of a service are internalised (Brown & Jackson 1990:34; Samuelson 1970:179-180). This means the owners of the service can exclude other individuals from consuming such a service and it also means that individuals enjoy the benefits from this service privately. The important factor here is private property rights. Private property rights determine who owns the service. Individuals who are not willing or cannot afford to pay for the service are excluded from its consumption. Private property rights also make it possible to exchange the service.

Characteristics of private services include that such services are:

- ◆ excludable in consumption; and
- ◆ rival in consumption.

Examples of private services are haircuts and doctors' consultations.

Telephones in houses or offices and cellphones are excludable and rival in consumption and they can, therefore, be categorised as private services. A price in the form of a basic service or connection fee is charged on these phones. Note that although any member of the community may use a public phone on the street, they can be excluded because they must pay for the service. There may also be a capacity constraint for the service and therefore rivalry in consumption. As soon as one person occupies the phone booth, it becomes unavailable to other people. The third type of service is a mixed service. The following section examines the nature of mixed services.

3.4 Mixed services

Services that possess characteristics of both public and private services are called mixed services. For example, education has a private benefit that is enjoyed by the educated individual and it also has a public benefit that is enjoyed by the community in which the educated individual is working. This is known as positive externalities (which is discussed later in this section).

As indicated earlier, the feasibility of exclusion and rivalness in consumption are two important factors that are used to determine whether a service can be classified as private or public (refer to table 3.1). In-between combinations give rise to mixed services. A service might be rival in consumption but it may be quite impossible, given unimproved technology, to exclude others from consuming such a service, e.g., West street in Durban. Or it might be non-rival in consumption while it may be possible to exclude others from consuming such a service, e.g., the N4 highway to Maputo. The analysis and consequent conclusion on whether a service is a common pool or club service can go either way, depending on the nature and other characteristics of the service in question (Herber 1971:56). A service could be a club service if its benefits are excludable in use and its consumption non-rival if full capacity is not reached, e.g., a swimming pool (Cornes & Sandler 1986:7,159-161). The theory of clubs dates back to Buchanan's seminal paper published in 1965. Club services can be shared by individuals up to a certain point, after which inclusion of more people will cause the individual benefit to decline (Buchanan 1965:1-14). A common pool service is one whose benefits are wholly excludable in usage and whose consumption is rival, e.g., water supply from

a city council. A common pool service can also be called a common pool resource (Bish & Nourse 1975:119-120).

Indivisibility in consumption exists in most services and such services can be consumed by many people simultaneously up to a certain full capacity level. This leads to the introduction of user fees that make these services partly excludable. The definition of a mixed service indicates that there is always a portion of the service's characteristic that makes it partly rival and/or excludable. Although in reality the characteristics of many services place them either towards the private service end of the spectrum or towards the public service end, most so-called public services fall under the mixed service category (Brown & Jackson 1990:79-80). The telecoms service does not fall under the mixed services category because it has been shown in the previous two sections that it is a private service.

The usage and production of services may have spillover effects on other sectors and participants in the economy. This is known as externalities. Since the externality concept may be applicable to telecommunication, it is thus necessary to discuss it in more detail.

3.4.1 Externalities

Although externalities are defined in different ways, a common definition can, however, be constructed from these definitions (Cornes & Sandler 1986:29-46). According to Stiglitz (1988:214-215) externalities are the consequences of an individual or a firm that have an effect on another individual or firm for which the latter does not pay or is not paid. The effect of an externality on individuals will depend on whether it is a negative externality (external diseconomy) or a positive externality (external economy) (both defined in the next paragraph). Rosen (1992:93) views externalities as a consequence of the failure to establish property rights. In simple terms therefore, economic gains or losses accruing to one or more economic units as a result of an economic action initiated by another economic unit are known as externalities (Herber 1971:35).

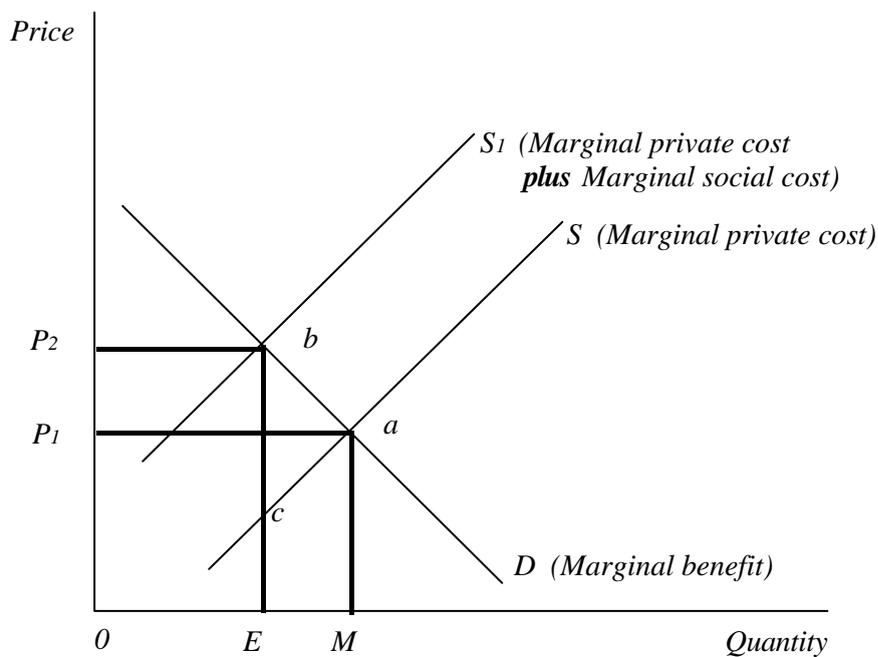
An external economy is an appreciable benefit to some person(s) who were not fully consenting parties in reaching the decision(s) which led directly or indirectly to the event that resulted in the benefit. An external diseconomy is an appreciable damage inflicted on some person(s) who were not fully consenting parties in

reaching the decision(s) which led directly or indirectly to the event that caused the damage. In these cases market prices do not reflect the social costs or benefits.

If the party that initiates the externality is a producer, he or she will be motivated by a profit goal and if it is a consumer, he or she will be motivated by a satisfaction or utility goal. An external gain for a consumer who is on the receiving end of an externality will mean that there is an improvement in the utility of that consumer. An external loss will mean a decrease in utility or reduced gains. If an external gain accrues to a producer, that means an improvement in the level of profitability is achieved. An external loss for a producer will therefore mean increased costs and/or a fall in profits. An external gain is a positive externality and an external loss a negative externality. Figure 3.1 below illustrates the effect of negative externalities on the equilibrium prices and quantities.

FIGURE 3.1

EFFECT OF NEGATIVE EXTERNALITIES ON EQUILIBRIUM



In the absence of externalities, the equilibrium level of demand and supply is achieved where the supply curve (**S**) intersects the demand curve (**D**), at point *a*. Under these conditions, the supply curve reflects marginal private costs. The efficient quantity level is **M** and **P₁** will be charged for that quantity.

The existence of externalities may change the picture. Take the case of negative externalities. These extra costs (social costs) are normally not taken into account by producers. The supply curve will therefore not reflect the marginal social costs in that instance and equilibrium will occur at point *a*. If the marginal social costs are taken into account, the externalities will shift the supply curve to the left or upwards to **S₁**. As can be seen in figure 3.1, **S₁** will then be the sum of the private cost and the social cost. The efficient quantity level will no longer be **M** but **E** at price **P₂** at point *b*. Due to negative externalities the efficiency level is pushed to a point lower than the market equilibrium. In other words, with no intervention, there will be under-pricing and over-production by the market which imply a market failure or an inefficient allocation of resources.

Similarly, the opposite reasoning shows that marginal social benefits are also not taken into account by the market. If marginal social benefits are taken into account, the marginal benefit curve will shift upwards or to the right (not shown in diagram). If marginal social benefits are taken into account the market will under-produce and under-price the good or service. There is a presumption that when there are externalities, the market equilibrium will not be efficient since the social optimum level of production will not be reached because social benefits and costs are not taken into account. The correction of externalities normally has an impact on the prices and quantities of the services involved.

The most common remedies for externalities are taxes and subsidies (Brown & Jackson 1990:41-50; Rosen 1992:105-106,112). Taxes and subsidies are used to influence the level of external economies or diseconomies. Government may give rewards, in the form of subsidies, to individuals or groups that produce external economies. However, subsidies are not a very popular solution since they can cause inefficiencies in the form of an excess burden or deadweight loss to the economy. Furthermore, they must be financed by taxes which may cause further inefficiencies. Taxes, also known as Pigovian taxes, may be levied to address external diseconomies. Such a tax should be equal to the external cost at the optimum level of output, i.e., *bc* at the quantity **E** at the equilibrium *b*.

Alternatively, according to the Coase theorem, which emphasises the clear definition of private property rights, individuals may solve the problem of externalities among themselves (Rosen 1992:105). For example, individuals may be able to sue or claim compensation if they are badly affected by externalities from other parties. It is important to note that this theorem is most relevant for situations in which a few parties are involved, thus keeping transaction costs low, and where sources of externalities are clearly defined. This is similar to the concept of pollution rights, whereby a firm can obtain the right to emit specific pollutants up to a certain level. From the above discussion, it is apparent that externalities often arise from activities of the private sector (Peston 1972:53). These activities are usually privately performed with no intention to affect other people, however, such actions may affect others negatively or positively and these costs or benefits are usually not reflected in the price.

So far the focus of the discussion of externalities has been on technological externalities. This implies that the consumption or production activities of one party affect the production and consumption levels of other parties. A distinction can also be drawn between market and non-market externalities (Rosen 1992:93-116; Stiglitz 1988:214-216).

Market externalities are those that can be priced through supply and demand. For example, the negative externality of receiving unusable water that accrues to farmers at the lower part of a river, due to people misusing the river at the upper part, can be priced based on the total loss in production as a result of not watering properly. An important aspect here is that the farmers must have the necessary rights in order to sue. In this case the set of prices in the economy is affected by the behaviour of producers and/or consumers. For instance, if other firms use firm A's output as their input, an increase in the price of firm A's output due to external effects may mean an increase in the prices of inputs used by such firms (Brown & Jackson 1990:38-39). Similarly, an introduction of communication facilities in remote areas may enhance business for other industries. Advertising and electronic sales by such industries may improve. Non-market externalities are those in which pricing and exclusion are difficult to apply, e.g., noise.

Both club services and common pool services possess characteristics of externalities. In the case of club services, people in the group or club may affect others by their actions. For example, if one person in an exclusive movie club theatre suddenly stands up and sings loudly while the movie is still showing, other club

members will be affected negatively by that action. The same effect may be noted in common pool resources. If a group of people vandalise a public hall, other people who might like to use the facility for various activities such as public gatherings, may find it unusable.

An important negative externality associated with the telecoms service is congestion, either an engaged line or a heavily congested network. As the number of people connected to a network increases, so does the level of congestion. People who are confronted with the capacity constraint in a telecoms network need to wait for the volume of calls to subside. The capacity constraint is an important factor in telecommunication because it leads to lost sales and frustration to customers. Changes in technology, e.g., advanced digital networks and smart end-user equipment, help to reduce the capacity constraint problem by offering alternate routes to messages, e.g., automatic call-backs, if lines are busy and the possibility to automatically charge higher rates during peak hours.

There are two important positive externalities associated with telecoms that are known as call externality and network externality (Vogelsang & Mitchell 1997:51). Call externalities occur when the called party benefits from receiving a call without paying for it. Network externalities occur when new subscribers join the network. Existing subscribers could benefit, without paying, from being called by the new subscribers. This is partly a call externality because existing subscribers will also have a wider scope for phoning as a result of the new entrants. Although government intervention is one of the ways to redress the externality problem, it could create its own problems. For instance, potential competitors may find it unfair to enter the market if one of the players enjoys government's financial support due to ownership or if the government imposes unfair price ceilings that benefit one of the players. The following section briefly focuses on equity, a matter that government also needs to take into account when it decides to intervene or privatise the telecoms industry.

3.5 Equity considerations

A market economy may not lead to an equitable distribution of income and wealth. Equity refers to the distribution of a country's income and wealth between all members of the population. An inequitable distribution of economic resources may not be acceptable to society and usually requires government

intervention to promote equity. Equity is usually promoted through taxation and government expenditure programmes. Arthur Okun noted that conventional economic theory holds that there is usually a trade-off between equity and efficiency (Terreblanche 1992:548-552). This view, however, is not supported by everyone. Jackson (2000) shows that some developed countries have been able to achieve high growth and low unemployment without sacrificing the objective of social equity. This may, however, not necessarily be the case in developing countries. This dissertation adheres to the conventional approach because developing countries face high levels of poverty and unemployment. This implies that efforts by government to address either equity or efficiency will have to take the possibility of a trade-off between equity and efficiency into account. Government will therefore have to find some kind of a balance between equity and efficiency.

In South Africa there are large imbalances in the distribution of income and wealth which make the redress of equity an important issue. Although there has been improvements in recent years inequity is still a problem. The legacy of apartheid is an important reason why the majority of the South African people did not in the past get access to proper education, skills development, small business opportunities and stable income-earning jobs. It has to be noted, however, that over the past couple of years distribution has become skewed even among the disadvantaged groups. This makes it difficult to analyse the distribution only in terms of advantaged and disadvantaged groups of the past. It may require that government policies should be targeted more to address the needs of the poorest of the poor. The Gini coefficient, with a scale of 0 to 1 (with 0 indicating absolute equity and 1 inequality) is a measure of income distribution in a country. The Gini coefficient is currently approximately 0,69 for South Africa (*Wharton Econometric Forecasting Associates -WEFA* 2000). The calculation of this coefficient is based on the u-shaped Lorenz curve, $y = L(x)$, where x is a percentage of the population in a country, starting with the poorest working upwards in terms of income, and y is the percentage of total income that population x receives (Richardson & Felkel 2001:1-11).

The trade-off between efficiency and equity may imply that it might be necessary to give less attention to the equitable allocation of resources at certain times in order to enhance the efficient allocation of resources and to promote economic growth or *vice versa*. Depending on the immediate needs of a country, either a sacrifice for one factor in favour of the other may be made or rather a balance have to be found between the two factors, because emphasizing only one factor may have negative effects on the economy (Smith &

Stone 1988:248). It has to be emphasized that striking a balance is not so easy because the full implications of redistribution policies may only be determined afterwards. It could, for example, have negative implications on work effort and savings. This may require a careful consideration of policies of promoting equity, also with regard to privatisation.

Government may raise capital in the financial markets for various reasons, such as to finance capital formation, to pay debts, to supply social services to the public, to finance its operational costs, etc, while there may also be a need to improve the well-being of the poor. Note that the term “poor” is broadly used here to cover low-income earners and no-income earners. Privatisation is one method to raise capital. If privatisation is also used to promote equity, one way of doing this may be to allow low income groups to purchase shares at a discount. The question then becomes how much discount can be allowed? Even at very low prices in an economy like South Africa, where most of the people are poor and the distribution of income and wealth is not equal, it may be unrealistic to expect the poor to be able to buy shares. Government may therefore find it difficult to raise the required capital while simultaneously ensuring that low-income groups can still have access to the shares distributed. If shares cannot be sold to low income groups, the implication is that high income groups will become the shareholders of the newly privatised company.

Therefore, if one of the aims of privatisation is to promote equity, a better solution may be to use some of the proceeds from the sale of state-owned enterprises (SOEs) to address the social needs of the poor. Proceeds may, for example, be used to reduce the country’s debt which may create fiscal scope for higher social expenditure. The most important tool at the disposal of government to enhance equity and to meet the social needs of the poor is the **National Budget**. Taxes may not be the best way of addressing equity due to disincentives they may cause. Public expenditure may be a better tool to address the social needs of the poor. Examples of such social expenditure are expenditure on education, skills development, housing, social security and healthcare. When government expenditure is used as a distribution tool, government should be careful not to increase expenditure on administration costs excessively, such as bureaucrats’ salaries for example, because this may imply that less funds are available to address the needs of the target groups. The increase on expenditure should be on actual service delivery to benefit the poorest of the poor.

Although surveys of recent studies done in developed countries suggest that inequality has not increased

significantly during the past two decades or more, this finding may not reflect the situation in developing countries where income and wealth distributions are still largely skewed (Jackson 2000). In fact Olinto and Deininger (2000) found that inequality was still hindering growth and required the attention of policymakers in many countries.

3.6 Natural monopoly theory

The discussion now turns to natural monopoly in order to identify whether the telecoms industry is still a natural monopoly or not, as has been the belief for many years. This will indicate whether the developments in technology provide scope for privatisation or not.

Decreasing cost conditions and imperfect markets are arguably the most important reasons for government intervention in telecoms and require a detailed analysis. In this section the aim is to directly answer the question stated in section 3.1; whether the telecoms industry is a natural monopoly or not? This is performed through analysing the natural monopoly theory as well as the public utility concept and apply them to the telecoms industry.

3.6.1 Monopoly and natural monopoly defined

One of the very first papers to discuss monopoly was written in 1838 by Augustin Cournot. In his discussion he used a downward-sloping demand curve facing the seller. Jules Dupuit also made a contribution by explaining the notion of price discrimination in 1844. Price discrimination was made popular in 1938 when Harold Hotelling discussed it in his paper on taxation and utility. Price discrimination commonly refers to the three pricing options that can be used by monopolists (discussed later on in this subsection) (Rosen 1992:338-339; Miller & Meiners 1986:381-388). According to Sharkey (1982:13-16) other authors have since developed the monopoly theory further.

Imperfect competition consists, *inter alia*, of monopoly and natural monopoly. Although the focus of this study is mainly on natural monopoly, a brief explanation of each case is provided because the evolution of the telecoms industry may cover both cases. A market is a monopoly if there is only one seller (Sharkey

1982:2). Koutsoyiannis (1979:171) adds that there must be no close substitutes to the service provided and there must be barriers to enter the market. This is also known as artificial or statutory monopoly. A natural monopoly is, however, characterised by huge economies of scale, i.e., decreasing average costs, and subadditivity (Berg & Tschirhart 1988:21-33; Griffith & Wall 1997:177). Subadditivity implies that a single firm's (i) production cost $C(q)$ is less than the production costs of two or more firms (j) for the same output.

$$\frac{C(q^i)}{q^i} < \frac{C(q^j)}{q^j}$$

This simple cost function for two firms indicates that the production cost of firm i is less than that of all other firms j . This function may be modified further. A cost function is subadditive if:

$$\frac{C(q^i)}{q^i} \leq \sum_{j=1}^m \frac{C(q^j)}{q^j}$$

This implies that costs will be lowest when there is only one supplier. Note that this function represents one firm on the left and many firms on the right. The high costs involved and the fact that only one institution is required to operate means that there is room for government to intervene in the market because it may be either too costly for private companies to operate here or one firm may be making excess profits. This is one explanation why telephone industries were largely owned by governments. Although economies of scale and subadditivity are necessary and sufficient conditions to constitute a natural monopoly, other conditions such as the type of market that exists and the nature of demand in the market should also be taken into account before labelling an industry a natural monopoly. However, these other factors carry a lesser weight. The following section discusses factors that cause monopolies and natural monopolies and explains how imperfect markets operate.

3.6.2 Causes and operational aspects of monopolies and natural monopolies

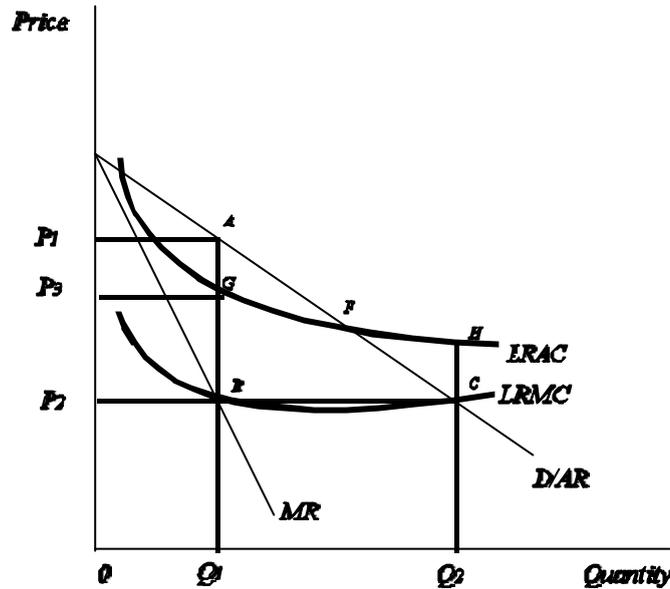
There are several factors that give rise to monopolies and natural monopolies (Koutsoyiannis 1979:171-175; Bish & Nourse 1975:120-136). These can be listed as follows:

- ◆ Ownership of strategic raw material, e.g., an oil well.
- ◆ Patent rights for a product or production process.
- ◆ Government licensing or imposition of foreign trade barriers to exclude competitors.
- ◆ The size and nature of the market may be such that no more than one plant can be supported and costs of entry for new firms are high.
- ◆ Existing technology might exhibit large economies of scale which require one firm if they are to be reaped fully.

For the purpose of this study the last two factors are the most important because they give rise to a natural monopoly. If such a factor later ceases to exist, then the monopoly may disappear over time. For example, existing technology may be such that various companies may be able to operate simultaneously in the industry and share existing infrastructure. This may open up the market for other competitors and may put an end to the monopoly situation. This, of course, will depend on whether there are enough incentives for other firms to enter the industry.

A monopolist can have decreasing, increasing or constant marginal costs. The focus here is on decreasing costs because that is what constitutes economies of scale and is a precondition for a natural monopoly.

FIGURE 3.2
NATURAL MONOPOLY



Marginal analysis may not be suitable for telecommunication due to price discrimination. A telecoms firm may charge different prices for the same service, e.g., there might be a difference in tariffs for firms and households (Glahe & Lee 1981:329-336). However, it is necessary to use the marginal analysis to clearly explain the long-run equilibrium under natural monopoly in general and why government intervention may be necessary. The analysis of pricing and output under natural monopoly is discussed with the aid of figure 3.2.

In terms of marginal analysis, point C complies with the requirements of an efficient allocation of resources. The reason being that price is equal to marginal cost ($P = MC$) (see section 3.2). Quantity Q_2 is therefore the efficient level of output. A profit maximising monopolist will choose to produce at B, where marginal revenue (MR) equals long-run marginal cost (LRMC) at price P_1 . As mentioned earlier, this is not an allocative efficient level because price (P_1) is not equal to marginal cost ($P \neq MC$). Furthermore, the output

level (Q_1) is also lower than the efficient level (Q_2). The monopolist is able to operate at this level because there is no competition and it is able to set its own price and make excess profits. In this case excess profits are $P_1 - AG - P_3$.

At point C the monopolist will, however, be making a loss because it is producing at a level where the LRMC is lower than the long-run average cost (LRAC). To produce at this optimum output level some form of government intervention may be necessary. Government intervention may consist of setting price floors and ceilings, subsidisation and regulation. Since point C is an efficient point, government may want to intervene and maintain this price by setting the price level at P_2 . In such a case government will have to subsidise the monopolist to stay in business. The subsidy should be CH multiplied by Q_2 . Another option is to let the monopolist produce at point F because at this point the monopolist will break even. However, some efficiency will be sacrificed at that point because price will be above the efficient level and quantity will be below the efficient level. The problem with this geometric analysis is that in reality information of this nature, i.e., identifying point F, may not be so easy to determine for decision makers, e.g., government. It may take a long time to gather the necessary information and it may also be expensive. Any quantity produced on the right-hand side of point F will enhance efficiency but will be produced at a loss and that may require government assistance which may be in the form of subsidies and/or other interventions to ensure that the company is in line with market requirements (Glahe & Lee 1981:347).

When compared to a competitive firm's price and quantity (P_2 and Q_2) the natural monopoly will produce a lower quantity at a higher price than would be the case in a perfectly competitive market. Because of lack of competitors, the firm is able to select a price-quantity combination where total cost is less than total revenue and therefore will be able to make excess profits and not normal profits. Government may therefore consider the introduction of regulation to force the monopolist to reduce its price.

Monopolies can use various pricing options in order to recover their loss if they are forced to produce at a position where average cost is greater than marginal cost (Rosen 1992:338-339). The first pricing option is third-degree price discrimination, also known as a two-part tariff, in which an initial lump sum is charged to gain access to the service and then a subsequent price equal to the firm's marginal cost is charged for each unit of service consumed. This is a very common pricing method for telecommunication institutions. The second pricing option is the second-degree price discrimination which entails charging successively

lower prices as more of a service is purchased. The third pricing option is the first-degree price discrimination which involves charging each buyer the maximum amount that they would be willing to pay (Miller & Meiners 1986:381-388).

The natural monopoly arrangement (illustrated in figure 3.2) therefore leads to a misallocation of resource or allocation inefficiency. The area P_1ACP_2 represents consumer surplus that will be lost. Consumer surplus is the difference between the price that a consumer is willing to pay and the price he/she actually pays. The area P_1AGP_3 is transferred to the monopolist as increased profits and excess profit. The area ABC represents a deadweight loss because the monopolist produces a lesser volume and charges a higher price compared to a company that operates under perfect competition. The area BCQ_2Q_1 represents resources that will be transferred elsewhere. From an efficiency perspective it may be argued that government intervention is necessary to deal with this misallocation of resources. However, that does not imply that government has to own and operate the natural monopoly.

In most cases the network-based industries which are presumed to have natural monopoly characteristics, such as electricity and telecommunication, are referred to as public utilities. It is necessary to analyse this concept in order to determine whether telecommunication can be classified as a public utility. The term public utility is generally accepted through popular usage rather than by precise definition. In practice public utilities may be operated by institutions in the private sector or by government. Services provided by utilities are mainly primary inputs, i.e., they are used to process other consumer goods and services, they cannot be stored by consumers and they are normally required at fluctuating levels (Wallis 1983:3-4). Most services produced or provided by public utilities have private service characteristics. Public utilities are further characterised by the high usage of capital-intensive methods of production.

According to Phillips (1984:4-8) public utilities can be divided into **two categories**. This division is particularly legitimate in the South African scenario because examples of both categories are found. The first category comprises those services which are supplied repeatedly, directly or indirectly, through more or less permanent physical connections between the plant of the supplier and the home of the consumer. This category includes services such as electricity, natural gas, communication services, water and sewage.

The second category is usually provided by transportation agencies. This was especially true in the olden

days when the main means of public transport in many countries was provided by government, e.g., railways. The fact that characteristics of this market usually required a single institution to operate, led to government involvement because competition was lacking. There were not too many private parties that owned or used mechanical transporting facilities as compared to nowadays. These days private institutions are able to participate in the creation of road networks and in the provision of transport for the general community. Strategies like build-operate-transfer (BOT) have been introduced in South Africa to ensure the participation of private institutions. For example, private institutions may provide roads and finance such projects with the aid of toll fees.

Public utilities differ from other industries in several ways. Three of these differences are discussed in the following subsections in order to relate the telecoms industry to the public utilities.

3.6.3 Public utilities as natural monopolies

Public utilities tend to be natural monopolies and as such do not comply with allocative efficiency requirements (see subsection 3.6.2). According to Buchanan (1970:450-452) the market cannot supply public utilities services efficiently due to the specific physical characteristics of such services. Most public utilities require large and costly networks to operate. The technology that existed, the market conditions and the huge sunken costs that were involved led to a market failure that induced government to become involved in the provision of public utilities. Up to the early 1970s it has been a general norm throughout the world for government to own and operate telecoms firms (Buchanan 1970:450-452). This phenomenon also contributed to the worldwide state-ownership of public utilities. Governments sanctioned and even created laws to protect such government-owned enterprises. Many public utilities were given a guaranteed and protected right by governments to operate in a country.

Government ownership of public utilities, particularly telecommunication, has also been associated with government control of the regulatory entity for the sector. In most instances the regulatory entity was formulated as part of the government's department of communication. This has caused problems with regulatory entities being ineffective and manipulated by government, hence the growing need today to rebuild regulatory entities and introduce independent institutions when government decides to privatise. Government regulation of utilities may also be required to smooth out conflicts between private firms and public interest.

3.6.4 Public utilities and public interest

There is a high level of public interest attached to the services rendered by public utilities. Most people usually need postal services, electricity, water and sewage, communication services and transport on a daily basis. The quality of these services has a direct impact on the living condition of individuals. These services have private service characteristics. Benefits from the services of public utilities are almost completely divisible among users implying that non-payers can be excluded. This is then also acknowledged by the pricing and the continuous evolution of such services.

3.6.5 Public utilities and current developments

There is a great deal of outsourcing, sub-contracting and regulation of public utilities as a result of the conflict that arises between the basic objectives of private firms to maximise profits and the interest of the general public. This factor is not so severe in developing countries where most public utilities are not yet fully privatised. In many cases government owns almost 50 per cent of shares and therefore still has a significant control or influence on the firms. It is assumed that the government has the interest of the general public as a priority. Thus fewer conflicts are anticipated.

With regard to telecoms it is indicated in chapter two that developments in technology have made it possible to subdivide a telephone network into different segments or subsectors, e.g., switching equipment, transmission, access to network and customer premises equipment. A network is divided into identifiable productive units that can be managed and operated independently by different institutions. This is vertical segmentation as opposed to horizontal segmentation. Vertical segmentation refers to the situation where different firms operate in each of the subsectors of a telephone network, while horizontal segmentation occurs when different firms operate in the same subsector. This then makes it possible for more firms to operate in the telecoms industry instead of just one firm. The nature of firms that control the different segments may vary. Some firms might be competitive and others might be monopolists. It follows therefore that segmentation has reduced the cost of infrastructure significantly in the telecoms industry because firms can specialise in smaller units within the industry. This renders the subadditivity argument invalid in the telecoms industry.

In terms of the categories of public utilities, telecommunication falls under the first category, *viz.*, supplied repeatedly, directly or indirectly, through more or less permanent physical connections between the plant of the supplier and the home of the consumer. The telecoms service is indeed supplied directly to the consumer through a permanent connection between the local exchange or base station and the user equipment (see chapter 2). This brings into perspective the general acceptance of the industry as a public utility. Telecommunication as a public utility has more private service characteristics than public service characteristics (as defined in section 3.3). Note that services of public utilities are divisible in nature and hence excludable while public services are indivisible in nature and therefore non-excludable (see subsection 3.3.1). This, however, does not restrict provision of the public utility's services to the private sector only, either the public or private sector can provide telecommunication.

Most telecoms firms were, until a decade or more, fully owned by government. Governments controlled and owned or sanctioned monopolists providing voice telecommunication services. Issues like market failure, allocation efficiency considerations, the technology that existed and high costs resulted in governments stepping in to provide the telecoms service to the public. The situation has changed significantly. Results from two sets of econometric studies can be used to substantiate this statement.

The first and earlier set of econometric studies of the telecoms industry intended to determine the presence of economies of scale using scale elasticity, which is the ratio of percentage change in output resulting from a given percentage change in all inputs. A scale elasticity that equals unity corresponds to constant returns to scale, where the cost per service does not decrease as the entire industry expands in size. A scale elasticity of greater than unity corresponds to substantial economies of scale and tends to support the natural monopoly argument. A common finding of the econometric studies has been an elasticity which is slightly more than unity, confirming the fact that telecoms firms are still showing a slight inclination towards natural monopolies (Chistensen; Cummings & Schoech 1983:27-53).

The second and latter set of econometric studies of the telecoms industry intended to determine, among other things, the presence of subadditivity and economies of scale using various cost functions of the telecoms industry. As mentioned earlier, subadditivity and economies of scale are necessary and sufficient conditions to constitute a natural monopoly. A common finding of these econometric studies has been that the cost functions do not show subadditivity and in some cases increasing average costs were exhibited (Cubukcu

2000). The studies confirmed that telecoms firms are not natural monopolies anymore. The one significant factor that is still aiding them to remain large is government licensing and the imposition of trade barriers. Therefore, due to the size of telecoms firms, regulation is necessary in the industry.

Technological changes, especially in switching and transmission facilities, and government intervention to compel existing firms to share facilities are making it possible to introduce competition in the industry. This also highlights the important fact that although they remain large institutions, it is feasible for government to relinquish its ownership and control of telecoms firms to the private sector. It is therefore possible to argue that telecoms firms are no longer natural monopolies, but have become artificial or statutory monopolies. This view is supported by the fact that most fixed line telecoms firms still have large capital outlays, which, in turn, strengthens the case for government regulation in the telecoms industry.

The fact that new entrants into the market normally use the existing networks, satellites, and in some cases, base stations for their service provision may be a cause for concern when full capacity is reached because the original owner(s) of such devices may have or acquire monopoly power and control that may be harmful to other participating firms. Nonetheless, this sharing of facilities makes it important and necessary to retain and upgrade existing facilities and networks. Furthermore, although the decreasing costs of satellites is making it possible for private institutions to use satellites and transmit signals without ground networks, there are other complications such as the finite orbit positions and frequency bands available which may be a barrier to operating satellites (Hegener 2002). Therefore, government intervention in the market is required to compel market incumbents to share their facilities at reasonable costs, limit the number of participants to prevent or reduce bankruptcy, deal with allocation efficiency and introduce competition.

From the above discussion, it follows that market failure, caused mainly by large network set-up costs, decreasing cost conditions and imperfect markets contributed to government intervention in telecoms markets and its ownership of telecoms firms. The ability to introduce competition, as was made possible by changes in technology, and the possibility of one or a few new entrants to monopolise the industry through bypassing terrestrial networks and use satellites, has created further scope for regulation by government. Government must use regulation to ensure that existing institutions are not rendered bankrupt by new entrants in the market who may find it cheaper to enter due to low or no infrastructure costs.

Although it is acknowledged that there is still a need for government intervention in the telecoms industry, technological developments have changed the focus for government intervention. Prior to changes in technology, the reason for government intervention was due to the natural monopoly characteristics of the industry and therefore to promote efficiency. The development of technology like satellites and cellular telephones, made competition possible by enabling private sector institutions to either bypass or jointly use existing networks and thus making it easier to participate in the industry. Besides allocation efficiency reasons for government intervention that may exist today, the focus of government intervention into telecoms markets is also largely aimed at:

- ◆ protecting market participants; e.g., by ensuring that all firms in the market operate in good faith;
- ◆ protecting consumers from any unfair operation that may occur in the telecoms industry rather than supplying the telecoms service; and
- ◆ ensuring that competition occurs.

Therefore, it is crucial that an efficient regulation policy is designed in order to ensure that competition is encouraged and that firms do not become monopolies. Regulation procedures may differ from country to country due to specific circumstances. Direct or indirect regulation can be used. When direct regulation is used laws and standards are imposed on firms. Indirect methods are introduced to firms *via* the market mechanisms. For example, government may delegate the monitoring of institutions to private professional accounting or law firms. However, any intervention into the telecoms industry should be conducted carefully.

As seen in figure 3.2, before privatisation the firm's equilibrium level may be at A, C or at F depending on the availability of information. In such situations both government involvement and company restructuring may be required when embarking on privatisation. The latter may involve trimming the existing staff, a very contentious issue that government should employ very carefully in order not to be challenged by trade unions (this issue is discussed further in section 5.2).

The following are some of the measures that may be taken into account in an attempt to achieve an efficient regulation policy:

- ◆ Facilitating the gradual introduction of entries into the market in order not to jeopardize competition

or bankrupt existing companies in the short run.

- ◆ Supervising market operations to ensure that set standards are met.
- ◆ Ensuring that all communities benefit from activities of telecoms markets.
- ◆ Ensuring that a competitive environment is created.

In the case of the telecoms industry, government intervention must try to limit uncertainty for participants and ensure that the welfare of consumers is not jeopardised.

The production and provision of different types of services are discussed in the next section in order to reinforce the case for private provision. As discussed in subsection 3.3.2, the telecommunication service is a private service and as such can be provided by either the public or the private sector. Although public provision may cause inefficiencies such as political interference and huge subsidisation, it is necessary to discuss public and private provision in order to determine which sector is the most appropriate to provide the telecoms service.

3.7 Production vs provision of public, private and mixed services

It is essential to realise that the provision of a service by an institution does not necessarily imply that the service should be produced by such an institution. Production of a service is the actual process of creating that service, e.g., generating electricity, while provision refers to bringing the service to the users, irrespective of who produced it, e.g., distributing electricity to the final consumers.

According to Stiglitz (1988:199-201) two main differences between enterprises in the private sector and those in the public sector are that bankruptcy and competition occur in the private sector. Government-owned institutions are usually not subject to competition and usually do not need to worry about the threat of bankruptcy, since it is more than likely that government may provide financial support if this may occur. The possibility of bankruptcy provides a limit to the level of losses that can be allowed by an efficient management and therefore a budget constraint may be more real on enterprises in the private sector. This serves as an incentive for efficiency. If a firm is listed on a stock exchange, shareholders will also put pressure on management to generate profits. Contrarily, government-owned enterprises often run large deficits over long periods of time. This may put pressure on government expenditure because government may have to subsidise such enterprises. It may also lead to economically harmful tax increases to finance

such deficits.

Competition leads to improved internal operational procedures, such as the cutting of costs and therefore to the efficiency of private enterprises. This is normally not the case with government-owned enterprises which are seldom engaged in competition. In most cases these enterprises are large and tend to lead the market with regard to setting prices of services and other costs of production. It may, therefore, be necessary to restructure government institutions, shedding jobs in the process, to make them efficient before privatising. The efficiency levels of the private and the public sectors are of importance if the two sectors are to be compared. The following subsections focus on the provision of services by the public and the private sectors to determine whether improvements on efficiency levels have occurred and to answer the question whether the public or the private sector is best suited to provide the telecoms service.

3.7.1 Public provision

Government is viewed by many people as the production engine in the public sector. One of the four justifiable categories of governmental allocation activities, as enumerated by Adam Smith in *The Wealth of Nations*, is the duty of establishing and monitoring those highly beneficial public institutions and public works which are such that profits from them cannot be expected to repay the original expenses by individuals or small groups and as a result cannot be expected to be supplied in adequate quantities (Herber 1971:22). Government is therefore required to step in and use its powers to coerce individuals to cooperate in using services responsibly through efficient resource allocation. It is sometimes important for government to intervene because if there is no charge for the usage of a jointly-owned service, individuals tend to overuse that service. That may result in a rapid deterioration of the quality of such a service (Brown & Jackson 1990:30).

An essential decision to be taken by government is how to intervene. For example, should the service be produced under public management or purchased from private firms (Musgrave 1959:43)? The service can be made available to the consumer free of charge but financed by taxes or through cost-covering fees or user charges. This underpins the fact that any sector may choose to produce or provide any type of a service and distribute it freely or charge for it. It is obvious, though, that firms in the private sector will not survive if they embark on free distribution of services.

Some services are of such a nature that they cannot be left to private suppliers, e.g., national defence, because individuals may not reveal their true preferences. In such a case they realise that they cannot be excluded from the benefits. However, some parts of these services can be provided in conjunction with the private sector. For example, national defence equipment may be obtained from the private sector while the public sector continues to provide the service. Similarly, telecommunication can be subdivided into switching, transmission and end-user equipment and be supplied as such by the public sector. Even if different institutions (public or private) operate in each segment, it is necessary that a regulatory institution should ensure that they do not become too large and as a result threaten the existence of other institutions in other segments.

This is also reiterated by Stiglitz (1988:132) in his concern about the magnitude of the supply of public services. Niskanen's model of bureaucracy is also concerned with the size of the public sector. The model assumes that government departments or bureaucrats strive to maximise their budgets because they have an information advantage and are therefore able to demand such budget increases (Buchanan & Flowers 1987:126-130; *YUSU* 2000). Although this may lead to an excessive supply of services, bureaucrats embark on it because they want to increase their utility. According to the allocation efficiency analysis, government will only have provided an efficient level of service if the sum of the MRS's for all individuals is equal to the MRT. But in order for that to happen, individuals will have to reveal their preferences. As indicated earlier, in the case of public services individuals may not always reveal their preferences and may try to become free riders. It is conceivable therefore that it may be difficult to implement Lindahl or personalised prices for such services (*York University* 2001).

Some services can be measured directly, e.g., the number of electricity watts used, the number of units of telephone used and the number of litres of water consumed. There is difficulty in measuring other services like defence, police services and fire protection. Services that can be measured have to be supplied at a specific and direct fee because it is possible to do so. It follows therefore that it is undesirable for government to supply telecommunications free of charge because exclusion is possible. Furthermore, far too many government resources will have to be devoted to this free give-away of services (Buchanan 1970:452-461). In other words, user charges should be used to ration the usage of publicly supplied private services or mixed services. In this manner congestion or overcrowding can be avoided.

Government sometimes produces and provides services that have private service characteristics, e.g., most services provided by public utilities. These services usually have benefits which are largely divisible among users. Direct user charges may be levied because free provision of these services could lead to over-consumption and wastage. The latter is an important aspect of government intervention and can be understood from the reiteration by Keynes when he wrote that government is to do those things which are not done at all by individuals and not to do those things already done, a little better or a little worse (Herber 1971:23). According to Brown and Jackson (1990:14-15) there are two ways of allocating resources, *viz.*, the market method and the non-market method. The former uses price mechanisms and the latter, also known as the public sector method, uses rules. Although regulation may be used and sometimes necessary in both methods, it is mostly important for the non-market method.

It is very difficult to state outright which sector is most efficient with regard to the provision of telecommunication or any other type of service. There are very few systematic studies of the relative performance of the public and the private sectors. Comparisons of efficiency in these sectors should be done with great caution, because the major problem is determining comparable phenomena. Firstly, enterprises in the private and public sectors may use different business systems and they may differ in their proximity to the public. This could affect the eventual cost of the service. Secondly, inefficiencies from the public sector are often scrutinized by the press because the general public has an interest in government operations, whereas inefficiencies of the private sector are less visible to the general public eye. Share owners may, however, focus on the profitability of the company and this should promote efficiency. Furthermore, competition may also force firms to identify inefficiencies that need to be corrected.

One of the most difficult questions to answer in public sector economics is “under what circumstances will collective-governmental supply be more efficient than private or non-collective supply?” (Buchanan 1968:172). According to Gayle and Goodrich (1990:42) efficiency may imply that the rate of return expected from allocating resources to privatisation is equal or greater than the rate of return of capital in the economy in general. This reflects the opportunity cost. Since there is no straightforward or simple answer to the above question, it is suggested that the rate of return expected from allocating government or private-sector resources to supplying the service should be used as a measure of efficiency. Collective-governmental supply could be more efficient than private or non-collective supply if the rate of return expected from allocating government resources to supply a service is greater than the rate of return expected from allocating

private sector resources to supply the same service. This may be an inaccurate measure as both rates of return are based on assumptions and estimates. For comparison purposes, a brief analysis of private provision is made below.

3.7.2 Private provision

The private sector or market is a common way of supplying private services or commodities to the public (Rosen 1992:69-72). Institutions that operate in the private sector are normally competitive, thus they usually produce where price equals marginal cost ($P = MC$). The equilibrium level is achieved where the market demand is equal to the supply curve. This is the efficient level outlined earlier (see section 3.2) as the point where $MRS_{ab} = MRT_{ab}$.

A firm in the private sector may produce public services, but it will rarely provide such services without government involvement in one form or another. The market provision of a public service is likely to be inefficient as a result of the existence of the free rider problem and the non-excludability problem of public services. Private services on the other hand can be produced or provided best by the private sector. In the case of mixed services the non-excludability or non-rivalness aspects are not so strong, thus private institutions may sometimes employ mechanisms, such as user charges if it is feasible, to bypass those aspects. Government regulation may, however, be required.

As indicated earlier, technological developments such as cellular telephones, micro chips and satellites as well as government intervention compelling existing firms to share their facilities with new entrants created a scope for privatisation and competition in the telecoms industry. But since fixed-line network operators are normally large institutions with huge capital outlays, it is crucial to have a regulatory process in place to ensure that new entrants are not treated unfairly.

Private services should be provided by the private sector since it is the most efficient method and will ensure that a competitive Pareto optimal point is reached where price equals marginal cost ($P = MC$). In the case of the telecoms industry the necessary regulation must accompany private provision.

3.7.3 Views of trends in telecommunication

It is necessary to discuss views of development trends in telecommunication in order to determine the current development phase of the telecoms industry. Since the early eighties governments have been transferring telecoms industries to the private sector. The industries are normally regulated just before or soon after they are transferred because they consist of large firms which might exploit their market advantage if unregulated. In section 3.6 it is indicated that telecoms firms are no longer natural monopolies. Although developments in technology and government intervention make it possible to privatise and have competition in the industry, it is necessary to regulate to ensure that the large telecoms firms do not abuse their size. Regulation may be minimised as soon as the different companies in the industry are able to compete fairly.

In this section, two alternative views of trends in telecommunication development receive attention. These are the idealist model and the strategic model (Mansell 1993:5-10).

The **idealist model** is derived from theories that emphasise the emergence of a mature and perfectly competitive market. In such a case the following market characteristics are essential:

- ◆ There is a large number of buyers and sellers.
- ◆ Perfect information which enable parties to make rational decisions is freely available.
- ◆ There are no barriers to entry.

As its main assumption this model envisages that technical innovation and competition will erode monopolistic control of the telecommunication infrastructure and the services it supports. The intelligent network, i.e., with computer nodes distributed throughout the network to facilitate rapid adaptation capabilities to customer needs, is treated as a direct response to customer requirements. The development of such a network is expected to offer opportunities to new entrants in various segments of the telecoms industry and dilute the monopoly power, thus bringing to an end the monopolisation of the industry. According to Mansell (1993:5-10) this model further assumes that:

- ◆ information and communication services between telecommunication and computer industries will be integrated;

- ◆ intelligent networks will reduce operation costs in the telecoms industry, thereby making it easy for new entrants to operate; and
- ◆ intelligent networks will lead to profitable collaborations between firms.

The market condition in the telecoms industry suggests that most of the requirements of the idealist model have been fulfilled during the past two decades or more. It should not be ignored that new entrants in the industry may choose to use satellite communication, thereby bypassing existing networks. This may lead to bankruptcy for existing institutions and large capital outlays will have to be written off. Government intervention may be necessary to regulate the provision of fixed-line services to other firms and to ensure that no monopolisation of satellite usage occurs. Most governments are opening up telecoms industries and these developments take place under the so called managed government liberalisation approach.

The **strategic model** is based on theories of institutional change and market power. This model is rooted in theories of imperfect competition. Its main assumption is that firms deliberately employ short-run pricing strategies to achieve a long-run establishments and monopoly power in national markets. The model's argument against competition assumes that:

- ◆ the monopolist operates efficiently and pressures from competition will not lower its cost per unit of service;
- ◆ regulatory costs are insignificant; and
- ◆ the rate of technological progress is independent of industry structures so that any technological advances that might be introduced by new competitors will also be introduced by the monopolist.

The model further assumes that:

- ◆ due to market imperfections, no integration will take place between different industries; and
- ◆ technical innovation will provide a weak stimulus for competition and that will not be sufficient to prevent monopolisation

The evolution of the telecoms industry worldwide tends to comply mostly with the idealist model (McNamara 1991:89-90). Although still large, most telecoms industries in the world are forced to open up for

competition. This is mainly due to government intervention and new technologies in the telecoms industry which have altered the cost structure, creating alternatives to the monopoly that existed for many years. The merging of computers and communication technologies such as digitalisation, has placed a different perspective on the natural monopoly argument. Some changes in the industry can be attributed to the merge between computers and communication technologies and to the development of alternative transmission facilities, e.g., satellite, which made it possible to by-pass common carrier networks and as a result costs are lower (McNamara 1991:73-78). However, this does not suggest that fixed-line networks are no longer necessary because in most cases new entries into the telecoms industry use the existing networks until they are well established.

3.8 Conclusion

In conclusion it can be noted that before major technological changes took place in the telecoms industry, the following was important:

- ◆ Large costs were involved in setting up a telecoms network, showing natural monopoly characteristics. The government intervened and created a public monopoly which was responsible for all components, i.e., switching, transmission and end-user equipment, of the industry.
- ◆ The nature of the market was such that competition was severely limited or totally absent.

These were also the main reasons why telecoms firms were publicly owned.

During the past decade or more improvements in technology and government intervention have ensured that the following is realised:

- ◆ Building a fixed-line network is no longer a prerequisite to enter the telecoms industry. The use of satellite and cellular communication has seen many firms entering the industry. Setting up networks for cellphone companies do not have too many complications and may not be costly, as compared to fixed-line networks.
- ◆ There are various segments at which firms can enter the industry. (For example, there is switching, transmission and end-user equipment sectors which are all developing continuously.)

- ◆ Segmentation and the convergence of computer technology and telecommunication have reduced operation costs.
- ◆ There is no need to own strategic raw material.
- ◆ Smaller firms can enter the industry.
- ◆ The size and nature of the market encourages competition.

These points are an indication that although telecoms firms are large, it is possible to privatise and introduce competition in the industry. However, there is still a need for government regulation due to:

- ◆ the sizes of the telecoms utilities;
- ◆ the fact that fixed-line outlays must be shared;
- ◆ allocation efficiency reasons; and
- ◆ the competition required.

The liberalisation of telecoms industries has set off a boom in the number of satellites, cellphones and fixed-line network competitors. The cost of setting up these infrastructures has decreased over the past three decades due to segmentation. The convergence of information technology and telecommunication has created huge opportunities and rewards for both users and operators.

The telecoms service is therefore not only a service offered by public-sector authorities, but also a commercial service that may and should be provided by private-sector institutions on a competitive basis. It is possible, therefore, for government to transfer state-owned telecoms firms to the private sector with the necessary regulation and in the process to enhance efficiency. The following chapter looks at some examples in other countries of such transfers.

CHAPTER FOUR

THE PRIVATISATION PROCESS - CASE STUDIES OF TELECOMS FIRMS IN SELECTED MIDDLE-INCOME COUNTRIES

4.1 Introduction

The second half of the 1970s and the early 1980s saw a significant change of focus in government restructuring policies, moving from nationalisation towards privatisation in many countries (Morley 1986:124-129; Anderson & Hill 1996:1). Government-owned strategic institutions such as electricity and telecommunication companies were placed in the market and sold to private buyers. This exercise started in developed countries and was gradually adopted by developing countries.

According to Petrazzini (1995:16) telecommunication reforms worldwide have been dominated by privatisation, liberalisation and deregulation. This refers to the transfer of commercially orientated state-owned enterprises (SOEs) to private ownership or control, lowering barriers to entry in the market to allow competition and reduction of government intervention in the operation of markets, respectively. Although these factors are carried out separately, in practice they are closely related and a change in one of them affects the others.

According to Moore (1986:1-3) nationalised industries' performances are more responsive to political requirements than to the needs of their customers. Privatisation on the other hand, has created a climate in which sound business logic and disciplines can be followed. Once the firm opens up for competition in the market, its performance can be monitored continuously. Gormley (1991:4-5) cites three essential factors that must be borne in mind when making an enquiry into privatisation. Firstly, theoretical arguments and empirical research both deserve attention and debate. Secondly, the enquiry must be multi-disciplinary in nature. Emphasis should not only be put on the privatisation process, but on other affected spheres of the economy as well. Thirdly, a privatisation study should be an exercise in comparative analysis. This chapter discusses common reasons for privatisation, pros and cons for privatisation, the process of privatisation and experiences of other countries with regard to privatisation. Important lessons that may be applicable to South Africa are then drawn from these discussions.

4.2 Reasons for and advantages of privatisation

Governments embark on privatisation for many reasons (Anstee 1988:67-68; Lathan-Koening 1988:54; Leach & Vorhies 1990:23-25; Moore 1986:3; Ohashi 1987:101-110; Poole 1996:2; Savas 1987:4; Veljanovski 1987:8; Venter 1990:12). Selling state assets or SOEs can be a result of one or more of the following reasons according to the sources mentioned above:

- ◆ ***Reduce government debt*** - governments often find themselves overspending and thus incurring huge debts. This raises concerns for their fiscal viability, furthermore, institutions such as the IMF and other international bodies may also be concerned about developments in fiscal policy. Huge debts put pressure on government expenditure and taxation. The sale of SOEs can help to generate the necessary funds to reduce such debts and eventually create scope for expenditure on social services.
- ◆ ***Promote economic equity*** - if one ethnic group has been favoured by government in the past, e.g., protestants in Northern Ireland or whites in South Africa, privatisation can be used to widen the scope of share ownership. Members of the formerly disadvantaged groups, who can afford to buy shares, should be encouraged to do so. The important aspect is ensuring that these people do purchase and benefit from the shares being sold. In order to achieve that, government may set up a special unit to distribute the shares to these groups. If done properly, this will avoid benefiting the same group of people each time privatisation is performed. However, the success of promoting equity depends on whether the targeted groups keep their shares or sell them immediately after acquisition. Price movements in equity markets immediately after privatisation may influence the decision to keep or sell shares. Employees may also be encouraged to identify more with the enterprise if they own shares. An increase in the number of shares traded and shareholders that participate in the economy normally develop and improve domestic capital markets. As discussed in the previous chapter, it is likely that the poor may not be able to afford shares. In such an event government could use the proceeds of privatisation to assist the poor or those who cannot afford to buy shares by attending to social needs such as healthcare and housing.
- ◆ ***Reduce the size of government*** - over the past twenty years there has been a rethinking with regard to the role of government in a market economy and in most countries there was the general feeling that government was over-extended. One way of downsizing government is by privatising

certain state assets. This, sometimes known as the ideological reason for privatisation, also lessens the scope for political intervention in the operations of enterprises.

- ◆ ***Increase competition and economic efficiency*** - SOEs are usually accountable to parliament and not to shareholders, as a result in most cases the profit motive is not a high priority. SOEs may not have any incentive to push for profits due to guaranteed government subsidies and the ability to influence prices. This may have an impact on the efficiency levels of such institutions. Furthermore, these institutions may put pressure on government expenditure. This situation could improve if these SOEs start operating under normal competitive market conditions.
- ◆ ***Raise capital*** - privatisation can raise the capital necessary in order to reinvest in the modernising and extension of infrastructure, particularly in rural areas.
- ◆ ***Build future revenues*** - privatisation could promote the fiscal viability of government through widening the tax base and avoid having to subsidise loss-making SOEs. Government may need to restructure the SOEs before privatisation in order to attract investors because investors may not be willing to pay much for a loss-making company.

Like any other policy, the selling of state assets has its pros and cons. It involves winners and losers. All the reasons for privatisation, as discussed above, may be regarded as advantages of privatisation. Butler (1991:17-24) mentions that revenue income and greater efficiency of the enterprise can be realised as a result of privatisation. At its best, privatisation can reduce government debt and therefore government costs, introduce new possibilities of better service delivery, enhance resource allocation and improve the performance of the enterprise (Gormley 1991:3,307-309). Pack (1991:282) states that government often gets involved in services that can be efficiently produced and provided by the private sector. Privatisation can help rectify such a situation. Privatisation can also enable individuals and institutions in the private sector to participate in the provision of services. The following section deals with some of the problems of privatisation.

4.3 Problems of privatisation

Privatisation consists of several drawbacks. The process can be very slow due to numerous factors, ranging from practical implementation problems to fear of possible bad results of the process (Kirkpatrick 1989:99;

Savas 1987:277-289). Privatisation problems may arise from:

- ◆ *the privatisation concept itself*, e.g., defining and understanding privatisation. Workers, employers, the business community and government may have different conceptions of the meaning of the word privatisation. For some privatisation is the creation of a completely free market in which a dog-eat-dog, exploitation-of-the-weakest and survival-of-the-fittest situation exists. Some, e.g., workers, see privatisation as irresponsibility on the part of the government because they are concerned about losing their jobs in the process. Others see privatisation as the negation or violation of aspects denoted by their understanding of the term public, e.g., brotherhood, sharing and community;
- ◆ *failure to satisfy necessary conditions*, such as ensuring that all major stakeholders like workers, employers, business people and government are mobilised towards the privatisation process; or
- ◆ *difficulties in implementation*, such as obstacles due to a profound economic impact or potential non-delivery, e.g., buyers must pay for an enterprise that was previously financed through taxes and only people who pay, will enjoy the service. Other obstacles such as determining the value of the enterprise, deciding to whom to sell, trying to spread ownership and deciding what to do with current employees may cause problems for the privatisation process.

Summers (1994:15-16) calls the phenomenon that helps explain the slowness of the privatisation process the **privatisation trap**. Major contributors to the privatisation trap are normally power groups which benefit from the inefficiencies of public provision, *viz.*, labour unions and other bodies whose interests are protected by public production (Pack 1991:303-304). Privatisation problems are normally **financial**, e.g., correct asset valuations must be used, **attitudinal**, e.g., the attitudes of stakeholders need to be changed to ensure that they support the process, **political**, e.g., government's aim may be different from that of investors or a **combination** of these. To ensure that the privatisation is a success, it is essential to identify the possible problem areas.

Poole (1987:34-45) identifies three misconceptions about privatisation. The first misconception is that there will not be enough suppliers to permit competition. Opponents of privatisation claim that only a handful of firms will be qualified or willing to enter the field. According to them, this will lead to a monopolistic situation which is not good for consumers. As seen in the views of trends in telecommunication development

discussed in the previous chapter, there doesn't seem to be a lot of empirical evidence that supports this view. Most telecoms firms in the world have evolved or are evolving towards competitive entities and the industry is able to attract many entrants in many areas of telecommunication. The second misconception is that public utilities, like telecommunication, are still natural monopolies and they should, therefore, be operated by the public sector. But, as discussed in chapter three, it is clear that although public utilities, particularly telecommunication, remain large entities, developments in technology and government intervention, especially to foster infrastructure sharing, has ensured that it is possible to privatise telecoms firms and introduce competition in the industry. Note that although it is possible to introduce competition, there is still a need to regulate the industry. Lastly, opponents of privatisation propose that public services should be provided with a non-profit motive. But this proposal excludes competition and is the cause for SOEs to perform poorly.

Government therefore needs to embark on a careful analysis of the privatisation environment in order to solve the problems arising from the privatisation process. The following actions may be helpful in that endeavour.

- ◆ Government needs to educate all people involved about the meaning, merits and demerits of the privatisation process.
- ◆ Accredited accounting firms or investment banks must be employed to value the earmarked enterprises.
- ◆ Bidders must be assessed fairly in order to determine if they meet government requirements.
- ◆ Earmarked beneficiaries must be clearly identified.
- ◆ Employees may be transferred to other government institutions if possible or transferred to the private sector as part of the privatised institution. They may also be given options to buy portions of the privatised institution.

4.4 Barriers to privatisation

According to Poole (1987:34-45) real barriers to privatisation require stricter attention, otherwise they can prevent the transfer of public assets to the private sector. Real barriers can be listed as follows:

- ◆ ***Misleading cost accounting*** - a comprehensive accounting system that includes overhead, retirement and capital costs should be used when valuing state assets in order to avoid any misunderstanding between government and potential investors.
- ◆ ***Fear of corruption*** - open and clear-cut bidding procedures may ease the fear of corruption of investors. The bidding procedure and process should not be secretive but be transparent and made available for inspection to interested parties.
- ◆ ***Fear of job losses and unemployment*** - the public sector is often overstaffed. It is often necessary to reduce the number of workers during privatisation to enhance efficiency. Many people may lose their jobs in this process. As a solution, one of three things can be done to remedy the situation. Firstly, the company taking over may be required to give preference to the workers displaced during the privatisation process. Secondly, although this is a temporary and unsatisfactory solution, different phases may be used to introduce the privatisation process in geographical areas so as to allow displaced workers to seek work in other unaffected areas. Thirdly, workers laid off may be given a chance to own stakes in the enterprise by allowing them to bid for contracts or buy shares. Note, however, that the first two suggestions may not be easy to implement because investors may not be willing to buy a company that they cannot restructure. It is very difficult, if not impossible, to restructure without trimming down on staff.
- ◆ ***Legal prohibitions and regulatory problems*** - any explicit legal restrictions that may be problematic in the privatisation process, e.g., existing statutes, should be amended or removed. Regulatory measures should not cause problems to the newly privatised enterprise by, for example, prohibiting it to adapt to market conditions. Also, if not well regulated, the large telecoms company may exploit its position in the market.

4.5 Process of privatisation

The process of privatisation is generally lengthy and very complicated. There are four broad phases that must be considered in the process (Marston 1987:67-76; Hanke 1987:216-219; Grimstone 1988:11-15), *viz.*:

- ◆ preparing for privatisation;
- ◆ implementing a privatisation programme;

- ◆ monitoring and enforcing agreements; and
- ◆ enforcing laws and regulations and monitoring end results.

Different countries have different ways of applying policies in these phases. Several activities may occur within each phase. In the following paragraphs each phase is discussed.

The **preparatory phase** of privatisation is the most important because it can determine whether the privatisation process will be successful or not (Marston 1987:67). An economic environment that is conducive to privatisation must precede everything. A conducive environment is one in which the four major groups, *viz.*, political leadership, citizens of a country, labour unions and the business community, are educated and mobilised to ensure that the privatisation process is successful. Note that resistance of any of the groups to government's privatisation proposal during the mobilisation and education process should not necessarily be regarded as an indication of readiness of a country or the outcome of privatisation. It should merely serve as an indication to government that more effort is required in the mobilisation and education processes. Note that not everybody will buy into the privatisation process. The important aspect is that the major groups need to understand the obligations, opportunities and risks involved in the privatisation process.

Well-trained specialists must be selected to handle the process. Targets that minimise difficulties and guarantee success, as opposed to those that sustain large losses, must be opted. For example, it would be unwise to select a bidder that is not financially sound because such a bidder may not be able to operate the business. It is also important to implement privatisation when the economic environment, *e.g.*, the performance of the financial markets, is favourable. According to Lawson (1988:3) it is sometimes necessary to embark on new radical developments, such as business restructuring, commercialisation and corporatisation, in order to prevent monopoly exploitation and to reinforce commercial disciplines when privatising. A well-prepared privatisation process will not only raise cash, but can be an engine for social and macroeconomic change (Grimstone 1988:11).

The preparatory phase in some countries involves changing the telecoms firm so that it is suitable to operate competitively or on a commercial basis in the market. User charges, commercial accountability and performance objectives are usually introduced. The government-owned institution is modified to operate under market principles. This process is known as commercialisation. During this phase the management

and operating methods of the institution may be changed significantly.

The **implementation** of privatisation is the actual process of selecting a buyer or buyers and allocating the government assets to them. Governments normally have lists of criteria, based on the objectives of privatisation, against which they check all applicants. The decision to sell stakes to bidders or shares to the public in a public offering needs to be made. The qualifying investor(s) or affording buyers are then granted the contract or shares. All agreements should be **enforced and monitored** by an independent party, such as an investment bank. The implementation process should be kept as transparent as possible.

During and after the implementation process all applicable **laws and regulations** that are in place should be checked and/or modified, if necessary, to ensure that they govern and protect the privatisation process. This may also mean that government should put a specific body, such as an independent regulatory authority, in place and charge it with regulating the industry to ensure that competition is achieved, company power is not abused, consumers are protected, operational standards are met and special government requirements are fulfilled. The after-effect should be monitored so that necessary corrective measures can be implemented if deemed necessary.

Marston (1987:68-69) identifies fourteen “logical” decision points, as outlined in table 4.1, such as, assessing the political situation, creating private sector coalitions, developing strategies, evaluating the business, evaluating candidates, etc., that must be dealt with before the privatisation process is launched. Moore (1986:18-21) also mentions some of these points in his discussion of typical steps for privatisation. Note that these points only serve as a checklist of key questions that are likely to be asked. There is no single model for achieving success when privatising and there is no ideal privatisation model that can be used in all situations (Cowan 1987:18-21). Privatisation processes differ from country to country due to project size, political sensitivity, investor interest and the complexity of the privatisation objectives (Grimstone 1988:17).

In simple terms, the possible step-by-step process of privatisation that can be deduced from these decision points is the identification of objectives, company selection, preparation for privatisation, asset revaluation, preparation of sales guidelines, sales announcement and promotion, bid evaluation, authorisation and legal requirements, transfer of assets, enforcing laws and regulations and after-transfer monitoring.

The next two sections look at prominent economic indicators of Chile, Malaysia and Mexico in order to get a better picture of the type of countries used in the case studies as well as of the general characteristics of these middle-income countries. Section 4.8 examines telecoms privatisation in Chile, Malaysia and Mexico and draws some lessons that may be useful in the South African situation. The choice of these countries stems from the fact that their economies are more or less comparable to that of South Africa in terms of the stage of development and telecommunication ownership prior to engaging in telecoms privatisation and the similarity of privatisation objectives.

TABLE 4.1**PRIVATISATION DECISION POINTS**

No	Decision to be made	Note(s) on each decision
1	Organise for privatisation	<ul style="list-style-type: none">- define objective(s)- feasibility study- identify needs, opportunities and prerequisites
2	Assess political situation	<ul style="list-style-type: none">- impact on labour unions and local business- outside or foreign interest
3	Create private sector coalitions	<ul style="list-style-type: none">- communicate the process to business community and individuals
4	Develop strategies and guidelines	<ul style="list-style-type: none">- content and form of administrative guidelines
5	Policy review	<ul style="list-style-type: none">- review the privatisation policy for a specific privatisation action- organisational mission and objective
6	Organisational survey	<ul style="list-style-type: none">- staffing- operational procedures- equipment and facilities
7	Business evaluation	<ul style="list-style-type: none">- extent of industry reorganisation required
8	Strategic analysis	<ul style="list-style-type: none">- one or more privatisation option(s)- possibility of competition
9	Estimate value	<ul style="list-style-type: none">- costing method- outline fair value
10	Issue condition and solicitation for transfer	<ul style="list-style-type: none">- seek professional advice- consider legal and constitutional requirements
11	Evaluate and select successful bidder	<ul style="list-style-type: none">- base selection on advice and objective(s)- sustainable business under private ownership
12	Negotiate and execute transfer	<ul style="list-style-type: none">- method of sale- method of payment
13	Establish regulatory and oversight mechanism	<ul style="list-style-type: none">- regulation procedures- custody of regulation and independency of regulator
14	Monitor performance	<ul style="list-style-type: none">- implementation of competition policy- special projects and delivery deadlines

Source: Marston (1987:68-69)

4.6 Prominent economic indicators of Chile, Malaysia and Mexico

Table 4.2 below uses selected indicators to compare South Africa, Chile, Malaysia and Mexico. The four countries included in this table are developing countries and all of them experienced certain forms of political problems, exchange rate problems and problems with economic growth in general. Note that Mexico is slightly ahead of the other countries in terms of its developmental phase (see section 4.7). It is difficult to isolate the effects of privatisation on these economies because privatisation in these countries was part of broader economic reform.

An analysis of the economic development of each country from 1980 is made. The table shows government debt as a percentage of Gross Domestic Product (GDP), average real GDP percentage growth, average inflation per year, telephone lines per 1000 population and the percentage share held by government in the main fixed-line telephone company as comparison indicators. The years used in the table are deliberately selected to represent the era prior to privatisation and after privatisation and not necessarily to focus on recent levels. Note once again that the changes in government debt as a percentage of average real GDP growth, GDP and inflation are influenced by more factors than only privatisation. The following can be noted from the table:

- ◆ During the period 1982 to 1992 government debt as a percentage of GDP decreased substantially in Chile, Malaysia and Mexico. Although privatisation helped to reduce public debt in these countries, there were other important expenditure in all four countries, e.g., financing their democratic evolutions, that they had to deal with during the period 1980 to 1998. Chile and Malaysia experienced increasing total debt as a percentage of GDP after 1992 while Mexico and South Africa experienced falling debt.
- ◆ Although it is difficult to quantify them, positive benefits from privatisation may be evidenced by the growth in average real GDP in all the countries.
- ◆ Although levels differed, the rate of inflation came down during the post-privatisation era.
- ◆ Privatisation contributed to the increase in telephone lines per 1000 population and the decrease in government ownership of telecoms firms. By 1998 the Chilean and Mexican governments had already sold more than 50 per cent of their telephone companies while Malaysia and South Africa had about 70 per cent of their telephone companies still owned by government. As indicated earlier

(chapter one, subsection 1.2.1) this analysis focuses on the privatisation of point-to-point, fixed-line voice telecommunication. The exact figure for telephone lines per 1000 population for 1980 is not available from Telkom, the South African fixed-line telephone company, because the land was segmented during the apartheid regime, into the so-called independent states Transkei, Bophutatswana, Venda and Ciskei or the TBVC states. The calculations for telephone lines per 1000 population are estimates based on the total lines and total population during the period under consideration.

TABLE 4.2**COUNTRY COMPARISON USING SELECTED INDICATORS**

Total debt as a percentage of GDP	<u>1982</u>	<u>1992</u>	<u>2002</u>
Chile	71	46	63
Malaysia	49	34	43
Mexico	50	31	24
South Africa	31	39	24
Average real GDP growth rate	<u>1982-1992</u>	<u>1992-2002</u>	<u>2002</u>
Chile	6,8	5,0	2,1
Malaysia	6,3	5,3	4,2
Mexico	1,9	3,2	0,9
South Africa	1,1	2,7	3,0
Percentage change in consumer prices	<u>1982</u>	<u>1992</u>	<u>2002</u>
Chile	9,9	15,4	3,0
Malaysia	2,6	4,7	2,7
Mexico	58,9	15,5	5,0
South Africa	14,7	13,9	8,9
Telephone lines (per 1000 population)	<u>1980</u>	<u>1998</u>	<u>2001</u>
Chile	33	205	239
Malaysia	29	198	199
Mexico	40	104	135
South Africa (estimates)	Less than 30	110	113
% share held by government in telecoms	<u>1980</u>	<u>1998</u>	<u>2003</u>
Chile	Almost 100 %	47 %	0
Malaysia	100 %	Over 70 %	55,2%
Mexico	Almost 100 %	44,9 %	0
South Africa	100 %	70 %	39,3%

Adapted from Internet sites: *International Telecommunication Union 2003, South African Reserve Bank 2004, Statistics SA 2002(2) and World Bank 2002(1)*

4.7 General characteristics of middle-income countries

Most developing countries have more or less similar characteristics. For the purposes of this study, the World Bank definition of a middle-income stage of development is used to identify the countries in the case studies used in this study. The World Bank uses, among other things, a country's level of income and a country's indebtedness to define the stage of development. The gross national income (GNI) indicator is used to measure the *per capita* income of a country. Indebtedness is measured as the value of debt to income and the value of debt to exports (*World Bank 2002(2)*). Obviously the level of GNI *per capita* and the level of indebtedness vary from country to country and that is why countries are classified as low-income, middle-income, upper middle-income or high-income. For obvious reasons it is a positive indication for a country to have a high GNI (*per capita*) and be less or moderately indebted. Typical examples of countries which fall under this category are Mexico, Chile, Malaysia and South Africa. However, according to the World Bank indicators Mexico has performed better than the other three.

The points listed below outline the general conditions and, therefore, characteristics of developing countries in the middle stage of development (Price 1994:241, Todaro 2000:30-62; *World Bank 2002(2)*; Stiglitz 2003:3-88).

- ◆ Governments in most developing countries provided strategic industries under the import substitution industrialisation which was operational in the 1960s and early 1970s. Most of these industries were wholly-owned and heavily protected by the government up to the early 1980s. Many of these industries were unable to perform well and this led to a high degree of government involvement through subsidies.
- ◆ Public enterprises used to be, and in most developing countries are still found in most economic sectors.
- ◆ The levels of household income and national saving in these countries are relatively low.
- ◆ The early 1980s saw a huge wave of trade liberalisation that swept across developing countries. This was in response to the demands of developed countries and world institutions like the IMF and the World Bank. Although this was an important step for the developing world towards positioning itself in international markets in a period where globalization became a popular concept, some, e.g., Stiglitz, felt that these world institutions sometimes pushed developing countries to liberalise too

quickly before they were ready.

- ◆ Developing countries inherently suffer from huge public deficit burdens due to small or a lack of savings by the public sector as a result of large demands for expenditure on social services, furthermore they also historically have high inflation rates and inadequate infrastructure. One of the major reasons why these countries embarked on the selling of state assets is to address the budget deficit of government.
- ◆ Capital markets in developing countries are normally still in a development stage. This is one reason why the governments in these countries prefer to sell smaller parts of targeted state assets as opposed to a once-off sale. It should be noted that the partial sale of public enterprises raises questions with regard to the alteration of attitudes in the management of the privatised institution(s). Sometimes full cession of control to other persons may take some time to be phased in, due to the way the transaction(s) is structured as well as the capacity of capital markets.
- ◆ Rather than treating privatisation as a search for dynamic management, as is done by developed countries, most developing countries see it as a way or remedy for correcting flaws or problem areas in their economies. It should be mentioned, however, that there is a fine line to be drawn between the two objectives and many developing countries incorporate the former view in their privatisation exercises.

4.8 Privatisation cases in middle-income countries

The selected countries for the case studies (Chile, Mexico and Malaysia) embarked on privatisation during more or less the same period, *viz.*, in the early 1980s. Like South Africa, the privatisation of telecoms firms in these countries was part of a broader economic reform policy (Jones 1994:75). It is noteworthy that South Africa lags behind in terms of its privatisation implementation. One of the main reasons for this is the isolation of the country from the international arena caused by the policies of apartheid of the former National Party (NP) government. During the 1970s and 1980s most local industries were protected and mainly geared towards providing for the domestic economy rather than to compete internationally and conform with international standards. Although privatisation efforts were made, economic reform was not high on the agenda of the NP. This section outlines a set of criteria against which the success or failure of the selected countries with regard to privatisation will be tested. Each country's experience is analysed with the aid of these criteria.

According to Megyery and Sader (1996:1-9) three fundamental factors are common in all successful privatisation cases, *viz.*, political commitment, fairness and business orientation. Political commitment is the responsibility assumed by government when it embarks on privatisation. Fairness refers to the fact that government should handle all privatisation processes and potential investors in a just manner. Business orientation means that the earmarked institution may need to be restructured in order to be able to operate in a competitive market environment. Common methods of enhancing business orientation are commercialisation, which means that user charges, commercial accountability and commercial performance objectives are introduced and corporatisation, which means that the institution must start to operate along business or commercial lines. The presence of political commitment, fairness and business orientation in a privatisation exercise will improve the credibility of the process and enhance the interests of investors to participate in the process. The sale of a large state-owned telephone company may convince investors about government's commitment and determination to the privatisation process, and may therefore boost the perceptions of the economy's future performance.

Since countries decide to take the privatisation route for many reasons, each privatisation may be unique and emphasize different aspects (see also section 4.2 which deals with reasons for privatisation). Each privatisation arrangement has its general and specific conditions and requirements. It can, therefore, be argued that the privatisation of telecoms industries is successful if most (it is not easy to achieve all) of the following criteria are met:

- ◆ The privatisation exercise should not be viewed as an isolated policy, but rather as being part of a **broader economic reform** programme in order to ensure co-ordination with other macro-economic policies.
- ◆ Government must ensure that there are **laws** in place that govern the privatisation and the regulation processes. The regulatory authority should be an autonomous entity that is able to perform its duty without favour or fear of government intervention.
- ◆ Privatisation must be a **transparent** process so as to boost the confidence of investors and the domestic community as a whole. The bidding process must be competitive and transparent. If possible, the privatisation process should be done in smaller parts as opposed to a once-off sale in order to be manageable and these smaller transactions should be concluded within short periods of time in order to ensure that government receives the revenue required on time.

- ◆ The privatisation exercise should raise an amount of capital not less than the **fair value of the company** and the proceeds should be used responsibly. Note that capital raised may also include foreign capital which may benefit domestic capital markets. Fair value is a very difficult concept to define because there are many methods of determining the fair value of an institution. It is essential to answer three basic questions to clarify the purpose of the valuation, *viz.*, value to whom?, valued how? and under what circumstances? (*Burkert Valuation Advisors* 2004). For the purpose of this dissertation fair value is the value to the potential buyer(s), valued in terms of the business enterprise value as a going concern. In other words it is assumed that both the seller and the buyer understand that the business was operating in the past, it is operating currently and it will operate in the future. The potential buyer(s) refers to any entity that submits a bid to purchase the telecoms firm. The business enterprise value refers to 100 per cent of the equity plus the market value of interest-bearing debt. This value is derived by applying the weighted average cost of capital to cash flows of the debt and equity holders. The notion of a going concern assumes that the business continues to operate normally. In this dissertation therefore the fair value of an institution is regarded as the *fair market value* of the institution. Fair market value is the cash or cash-equivalent price at which the firm will change hands between a willing buyer(s) and the government, both being informed of the relevant facts and neither being forced to enter into the transaction (Pratt 1989). This definition assumes that all applicable statutes and legal requirements are incorporated into the transaction and it does not matter whether the full telecoms firm or only part thereof is eventually sold. Since government may use proceeds from privatisation for many purposes, to determine whether the selling of state assets makes sense or not may to a large extent depend on how such proceeds are used. Governments are deemed to have acted prudently if the proceeds are used to pay off public debt or to invest in large capital projects which enhance local economies.
- ◆ Privatisation should aid the promotion of **domestic share ownership**. Government may need to reallocate the country's wealth in order to enhance an equitable redistribution of wealth to domestic residents and improve local capital markets. As mentioned earlier, this often clashes with efficiency considerations. From an equity perspective government may decide to reduce the share prices in order to accommodate local buyers and low-income groups. There is no fixed rule that stipulates by how much the local share ownership must increase, low-income groups should be given the opportunity to receive extra income in the form of dividends through owning shares. It is however important for the buyers to keep the shares and not sell them immediately. Note however that even

at low prices, the poor may still not be able to buy shares. Government could then consider other redistribution methods such as using the proceeds from privatisation to improve the lives of the poor (see section 3.5).

- ◆ Privatisation should enhance **competition** in the telecoms market and thus improve the overall economic efficiency. A public monopoly should, therefore, not just become a private monopoly.
- ◆ New **entrepreneurial skills** should be developed as a result of privatisation because both the institution and the entrepreneurs will be exposed to competition.
- ◆ The newly privatised company should not be given too many **privileges**, since this may lead to unfair competition and poor delivery, hence contributing to inefficiency.

Each of these factors receive attention in the case studies analysed below in order to evaluate the success of the privatisation process. This analysis also highlight important aspects of regulation that was implemented. Note that the approach followed with the case studies is not to reveal every detail of these countries' privatisation exercises but rather to emphasize the important lessons that may be of interest to South Africa.

For the purposes of expressing all financial flows in a single denomination, the US dollar is used. An exchange rate calculated as an average for the year 1998 is used. Net gain or loss on shares is calculated as the current price of the shares less the original cost of those shares. Current price refers to the price at which the share is trading in the stock exchange. Cost refers to the price at which the share was bought originally.

4.8.1 Telecoms privatisation - Chile

The privatisation of the Chilean telephone company, the *Compañía de Teléfonos de Chile (CTC)*, kicked off in 1982. This was an extreme example of power concentration and state autonomy since there was no significant challenge to the government policies (Petrazzini 1995:148). The Chilean government dealt with the concerns of prospective opponents before privatization took place by ensuring that workers and the public in general understood the privatisation process through educating them (Serra 1988:4). The government launched educational projects where it was explained through the media what privatisation meant for the citizens and the economy. Other problems encountered included the thin capital markets and the few

potential buyers that existed. The Chilean privatisation process was implemented relatively quickly and with few barriers.

The management of the sale was vested on the *Corporación de Fomento de la Producción* (CORFO). Low levels of investment, the economic crisis in the early 1980s, fiscal deficits and an inability to obtain the necessary technology locally, are among the reasons that led to a review of CTC for privatisation purposes (Molano 1997:52-55). Furthermore, the decision to privatise firms in Chile sought to increase the economic performance of the earmarked enterprises and to reinforce the free market economy in the country. The privatisation of CTC therefore formed part of a **broader economic reform** programme.

In 1977 a subsector of the Ministry of Transportation and Telecommunications, the *Subsecretaría de Telecomunicaciones* (SUBTEL), was established to design, supervise and regulate all technical norms and policies of the telecoms sector. The subsector's duties covered tariff setting, licence granting with corresponding interconnections as well as supervising technical and economic operations of companies in the telecoms industry (Valenzuela 1999). A specific **law**, the *General Law of Telecommunications* (*Decree Law no. 18,168*), was issued by the Chilean government in 1982 to regulate the provision of telecommunication services. This was also the law that governed the privatisation process (Galal et al 1994:188,256-258). The law emphasized competition in the provision of services. Although the regulation power was vested in SUBTEL, there was not much regulation independence because the regulatory institution was part of the government. Players in the market are often very sceptical about the independence of such an institution.

CTC was privatised in phases, i.e., shares were sold in batches so as to allow the remaining shares to appreciate with time, and the process was kept as **transparent** as possible because the terms and conditions for the project, tariffs, interconnection principles and bidding procedures were set out in the bidding documents (Wellenius 1997:2). The institution charged with privatisation, CORFO, outlined the privatisation procedure so that all stakeholders would have a common point of reference. Private investment was encouraged by defining the telecoms regulatory regime clearly. Investors knew the conditions that would apply before they bought the business.

CTC was transferred to private owners for US\$126 million (Galal et al 1994:279). Taxes of about US\$87

million were expected from the privatised company as opposed to only US\$33 million in taxes *per annum* if government would have decided to keep CTC as a public enterprise. The government would also be entitled to dividends from the privatised company because it still held some shares. The methods of sale, which included public bids, may have been the contributing factors to this positive result. Although the bidding itself was open and flexible to both domestic and foreign investors, there was some degree of favouritism towards domestic investors. However, from this transaction it can further be deduced that the capital raised from 1985 to 1989 from the sale of CTC was the **fair value** of CTC because it was based on the company's growth potential as valued by the equity market (*Virtual Institute of Information* 2003).

According to Galal (1994:53) investors, consumers, government and foreigners benefited from the privatisation of CTC. CTC has been among the most profitable firms in Chile since its privatisation (*Forbes* 2003). The net gain or addition to **domestic share ownership** increased by US\$17 million (Galal et al 1994:278). The new share owners included individuals who owned shares via pension funds, CTC employees, other employees and other investors. The combined net gain for pension funds, CTC employees, other public employees and other investors was US\$41 million. Although placing shares in the hands of workers, pension funds and the public in general *via* the stock exchange increased the domestic share ownership, it remained difficult or impossible for low-income groups to buy shares during the privatisation exercise. This highlighted the problem of balancing efficiency and equity. It should be noted, however, that many low-income groups in Chile benefited a great deal from low telecommunication tariffs after privatisation (*Virtual Institute of Information* 2003). The privatisation of CTC also made it possible for the company to reinvest part of the proceeds into telecoms infrastructure and therefore expand.

Although there has been an improvement in domestic share ownership, the level of improvement on local capital markets did not exceed government expectations. The ownership structure of CTC shows that a large portion (59,4 % in 1990) of the company is owned by foreign private investors. The government implemented a rule that forbids any single shareholder to hold more than 45 per cent of the company. This was done to prevent dominance, particularly by foreign investors. The aim was to spread ownership of the company among numerous stakeholders. The privatisation transactions were therefore kept small and tailor made for each investor concerned (Galal et al 1994:259-260,293).

Until 1990, CTC and *Empresa Nacional de Telecomunicaciones* (ENTEL) respectively dominated the

local and international telecommunication services. ENTEL was established from CTC and was granted a concession by government for the international telecommunication service. ENTEL was also transferred to private ownership at more or less the same time CTC was privatised. Competition emerged in the late 1980s mainly in the form of a cellular telephone company CIDCOM (Galal et al 1994:255-256). There have been legal conflicts between CTC and ENTEL during the 1980s with each company attempting to penetrate the traditional market of the other. Although this led to many court cases, it proved that privatisation was able to promote **competition** between the two main companies. It is not possible to generalise and state upfront how many firms must be allowed to compete. Each country usually decides what sufficient competition entails in accordance with its own needs. However, government in conjunction with the regulatory regime, must ensure that there is enough competition and that the general consumer is not adversely affected by the market. One of the important outcomes of competition in Chile was the acceleration of telecoms development in rural areas (Wellenius 1997:3).

A comparison of CTC's public and private profit levels shows that the public ownership period was less successful. The private ownership era shows a significant and steady growth in profitability (Galal et al 1994:261-268). CTC expanded significantly under private ownership. Factors like capital growth, open market requirements and management style contributed to this expansion. The fact that a certain portion of CTC was purchased by foreigners indicates that new **entrepreneurial skills** were brought into the company. Specific areas where expertise was required were identified and were included in the privatisation contract as part of the requirements that foreign investors were to fulfill. No significant **privileges** were given to CTC after privatisation, instead the telecoms industry was regulated in order to ensure the improvement of domestic or social welfare (Galal et al 1994:259-260).

The Chilean experience also showed that privatisation relaxes the investment constraint and thus makes a difference to the infrastructure of the company. Some of the funds obtained from privatisation were used to raise the investment capabilities of CTC and made it possible to improve the infrastructure of the company. In other words the improved performance of CTC after privatisation can be attributed to getting hold of new capital (Molano 1997:62). The internal day-to-day management of the company did not change much. This shows that even if privatisation does not change the behaviour of a firm, the resource constraint for that firm can be eased. Although the independence of the telecommunication regulatory authority of Chile is not strong, empirical evidence and the criteria used here to test the privatisation process suggest that the

Chilean exercise was a success (Galal et al 1994:253-295). As indicated in table 4.2, growth in GDP and the rate of inflation improved, government debt as a percentage of GDP decreased and telephone lines per 1000 population increased.

4.8.2 Telecoms privatisation - Malaysia

Malaysia's most important public policy, the New Economic Policy (NEP) which emphasised growth and an equitable distribution, was introduced in the early 1970s. The core of this policy can be broadly defined as empowering the indigenous people, the Bumiputeras. In other words the NEP emphasised the equitable distribution of economic resources.

The Malaysian privatisation programme therefore formed part of a **broad economic reform** policy (Galal et al 1994:299). The *Telecommunications Act of Malaysia* was amended in 1972 to introduce institutional and administrative reforms into the department of telecommunications in order to enable it to operate on commercial principles (Petrazzini 1995:144-147; *Ministry of Public Enterprises* 1989:224). The telephone company *Syrikat Telekom Malaysia* (STM) was founded as a result.

As is the case in South Africa, politics in Malaysia is organised along ethnic lines. Therefore most government policies emphasize the social and economic upliftment of the disadvantaged indigenous population group. In 1983 a deepening fiscal crisis and a slow-growing telecoms industry encouraged the decision to reform the telecoms industry in Malaysia. The announcement of STM privatisation was made in 1984. The prime minister's office issued privatisation guidelines in 1985, outlining policy aims, modes of privatisation and the means of implementation (Jomo 1995:225-242). These guidelines were later included in the Privatisation Master Plan (PMP). The PMP, which incorporated the way in which statute or **law** changes would occur in order to achieve three main factors, *viz.*, facilitate the privatisation process, benefit the Bumiputeras and promote fair competition after privatisation, was issued in 1991 (*Economic Planning Unit* 2004). By outlining the privatisation process in the PMP, government ensured the involvement of all stakeholders and **transparency** (*Economic Planning Unit* 2004).

The PMP envisaged, among other things, regulatory measures for monopolistic institutions where competition was lacking, the promotion of employees' share of ownership and the creation of a special fund to finance

privatisation-related expenses. The document further outlined several expected benefits from privatisation such as efficiency gains, stimulus to growth and a decrease in government involvement, e.g., a reduction in the number of government employees. Four main methods, *viz.*, sale of assets, lease of assets, management contract and build-operate-transfer (BOT) of new infrastructure were used in the Malaysian privatisation exercise. Sale of assets involved the transfer of assets from government to the private sector. Lease of assets involved the temporary transfer of the usage of assets from the government to the private sector. Management contract refers to the agreement by which a company will provide its organisational and management expertise to the government. Build-operate-transfer (BOT) refers to the joint ventures between government and private institutions aimed at developing infrastructure and sharing the proceeds generated from such infrastructure. Like Chile, the Malaysian bidding process tended to favour domestic investors.

According to the privatisation guidelines, the aims of the process were to decrease the financial and administrative burden of government, increase the growth rate through stimulating entrepreneurship and investment, decrease the presence and size of the public sector, increase competition and thereby improve efficiency and productivity of services and make a contribution towards meeting the objectives of the NEP (*Ministry of Public Enterprises* 1989:221). Opponents of privatisation in Malaysia challenged the aims of the process on the following issues:

- ◆ Privatisation cannot produce a magic cure to economic reform. Public sectors in other Asian countries, e.g., Singapore, Taiwan and Korea, have demonstrated that it is possible to run a public sector efficiently.
- ◆ Public accountability would lead to greater efficiency in achieving the public and national interest.
- ◆ Only profitable or potentially profitable SOEs would be privatised because the private sector will only be interested in buying such institutions. This will postpone the fiscal crisis because government will be left with all the unprofitable institutions which will need to be financed.
- ◆ Privatisation will give preference to profit maximisation at the expense of social welfare and public interest.

These arguments did not halt the privatisation process as it was implemented regardless. It must be kept in mind that privatisation was part of a broader reform policy and that privatisation is only responsible for a certain portion of the economic improvements experienced.

A total of US\$870 million was raised from the sale of a stake of STM between 1990 and 1993. A percentage of 22,65 of the telecoms firm was transferred to the private sector. This is a relatively small percentage, hence the Malaysian government maintained a large degree of control over the institution. Although this was a partial sale, it can be argued that it reflected the **fair value** of the company as this was the market price at which the transaction was concluded between willing buyers and the government, both being informed of the relevant facts and neither being forced to enter into the transaction. The Malaysian government sold a large number of shares to the Bumiputera individuals as well as companies and trust agencies owned by the Bumiputeras (Galal et al 1994:304). Although most Bumiputera groupings benefited from the sale of shares, it is not very clear whether the share prices were very low. Like Chile, the **domestic share ownership** increased, but it cannot be said with confidence that low-income groups benefited from the privatisation of STM because there is little evidence that they bought the shares.

Since this was a partial sale, the level of new **competition** was limited after privatisation because the number of new competitors was small. An attempt to introduce competition policies and laws has been one of the government quests since the late 1990s (*Institute for Development Policy and Management* 2004). In order to improve **entrepreneurial skills** the government ensured the participation of foreigners in areas where expertise was required. But due to the fact that this was a partial privatisation, it should be noted that the inflow of skills and expertise was not substantial. However, both competition and skills inflow in the Malaysian telecoms industry have improved over the past decade.

A notable **privilege** for the firm is that the monopolistic nature of STM remained mainly unchanged (Galal et al 1994:304). However, the overall picture suggests that the privatisation of telecommunication in Malaysia had a positive spin-off that a large amount of capital was raised and the local share ownership improved and that the capital market expanded. Most of the aims of the Malaysian privatisation guide were achieved during the partial privatisation process and this was a significant move towards full privatisation. See the changes in some of the major economic indicators after the privatisation process in table 4.2. As indicated in this table, growth in GDP, telephone lines per 1000 population and inflation indicators looked favourable after the privatisation process, although the improvement was not attributable to privatisation alone. Furthermore, privatisation allowed STM to expand through reinvestment of part of the proceeds (*Institute for Development Policy and Management* 2004).

4.8.3 Telecoms privatisation - Mexico

During the 1980s, the giant Mexican telephone company, *Teléfonos de México* (TELMEX), suffered from many problems, such as prices which did not cover production costs, political interference, entrenched unions linked to the ruling party, investment constraints tied to the government's need to reduce public sector debt and the setback caused by the 1985 earthquake (Ramamurti 1996:74-79; Petrazzini 1995:103-139).

These factors, coupled with the fact that the Mexican government wanted to send an urgent investor friendly message with regard to its commitment to **broad economic reform**, led to the privatisation of TELMEX in 1990. Ambitious targets were set for the new owners. According to Ramamurti (1996:79-98) the government used two measures to counter resistance from workers and unions, *viz.*, a promise of job security and a threat that if these parties did not go along with the privatisation proposal, the process would be carried out without any welfare guarantees for workers. Although the original opposition was minimal, these measures helped to discourage any further unfavourable reaction to privatisation that might have occurred.

Specific measures to ensure the establishment of the newly privatised institution were put in place. The government drafted a specific **law** to regulate TELMEX. The regulatory responsibilities were given to the *Secretaria de Comunicaciones y Transportes* (SCT) (Griffith 1999; Galal et al 1994:419). The unlikely risk of telephone rates going down due to local and/or international market conditions, e.g., movements in global technology share prices that may affect the global growth, was reduced by adjusting these rates upwards before privatisation. However, rates never fell excessively as one of the purposes of regulation was to limit the number of participants in the industry (*World Bank-OED* 2001).

A total of 51,1 per cent of TELMEX was sold for US\$6,2 billion to the private sector (Galal et al 1994:431-436; *World Bank-OED* 2001). The Mexican privatisation is one of four telecoms privatisation which raised over US\$5 billion between 1988 and 1996. The others are Japan's NTT, Germany's Deutsche Telekom and United Kingdom's BT. The privatisation process was kept fully **transparent** with crucial actions like statute changes and the selection of successful bidders properly announced. The bidding process was competitive and fair (Hansen-Kuhn 1997; Galal et al 1994:431). A tripartite socioeconomic agreement, the *Pacto de Solidarid Economica*, existed between government, the private sector and labour unions

(Ferguson 2002). The government's privatisation unit was set up in 1988 to deal openly with all privatisation matters. As in Chile, the privatisation transactions were done in phases and were therefore kept within manageable limits. The capital raised in TELMEX is an indication of very healthy proceeds and it can be argued that this was a **fair value** of the company as this was the market price at which the transaction was concluded between willing buyers and the government, both being informed of the relevant facts and neither being forced to enter into the transaction. The proceeds had a significant impact on public debt reduction in the 1980s and the development of telecoms infrastructure (Griffith 1999).

The net change in welfare as a result of the privatisation of TELMEX was a gain of over US\$766 million as calculated from the gains of all stakeholders involved (Galal et al 1994:415,448-452). Although a large portion of TELMEX is foreign-owned, the domestic share ownership improved by over US\$4 376 billion. There was a substantial improvement in the spread of share ownership. Local buyers were encouraged to participate to buy shares from the stock exchange. **Domestic share ownership** includes local investors and TELMEX employees who participated in the privatisation process. The improvement in domestic share ownership led to a further development of local capital markets. The increase in share prices after privatisation induced some holders to exchange their TELMEX shares for cash (Griffith 1999). Although it does not seem to be one of the aims of privatisation here, there is no sufficient empirical evidence that the privatisation of Telmex promoted equity in Mexico.

Certain quantity constraints and competitive conditions were set for TELMEX. Among the targets that TELMEX had to meet by 1994 in order for it to preserve its monopoly between 1990 and 1996 (Galal et al 1994:420) were that:

- ◆ there had to be an annual minimum expansion of 12 per cent in the number of lines in service;
- ◆ towns with populations of 500 or more had to have telephone services by 1994; and
- ◆ the ratio of public phones were to be 2 lines per 1000 population in 1994, with the aim of meeting 5 lines per 1000 population in 1998.

Most of these requirements were more than met by TELMEX and the company thus inherited an exclusive six-year period in which it would not have competition (Ramamurti 1996:85). Due to this exclusive period the effect of privatisation on **competition** was negative in the short run. It had a different impact in the long

run because the threat to open up the long-distance service to competition in 1997 was taken seriously by the company (Ramamurti 1996:90-93). TELMEX upgraded its long-distance service so as to be able to compete. Although rates were set based on a price cap regulation, there has been anti-competitive practices such as cross subsidisation between the local and long-distance markets. This led to prices decreasing in the long-distance and increasing in the local services. The government is playing an active role through the introduction of laws and resolutions in order to try and solve this pricing problem (Casanueva & del Villar 2001:1-10). By 1994 there was significant competition from private enterprises, i.e., mostly cellphone companies. Between 1991 and 1995 Telmex invested over US\$12 billion on telecoms infrastructure (Griffith 1999).

Privatisation had a positive impact on the quality of regulation. Before privatisation the regulatory role of the government was blurred by its role as owner. The regulatory regime was revisited and enhanced after privatisation. SCT formulates and conducts policies to enhance a developed telecoms system. A new regulatory mechanism for telecommunication prices was adopted. The **RPI-X** price system was used. **RPI** is the retail price index and **X** is a factor to be determined by the regulator.

The new management demonstrated its commitment towards cost reduction more aggressively than previous managements. Better purchase agreements were renegotiated for the company. This is an indication of the new **entrepreneurial skills** brought into the company after privatisation. Although the company failed to improve the overall quality of service in the short-run such as reducing the number of lines that cease to function properly and reducing the new telephone installation backlog, the change in ownership had an overall positive result on the performance of the company.

A notable **privilege** is that after privatisation the company was granted an exclusive period of six years in which it would not have competition. The Mexican experience can be seen as yet another positive point of reference for South Africa. The privatisation of TELMEX is evidence of what privatisation as a policy can achieve with regard to the impact on ownership change, improvement of competition after the exclusive period and impact on regulation. As can be seen in table 4.2, growth in GDP, inflation and telephone lines per 1000 population looked favourable after privatisation.

4.9 Privatisation lessons from Chile, Malaysia and Mexico

Although privatisation does not solve all economic problems, experience shows that it is a worthwhile process to be carried out (Shirley & Nellis 1991:55-61). The real test for a successful privatisation is whether it yields a net benefit to the economy or not. Only a well planned privatisation process can yield high net benefits.

Regardless of the fact that all three case studies showed that local people benefited, there was no specific strategy implemented to ensure that shares are also distributed to the poor. Since South Africa's vast majority of the population are poor, it might be crucial for government to consider a final round of telecoms privatisation where the proceeds can be used to address the needs of the poor than trying to distribute shares to them. This may also apply when other industries are privatised. There are several obvious parallels between the South African economy and those of Chile, Malaysia and Mexico. Although the experience in the case studies with telecoms privatisation strategies and procedures cannot be applied directly to South Africa, there are six key elements that can be learned.

First, privatisation should not be viewed as an end in itself, but should be part of a broader economic reform programme designed to promote a better allocation of resources, to encourage competition, develop entrepreneurial skills, decrease public debt, enhance economic growth and improve financial markets. This was the case for CTC, STM and TELMEX whose privatisation exercises were part of broader economic reform programmes. It is possible that privatisation as an isolated policy could lead to fewer benefits.

Secondly, it is very important to govern the privatisation process by legislation (Megyery & Sader 1996:19-21). This is in line with the findings of Wallsten in his econometric analysis of telecommunication competition, privatisation and regulation. One of his findings is that there will be an overall improvement in efficiency for the market if privatisation is combined with an independent regulator (Wallsten 2001:12-13). In the cases of Chile, Malaysia and Mexico, government formulated new laws or enhanced existing laws to smooth and govern the process of privatisation. This, among other things, specified the privatisation scope, established the institutional authority to conduct the process and defined important elements of the process.

Special administrators should be granted the authority to run privatisation and be accountable for the

process. Although comprehensive laws need to be drafted, caution should be taken not to waste too much time when drawing up laws and debating them in parliament as this may hamper the process and may drive potential investors away. The regulatory framework may also be incorporated in such a law. It is essential to have such a framework because the bidders will want to know the conditions under which they will be operating once they purchase the company. Unnecessary red tape should be avoided at all cost.

Thirdly, there should be openness and public confidence in the privatisation process. Confidence in the process may be created by transparency and by explaining to and educating all stakeholders about the privatisation process. Governments from Chile, Malaysia and Mexico maintained transparent approaches for their privatisation exercises. Since the pros and cons of privatisation will be discussed by parties interested in the process regardless of whether information is revealed or hoarded, it is to government's advantage to make the privatisation discussion an open one.

Fourthly, lengthy and large transactions may lead to a loss of investor confidence. This will render the entire process of privatisation unattractive and may decrease the probability of finding suitable investors. There may also be the threat of financial markets failing to handle the large capital flows. So irrespective of whether it is a partial or full privatisation, it may be necessary to do it in phases. Individual transactions in Chile, Malaysia and Mexico did not extend over long periods of time. The actual process stretched over less than five years for specific transactions. In the same breath it must be mentioned that the amount at which the company is sold must reflect its fair value at that stage, i.e., the cash or cash-equivalent price at which the firm will change hands between a willing buyer(s) and the government, both being informed of the relevant facts and neither being forced to enter into the transaction.

Fifth, competitive bidding plays a very important role to enable the selection of suitable investors. In most instances, particularly in developing countries, decisions are made in such a way that they are not politically inconvenient. For instance government may want to improve the domestic share ownership. Outsiders may have suspicion of corruption and inside deals if too many shares from the privatised company end up in the hands of domestic individuals and firms in a manner that is not transparent. This has a potential of triggering severe criticisms of the privatisation process by unsuccessful bidders and opposing parties. However this should not stop government from stipulating the obligations which must be met by the investing party. In the three case studies government laid down specific requirements which had to be fulfilled by the investors.

Sixth, giving too many privileges to the private enterprise just to ensure a quick and successful sale, should be avoided (Ramamurti 1996:98-101). If possible, the exclusivity period of the enterprise should be limited and be kept as short as possible. This speeds up the introduction of competition in the industry. It will also ensure that the newly privatised company does not misuse its power as a monopoly. However, if raising capital is the immediate priority then this argument may be violated because government would hasten to sell and may end up selling to one buyer because there would not be enough time to scrutinize the deal. Such an approach, however, is not recommended. Selling to a single foreign purchaser is something objected by many governments because it causes the fear of dominance and control by foreigners over institutions in developing countries, especially if many privileges are given to the newly privatised enterprise.

4.10 Conclusion

Privatisation of telecoms industries have become common since the early 1980s. Although the actual privatisation process varies from country to country and depends on the specific needs of a country, there seem to be similarities with regard to the reasons for privatisation and the approach to privatisation. This provides the opportunity to some countries to learn from the experiences of others and improve their own privatisation strategies. The next chapter examines the South African situation and determines, taking into account the study cases discussed, whether the privatisation process in the telecoms industry can eventually benefit the country or not.

CHAPTER FIVE

PRIVATISATION OF TELKOM IN SOUTH AFRICA

5.1 Introduction

This chapter concentrates on the privatisation of Telkom, South Africa's fixed-line and largest telecommunication firm. The situation is assessed in order to determine whether the developments that took place in the South African telecoms industry can be viewed as contributing to the country's economy and transition or not. The South African privatisation is also compared with the experience of other countries. Based on the conclusions in chapter three and chapter four, the analysis will indicate whether privatisation, as defined in subsection 1.2.2, *viz.*, partial or full transfer of goods and services that ensures a major cession of rights and control to the private sector, has been properly implemented. The issues of telecommunication regulation and equity consideration are also discussed. It is, however, necessary to briefly examine the economic background of South Africa and the historical framework of the domestic telecoms industry as a point of departure for the discussion.

5.2 Economic indicators in South Africa

South Africa is one of the most developed countries of the African continent (*World Bank 2002(1), Financial Mail 1999:83*). In terms of international or World Bank standards, South Africa is an upper middle-income economy. Economic indicators in South Africa such as government debt, percentage growth in Gross Domestic Product (GDP), the rate of inflation, real effective exchange rate and unemployment rate are outlined in table 5.1 and compared to the averages for middle-income countries. About 76 per cent of all middle-income countries submitted this data used by the World Bank. The objective of the outlining these indicators is to show the social and economic position of South Africa during the period 1997 to 1999, when privatisation took off in South Africa.

The South African government debt as a percentage of GDP, average real GDP and real effective exchange rate compare favourably to the averages of middle-income countries that submitted data. Although the South African average rate of inflation was slightly higher, it fell to 4,2 per cent in December 2003 due to favourable economic conditions. Despite the fact that the central bank has a mandate to keep inflation

between 3 and 6 per cent, factors, such as the stickiness of administered prices, depreciation of the exchange rate of the rand, backward-looking wage settlements and unfavourable oil prices may influence inflation negatively in future. As a result of very few middle-income countries submitting unemployment data for the period covered and levels of unemployment in South Africa being very high, the unemployment figure does not compare favourably with the average of middle-income countries.

All the indicators in table 5.1 may be affected by privatisation. Privatisation is usually characterised by trimming the labour force of the privatised institution. This normally creates problems with labour unions and is a big concern in South Africa because, as indicated earlier, the unemployment level is very high. This indicates once again that the issue of restructuring earmarked companies may continue to be very sensitive and should therefore be treated with great caution. Government should try to find alternative employment opportunities, e.g., creating short-term jobs for workers laid off in other areas of the industry which are unaffected by the restructuring, or should try to secure jobs for existing workers in the restructured institution. It must be mentioned that this may not be a simple exercise because investors who want to maximise profits may not agree to keep all the existing staff.

TABLE 5.1
ECONOMIC INDICATORS OF SOUTH AFRICA COMPARED
TO THE AVERAGE OF MIDDLE-INCOME COUNTRIES

INDICATOR	SOUTH AFRICA	AVERAGE FOR MIDDLE-INCOME COUNTRIES
Government debt (as a % of GDP) - 1998	48,8%	48,7%
GDP (average real growth rate) - 1990-2001	2,1%	3,4%
Average rate of inflation - 1999	6,8%	6,2%
Exchange rate (real effective) - 1998	87,41	90,57
Gini coefficient 2000	0,69	0,53
Unemployment¹ (as a % of total labour)	36, 2%	7,3%

¹SA - Expanded definition - October 1999, Average - Dec 1997. Data submitted to the World Bank not sufficient for comparison purposes.

Adapted from Internet sites: *South African Reserve Bank* (2004), *Statistics SA* (2002(1)) and *World Bank* (2002(1)).

Another area of concern may be to structure the privatisation process such that it is in line with the demographics and financial markets. Privatisation should at least cater for the needs of the people in the country and boost financial markets. The total population in South Africa is estimated to be more than 42 million people. Of this about 85 per cent are Blacks, Coloureds and Asians which were disadvantaged in the past. Whites are about 15 per cent of the population. Government may be eager to address the imbalances that exist in the economy. South Africa has well-developed capital and equity markets for bonds, equities and foreign exchange which are closely linked to international markets. The net worth of the bond market was more than R491,0 billion in October 2003 while the equities at the Johannesburg Securities Exchange (JSE) were valued at more than R1,7 trillion during the same period. The futures exchange market, SAFEX, which cannot be capitalised easily due to extremely fluctuating prices and interest rates, also has a large amount of financial derivatives traded.

5.3 Historical framework of the South African telecoms industry

As is the case in most countries, the South African telecoms industry was 100 per cent state owned. Among the participants were certain municipalities that were providing telecommunication services in some areas. Certain public companies like Transnet and Eskom were later allowed to provide telecommunication services for their own private use. The former National Party (NP) government professed to be dedicated to private enterprise, but did not always act accordingly and has created a relatively high nationalised and over-regulated economy instead (Venter 1990:30). Up to 1989 there was one government Department of Posts and Telecommunications (DPT) which was responsible for all telecommunication matters. Telecommunication was a major activity of the DPT (Venter 1990:42).

The first privatisation announcements were made by former president P W Botha in 1988 (Moseki 1993:100; Leach & Vorhies 1990:23). Botha mentioned that Iscor, the iron and steel corporation, Eskom, the electricity supplier, South African Transport Services and DPT were to be considered for privatisation. Iscor was the first to be sold to the private sector for R3,7 billion in 1989 (Brynard 1995). The main objective of the NP government's privatisation policy was to restructure the South African economy and therefore enhance a free market system. Avoiding dominance in shareholding of Iscor by one party and benefiting Iscor's employees were very important objectives during the privatisation exercise. A workers' shareholding scheme was developed. Marketing campaigns were launched to educate both the workers and

the general public in shareholding. These campaigns helped to get domestic investors involved. This is an important lesson that was later again applied in one of the phases during the partial privatisation of Telkom.

It should be noted, however, that the objectives for selling Telkom did not exactly compare with those for selling Iscor (see section 5.4). While the selling of Iscor was mainly aimed at enhancing a free market system, the aim of selling Telkom was to give special attention to the improvement of the quality of life in South Africa, especially for the disadvantaged communities. Privatisation is therefore viewed as an instrument to fund this government endeavour. This makes it difficult to use the share distribution from the sale of Iscor as a determinant of whether low-income groups benefited from the sale of Telkom. A strategy that may ensure that low-income groups benefit, is to use the proceeds of privatisation to fund the social needs of the poor. The privatisation of Telkom is discussed in section 5.7.

The DPT was not restructured until three years after Botha's privatisation announcement. The De Villiers Commission of enquiry was appointed to investigate and advise government with regard to the condition of telecommunication. The commission recommended in the *De Villiers Report of 1989* that the DPT should be divided into two sectors, one to handle postal and saving services and the other to handle telecoms services.

The South African Post Office Limited company, which would be responsible for postal and saving services, and Telkom, which would be responsible for telephone services and value-added services, such as the Internet, were formed in 1991 (Venter 1990:1-11; Steward 1989:53). These companies were 100 per cent state-owned. The publicly-owned telecoms natural monopoly was caused by huge network setup costs and government laws (see the discussion in section 3.6). Huge capital outlays, government laws and the size of the firm are still important factors in the industry today. Regulation is still desired in the South African telecoms industry for three reasons. Firstly, Telkom is large and might abuse its size if not regulated and if it does not have a fixed-line competitor. Secondly, there is a need to ensure that resources are allocated efficiently in the economy so that prices can also be at competitive levels. Thirdly, competition is still in its infancy in the South African telecoms industry. These are also some of the reasons why many governments still regulate this industry through limiting the number of institutions that enter the industry. That is, although governments want to ensure that the position stipulated by the three points above are changed, they try to do so with caution.

Prior to its division, the DPT considered its monopoly status as a mandate to expand service universally and generally, and to keep prices for basic services low. This was partly successful, because in 1987 there were 84 telephones available to every 100 persons in white-owned residential areas (Black, Baird & Heese 1997:232-233; Kaplan 1990:52-53). Up to the 1970s, the vast majority obtaining telephones in South Africa were whites. The important reasons for this were the a lack of electricity in many black areas (urban and rural) and the high installation and maintenance costs which would have been incurred if telephone services were to be extended to such areas. As indicated in subsection 2.2.1, a certain amount of electricity is required between the local telephone exchange and the user equipment to ensure that the telephone works. Although telephone availability to the black population groups is substantially lower, there has been an improvement over the past twenty years or more. Telephone lines per 1000 population increased from less than 20 lines in the 1970s to more than 113 lines today (*International Telecommunication Union* 2003).

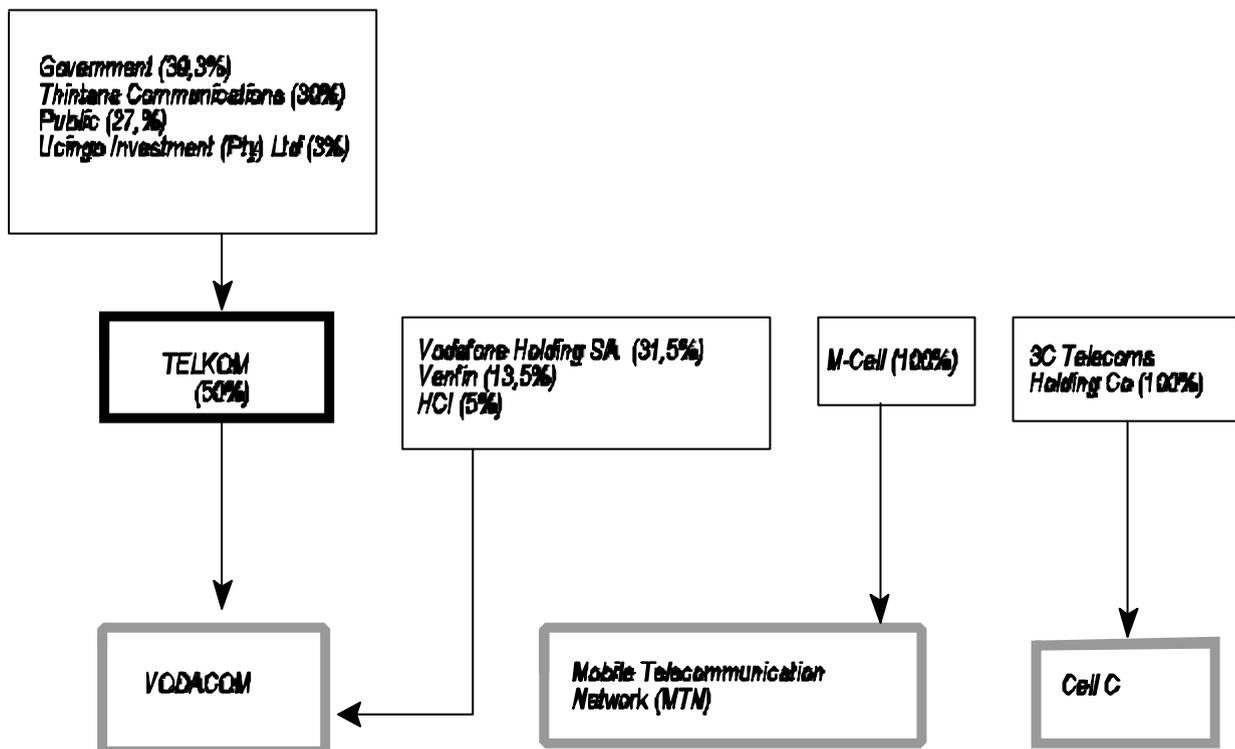
The DPT's mandate may be justified from a social and an economic perspective, however, it led to high cost and less revenue to the industry because services were rapidly extended to every small white village or farm. With the rise of the gold price in the 1970s, the telecoms industry was able to borrow and extend its services to a wider community, including other races. The costs of extending services were later revealed when the gold price fell in 1985. An important lesson was that extensions of service should be made to self-financing segments of the market (Kaplan 1990:19-23). However, the South African government must find ways of extending services to the poor. One such way is through privatisation.

Figure 5.1 shows the position with regard to ownership in the year 2003 of the South African point-to-point voice telecommunication (percentage ownership is given in brackets). The two cellphone companies, Vodacom and MTN (in grey boxes) were licenced in 1994 and are not only competing against each other but are also major competitors to Telkom. Government ensured that social obligations are built into the cellphone companies' licences (Government 2002). Although the registration of a third cellphone company, Cell C, in February 2001 was the correct step towards enhancing the process of introducing competition into the telecoms market, it is notable that there may still be competition problems as a result of the structure of ownership in the telecoms industry. Government has a significant influence in Telkom (39,3%) and in Vodacom (50%) via Telkom (see figure 5.1). This may lead to a situation where Telkom and Vodacom are competing against the other telephone companies. It may be necessary for government to relinquish more of its ownership from these companies in order to promote competition. Since foreign companies already

have significant stakes of ownership in the local cellphone companies, it may be beneficial to transfer some of the government ownership to local investors.

Another problem is that there is no competition in the fixed line industry. Although loaded with regulation squabbles, the government has issued invitations to apply for stakes in a Second National Operator (SNO). This new fixed-line network operator is expected to be in place in 2004 and will use Telkom's existing network. The introduction of the SNO may, however, be delayed since the regulatory authority is still ironing out problems regarding legal procedures on the project (*BusinessMap* 2002; *Financial Mail* 2001(1)). Due to rapid changes in the South African telecoms industry and the broadness of the industry, the focus in this chapter is not so much on the cellphone companies or the SNO, but rather on Telkom which is the country's largest fixed-line network operator.

FIGURE 5.1
VOICE TELECOMMUNICATION IN SOUTH AFRICA



Adapted from the Internet sites of Government (2002), Telkom, (2004(1)), Vodacom (2003), Cell C 2004 and Financial Mail (1997:57)

The next section discusses the reasons for privatisation in South Africa. Obstacles encountered during the preparatory and application stages of the privatisation process in South Africa are discussed in section 5.5. Sections 5.6 and 5.7 discuss the South African telecoms regulation and privatisation programmes that form part of the government policy commonly referred to as the **restructuring of state assets**. Section 5.7 covers the post-privatisation activities.

5.4 Privatisation objectives in South Africa

The privatisation of state-owned enterprises (SOEs) accelerated after the government of national unity (GNU) entered office in 1994. Several companies, including Sun Air, Safcol, the Airports company, Aventura and Telkom were identified by the then Minister of Public Enterprises, Miss Stella Sigcau, as being earmarked for privatisation. The other companies identified for privatisation will not be discussed here since the focus of this discussion is on Telkom. As discussed in section 2.3, the technological revolution in telecoms is one of the main factors responsible for this worldwide reshaping and privatisation of telecoms industries (Black, Baird & Heese 1997:227). The South African privatisation programme forms part of a broad economic reform strategy designed to uplift the newly democratized economy.

There are several reasons to promote privatisation in South Africa. Moseneke and Roberts (1995:9-14) state that over and above the common privatisation reasons, South Africa needs to give special attention to the last three objectives provided in the list below.

- ◆ Free government from day-to-day management burdens - government can have more time for other activities.
- ◆ Enhance the efficiency of state enterprises and avoid the fiscal drain of money-losing SOEs - more often government must finance loss-making institutions.
- ◆ Raise revenue - most governments are always in need for money to finance expenditure and budget deficits.
- ◆ Show a commitment to economic liberalisation and attract foreign investment - privatisation can serve as a signal to the private sector that government is serious about reform.
- ◆ Form strategic public-private joint ventures - both government and private entities can benefit from such partnerships.
- ◆ Broaden share ownership in the local capital markets - this can also promote equity.
- ◆ Foster a culture of entrepreneurship - foreign investors often bring much desired expertise into developing countries.
- ◆ Increase export earnings - privatised institutions could be able to compete globally.
- ◆ Boosting the small business sector - smaller transactions may be suitable for a country like South Africa where the capital market is developed but not very large. This will also allow smaller business sectors to participate in the privatisation process.
- ◆ Reforming state bureaucracy - privatisation may reform the state bureaucracy through reducing

public service duties.

- ◆ Correcting human rights abuses and land dispossession - according to Moseneke and Roberts (1995:15) reforming the earmarked institution and laws that deal with privatisation enhance the efficiency of the privatised institution and lead to a win-win situation for government and the private sector. South Africa's unique reconciliation programme among its different races presents an opportunity of distributing resources to the poor. Victims of human rights abuses and land dispossession may be compensated by share offerings. People who presented their cases in the Truth and Reconciliation Commission (TRC) may be compensated accordingly (Moseneke & Roberts 1995:16-17). The constitution of South Africa allows the claimant to order the payment of compensation or any alternative relief.

Although each country formulates its privatisation strategy according to its needs, a common objective among countries is a reallocation of resources. As indicated in the previous chapter, the Malaysian privatisation case has been based, among other things, on making sure that the indigenous Malays get their fair share from privatisation. Since the objectives of privatisation in South Africa include raising the standard of living, empowering the disadvantaged communities and increasing the country's economic growth, the Malaysian experience may be of special interest in this regard. The Malaysian government sold a large number of shares to the low-income Bumiputera individuals as well as companies and trust agencies owned by the Bumiputeras at low prices or at a discount.

Note, however, that low-income groups may find it difficult to buy, even at low prices. This is where the equity-efficiency trade-off becomes rife. For example, government may find it difficult to raise the required capital while simultaneously ensuring that low-income groups can still have access to the shares distributed. It has been indicated that unnecessary opposition may be attracted by privatisation programmes that benefit privileged parties most by selling shares to the same wealthy individuals and as a result increase the ownership of income-generating assets of privileged groups. A privatisation programme in South Africa should therefore attempt to benefit the black population (defined as all previously disadvantaged groups, women, labour unions and the middle class). This may be easier said than done. In the cases of Malaysia, Chile and Mexico, it was revealed that although privatisation increases a country's domestic share ownership, it was difficult to show beyond doubt that it directly improves the wealth of low-income groups.

An attempt has been made in South Africa to try and improve the wealth of low-income groups. The *National Empowerment Fund Act No. 105 of 1998* established a trust known as the National Empowerment Fund (NEF). One of the main purposes of this trust is to promote and facilitate the ownership of income generating assets by historically disadvantaged communities. During privatisation exercises, the NEF obtains shares at a discount from government, which should then be distributed to the target communities. The NEF is still to prove that it benefits the targeted groups of people. In most cases it has been distributing shares to the same groups of people who have access to the fund and did not reach the targeted low-income groups, who in most cases do not even know that such a fund exists. The South African government should address this problem directly by making a clear choice between distributing actual shares to low-income groups or enhancing those groups' social necessities, e.g., houses, jobs, health, etc., through the proceeds of privatisation.

A National Framework Agreement (NFA) was drafted by the GNU to support the restructuring of state enterprises (*Ministry of Public Enterprises 1996*). The NFA was signed on behalf of government and the major labour unions, viz., Federation of South African Labour Unions, Congress of South African Trade Unions and National Council of Trade Unions. The NFA stipulated the objectives of the restructuring and the guiding principles for restructuring. But the NFA did not provide a comprehensive guide. There have also been concerns that the National Framework Agreement (NFA) was a hastily cobbled-together agreement, which is partly why the Interministerial Cabinet Committee (IMCC) had to draft a comprehensive policy framework (*Finance Week 1997:29*). The Interministerial Cabinet Committee (IMCC) decided in November 1999 to draft a comprehensive policy framework to guide the privatisation process. As a result, a substantial policy document was issued by the government (*Ministry of Public Enterprises 2000*).

The policy document emphasises the privatisation objectives stipulated in the NFA, which can be summarised as follows:

- ◆ To facilitate economic growth. This will also help to generate employment and should enhance the promotion of equity.
- ◆ To raise capital that may be used to reduce state debt, fund the Reconstruction and Development Programme (RDP) and finance institutions that may be charged with promoting fair competition.
- ◆ To create wider ownership in the economy through empowering the disadvantaged businesses and

communities.

The three privatisation case studies discussed in chapter four also had these objectives, among others, which again shows the parallels between South Africa and these countries. Although stakeholders emphasise different objectives, the policy document seeks to provide a common frame of reference to all. The extent of trade-offs must be determined in each case (*Ministry of Public Enterprises* 2000:10-28).

5.5 Privatisation trap in South Africa

As discussed in section 4.3, the privatisation trap is the phenomenon that explains the slowness of the privatisation process. This is usually caused by power groups which benefit from the inefficiencies of public provision, *viz.*, labour unions and other bodies whose interests are protected.

The following are some of the concerns that were raised by critics of privatisation:

- ◆ Employment opportunities could be reduced initially. The main concern of the unions is that they do not believe in the “life after death” theory. They are of the opinion that it may be difficult to regain jobs after privatisation. This is a stance taken by unions worldwide. It is shown in figure 3.2 that for a typical fixed-line telecoms firm to operate efficiently, there usually must be some internal restructuring, e.g., laying off some unproductive workers. Maybe both government and unions should concentrate on how to deal with such lay-offs, because in the long-run these workers may be able to find jobs brought about by the efficiency gains of the privatised firm.
- ◆ The new owners may sell the company at the first opportunity. This may be a problem because the second contract might not include the initial benefits to the wider community intended by government in the initial privatisation contract. Government must therefore make provision for such an event in its initial contract and should also try to convince managers to achieve a win-win (Venter 1990:12).
- ◆ Lack of transparency may create suspicion and unease.

Although there have been divisions among union executive members (e.g., Cosatu), labour unions in general opposed the privatisation process from its early stages (*Business Report* 1997:9, *Cosatu* 2004(1)). Many proposals were made by Cosatu’s affiliates in the inaugural central committee meeting of 1998. A notable proposal was that Cosatu should oppose the privatisation of strategic sectors like electricity, postal services,

water and telecommunication. A moratorium should be called on any full privatisation of state assets.

The unions want a restructuring programme that will improve employment equity, reduce retrenchments and encourage investment and training. According to them, privatisation means that more profits will be sought which could lead to increases in the current costs of services. But that is not always the case. As seen in South Africa, the telecoms industry is yet to be privatised in full and there has already been court cases on high telecoms service charges and efforts to limit competition.

Despite initial union opposition to privatisation, the government was able to involve unions from early stages through consultation and discussion forums. This approach eased the concerns of unions. Government also took into account the effects of privatisation, e.g., job losses, before embarking on its privatisation or restructuring programme. Job creation strategies were discussed in summits and workshops attended by business, government and labour union representatives. Mass strikes by unions were the reaction to the announcement by government to privatise Telkom further. Government needs to create an environment conducive to the full privatisation of Telkom. That can be achieved by ensuring that the following factors are kept in check during full privatisation:

- ◆ Stick to the existing policy framework or enhance it if necessary.
- ◆ Involve all stakeholders in the process.
- ◆ Identify, decide and declare how privatisation aftermaths like job losses will be dealt with. While a new method of empowering the poor needs to be developed, government must also improve its service delivery capability.
- ◆ Outline clearly how competition, regulation and future licencing policies will work.

5.6 Telecommunication regulation

As shown in the privatisation cases discussed in chapter four, if a country embarks on privatisation, it is crucial to revisit the regulatory regime. After its split into two companies in 1991, the DPT was left with the regulatory duties of the telecoms industry (Lochner 1993:2-4). These duties were vested in the Postmaster General by the Post Office Act. At first the DPT viewed its monopoly as a right and duty to provide a standard service within its scope of resources to all clients. As a result of an increase in “non-standard”

service requests, the Post Office Act was amended to guard against self-interested service requests and to provide other types of instruments outside the scope of government.

The *Telecommunications Act No. 103 of 1996* established the South African Telecommunications Regulatory Authority (SATRA) as an independent institution responsible for regulating the telecoms industry. In June 2000, SATRA merged with the Independent Broadcasting Authority (IBA) to form the Independent Communication Authority of South Africa (ICASA). The IBA was responsible for the regulation of the broadcasting industry. For the purpose of this study the focus falls on ICASA with respect to telecommunication regulation.

ICASA is an independent institution with no ties to institutions providing point-to-point, fixed-line voice telecommunication, the government and any other parties that have interests in the telecoms sector. The *Telecommunications Act No. 103 of 1996* stipulates that ICASA is funded by the government and the beneficiaries of the regulation. ICASA has the power to issue different types of licences, e.g., a public switched telecommunication service (PSTS) licence, a radio licence and a value-added network (VAN) service licence. The regulator also has powers to propose licence amendments, control prices, charge licence fees and request accounting and technical information for its own purposes or to be published.

Vogelsang and Mitchell (1997:59) identify four areas in which telecoms regulation may be applied as:

- ◆ service price;
- ◆ entry;
- ◆ public service obligation; and
- ◆ interconnection.

Regulating the service price will reduce the probability or ability of the privatised company to use its market power negatively. It is shown in figure 3.2 that a decreasing cost firm is able to choose and produce at an uncompetitive point, e.g., **B**. The government may force such a firm to produce at a competitive point by regulating the service price. A service mandate to provide services at similar rates may be imposed on the service provider(s). However, government need to allow competition and regulate only where necessary. Entry can be encouraged or discouraged as desired. The South African telecommunication regulation covers

all these areas and government should refrain from embarking on any act that may appear to be undermining the power of the regulator. The regulation of telecommunication today serves to ensure that telecoms firms do not abuse their power, that they meet government requirements to enhance allocation efficiency and they adhere to fair competitive policies. Regulation can be reduced once these areas have been satisfied.

Lochner (1993:7-11) emphasises the following functions of ICASA in respect of telecommunication:

- ◆ Protecting customer interest. The quality of the service and the competition in the market is constantly monitored.
- ◆ Regulating any monopoly that might exist. The five-year monopoly grant and the specific commitments tabled by government to be met by Telkom are examples in this case.
- ◆ Protecting competitors. When the time for a competitive market arrives, the authority needs to ensure that Telkom does not abuse its dominance in the market.
- ◆ Community service obligation. The authority needs to ensure that the specific institutions identified by government, e.g., schools and hospitals, get connected to the system. Relevant fines must be imposed on failure to deliver. The authority must therefore be in a position to inspect such service delivery.
- ◆ Technical regulation. The authority must ensure that the network is of good quality and safe. Standards must be set with regard to equipment used and interconnection guidelines.

South Africa has improved its competition policy to encourage competitiveness (e.g., attracting foreign exchange and competing effectively in international markets) and develop the local economy (e.g., aid the redistribution of resources, aid the creation of jobs and support emerging entrepreneurs). The telecommunication areas and services in which competition will take place need to be defined clearly. The competition policy was constructed taking into account the objectives of Growth, Equity and Redistribution (GEAR). The policy was drafted to deal with issues such as regulation and consumer protection. One of the important areas of the *Competition Act No. 89 of 1988* is to investigate and prohibit anti-competitive conducts.

The Act recognises and therefore seeks to address economic issues such as high concentration of ownership, monopolistic markets and high barriers to entry. Adhering to this policy will go a long way in ensuring that

only efficient institutions get to operate in the market. In order to encourage competition and to be able to reach final consumers, it may be important to have service providers interconnected. As discussed in subsection 2.3.3, interconnection between telephone companies is already feasible and vital for the free flow of data between users. The next section discusses the privatisation process of South Africa's fixed-line company.

5.7 Privatisation of Telkom

As a prerequisite for privatisation, Telkom had to be commercialised and then corporatised. Commercialisation means that user charges, commercial accountability and commercial performance objectives had to be introduced. Corporatisation means that the firm started to operate along business or commercial lines. According to Moseki (1993:13) the commercialisation process gave Telkom an unfair advantage due to the following reasons:

- ◆ Telkom had unlimited financial resources as it was using tax-payers' money.
- ◆ Telkom held a virtual monopoly.
- ◆ Telkom was both a player and a referee in the market.

All parties involved in the privatisation exercise were aware of the fact that in order to obtain positive results in the restructuring programme there must be strong political commitment, transparency, effective regulatory mechanisms, public awareness and consensus. Government tabled several privatisation options, *viz.:*

- ◆ sale of total state assets;
- ◆ a partial sale to a strategic equity partner;
- ◆ sale of assets with government retaining a strategic interest;
- ◆ restructuring management; and
- ◆ build-operate-transfer (BOT) of infrastructure, such as roads, where private institutions may participate by incurring development costs and later benefit from toll fees collected.

The partial privatisation of Telkom occurred in two main phases, *viz.*, the **30 per cent sale of a stake** and the **initial public offering** (IPO). The *Telecommunications Act No. 103 of 1996* governed the

privatisation process. Government also sold a 5 per cent equity stake in between these two phases, 3 per cent to *Ucingo Investment (Pty) Ltd* and 2 per cent to Telkom staff. Each of the two main privatisation phases are discussed in the following paragraphs.

During the **first phase**, the second privatisation option was chosen, *viz.*, to embark on a partial sale to a strategic equity partner. The bidding process was kept open and competitive. In March 1997 a 30 per cent stake in Telkom, the South African fixed-line telecoms firm, was sold to a consortium called *Thintana Communications* at US\$1,26 billion (*Telkom 2004(1)*). The consortium consisted of United States' *SBC Communications* (60%) and Malaysia's *Telekom Malaysia* (40%). The South African capital markets were boosted by this partial sale of Telkom in 1997 (South African Reserve Bank 1997:S44). Although this was the largest partial privatisation exercise in the Sub-Saharan Africa region, the transaction itself was kept simple and did not extend over many years. On its privatisation Telkom was granted a five-year monopoly from 1997 to 2002 for providing fixed-line telecommunication services in order to expand and modernise its basic infrastructure. South Africa followed the example of Mexico. The government specified commitments that had to be met by *Thintana Communications* within the five-year monopoly period. The major licence requirements were that:

- ◆ 2,7 million lines and 120 000 payphones were to be installed in predominantly black and rural communities;
- ◆ all 1,25 million existing analog lines were to be upgraded to digital lines'
- ◆ new services would have to be provided to more than 20 000 priority customers to be identified by the government, e.g., schools and hospitals; and
- ◆ a comprehensive employee and management training programme, transferring of skills, knowledge, expertise and technology necessary for Telkom will have to be implemented

By the end of the financial year in March 1998 Telkom had made significant progress in terms of connecting the former disadvantaged groups. The pace of analog to digital conversions was 12 times higher than the set targets. By March 2000 Telkom had achieved almost 95 per cent of its licence requirements (*Telkom 2001*). This highlighted the potential and usefulness of privatisation to all concerned parties. By meeting its targets Telkom earned a further year of exclusivity from competition. As indicated earlier, Mexico also applied this six-year exclusivity policy in 1992 when it was liberalising its telecoms industry.

Telkom was valued at R18,9 billion at the time of its partial privatisation and the 30 per cent sale was therefore R5,5 billion. This sale helped to improve the price of the remaining stake. Today analysts value Telkom at over R70 billion (*Financial Mail* 2001:45). Although South Africa ploughed back R4,4 billion of the proceeds into telecoms infrastructure development, the financial implications of this sale was that over R40 billion was to be invested by Telkom into the telecoms industry over the exclusivity period (*Sunday Times* 1997:9). The government reaped R27,8 million from stamp duties and would receive over R8 billion in taxes over the five-year period. A further R1,38 billion would be spent on the development of skills. This was considered a good sale when taking into account that there were several commitments that *Thintana* had to meet. This phase can be seen as a capacity building period.

The **second phase** of privatisation took place in 2003. This was where issues such as boosting small businesses and correcting imbalances in the economy were to take the centre stage. The government announced its final intention to list Telkom on the stock exchange in January 2003. This initial public offering (IPO) took place in March 2003. Educational print and audio media releases were widely distributed in the country to inform people what the IPO was about. The share prices were divided into the General Offer and the Khulisa Offer. The General Offer was aimed at all individuals and was going to be discounted by 5 per cent of the initial offer price. The Khulisa Offer was targeted to previously disadvantaged individuals and *stokvels* consisting of previously disadvantaged individuals but was later opened to all South Africans. The Khulisa Offer was going to be discounted by 20 per cent of the initial offer price. The government relinquished 25 per cent of the utility's shares, raising over R4 billion. The private entities that participated included local individuals, *stokvels* and companies. Government's ownership of Telkom has since shrank to less than 40 per cent (*BusinessMap* 2003, *Telkom* 2004(2), *Telkom* 2004(3)). Although market analysts do not agree on whether the IPO was fairly priced or not, there seem to be consensus that government did a good job by delaying the IPO during a period where information technology stocks were not doing well in the financial markets.

The 30 per cent sale and subsequent IPO of Telkom did not raise any major problems due to the following reasons:

- ◆ **Transparency.** The South African government disclosed the handling of issues like purchase price, buyer identity, payment terms, investment commitments and skills and/or technology transfer

contracts. There was also proper consultation with all stakeholders throughout the process.

- ◆ **Legal reforms.** Specific sections of monopoly regulation, labour law and information and disclosure requirements were revised to ensure that no problems are encountered.
- ◆ **Public education.** Government embarked on an extensive education campaign to make the domestic people aware of the IPO and how it operates.
- ◆ **Partial sale.** The fact that this was not a complete sale of the company gave security to all parties involved because the problems encountered would be on a smaller scale. The sale of the remaining stake may be carried out with ease because investors, workers and consumers will have confidence in the programme.
- ◆ **Foreign investment.** The sale injected much needed foreign exchange into the country.

The major problem with partial privatisation is the possibility that the institution may be subject to political interference. Markets may be doubtful of government's intentions. Transparency and clear communication policies may help to provide the necessary clarity (*Ministry of Public Enterprises 2000:125*). But this problem may not be rife in instances where government does not have a 51 per cent ownership of the company, as in the case of South Africa.

The results from the partial privatisation indicate that there is a positive outcome to be expected from the full privatisation of Telkom. According to the privatisation case studies in chapter four, the South African economy may receive a major boost from such an exercise. Foreign exchange will be gained. Basic telecommunication infrastructure will improve. Government revenue will increase. This could be used to repay government debt or increase expenditure on social services. Skills may be developed. Capital markets may be boosted. Although there were some job losses during the restructuring of Telkom, the outcomes of the partial privatisation are a strong argument for the full privatisation of Telkom. Job losses resulting from full privatisation should be minimal because the company has already been restructured. Although a number of jobs were lost during the partial privatisation phase, this was mainly in the form of redundant jobs (*Cosatu 2004(2)*).

The big question arises as to whether the South African government succeeded in its quest to distribute equity to the poor. The 27,7 per cent stake held by the public in Telkom (see figure 5.1) is an indication that not much has been achieved in this front. As noted in chapter four which deals with case studies, it is not

easy to distribute shares to the poor. And the privatisation phases discussed made it clear that if government wants to promote equity in future, when relinquishing its 39,9 per cent stake in Telkom, it may be necessary to earmark the target groups and use the proceeds to uplift the lives of those people, rather than trying to distribute shares to them.

The greatest challenge for Telkom will be the transition from controlling the market to competition (Goldstein 1993:2-6). The following are some of the reasons for this challenge:

- ◆ New skills will have to be acquired because the existing staff may not have the expertise required in the market.
- ◆ Supply levels may rise beyond previous levels as a result of market demands.
- ◆ Decision-making might have to be rapid.
- ◆ Scarcity of information may affect decision-making.
- ◆ Prices in the market might be pushed to very low levels.

The general norm in the telecoms industry shows that most telecoms companies operating as monopolies do not have proper internal operations reports and/or product information. This is because such information is not used by managers for their internal business or the information is not required by a regulatory authority. This can sometimes be attributed to political reasons, e.g., it may cause unease if it becomes known that low-income groups are subsidised by high-income groups. It may not be too difficult for Telkom to adjust, because the company is already operating along commercial lines and management understands the needs of customers. Emphasis will have to be on gathering information of potential competitors and their products, trimming costs and investing in systems. As mentioned earlier, the shareholding of Telkom in Vodacom may need to be changed in order to enhance fair competition.

Given the results of the partial privatisation, it could be argued that full privatisation of Telkom should be successful and with few problems if all the basic steps are taken. Such steps include that the process should be transparent, that all stakeholders are taken on board, that a clear guideline for the process should be provided stating government's position on foreign investors, that all regulatory measures are in place and an awareness of potential external effects of the privatisation process are kept in check.

5.8 Conclusion

Although government did not do spectacularly in terms of using the privatisation of Telkom to uplift the standard of living of the poor, there are many benefits derived from the process, such as:

- ◆ Foreign exchange was gained.
- ◆ Telecommunication infrastructure was improved.
- ◆ Telephone connections were extended to previously disadvantaged communities.
- ◆ Government revenue was earned.
- ◆ Skills were developed.
- ◆ Capital markets were boosted.
- ◆ An effort was made to make shares available to the poor and those who could afford benefited.

Telkom is therefore a candidate for full privatisation and previously advantaged groups can benefit from the proceeds of the sale.

CHAPTER SIX

CONCLUSION

Technological changes such as improvements in transmission mechanisms, developments in electronic exchanges and modernisation of end-user equipment created definitional problems in the telecoms industry. As a result it became difficult to describe the characteristics of the telecoms industry, identify which sector should provide the service and decide whether privatisation and/or regulation can be applied efficiently in the industry.

Most telecoms firms that operate in fixed-line point-to-point, two-way voice telecommunication are large institutions which were formerly owned by government. These firms had a guaranteed government right to operate as monopolies. An analysis of the telecoms market today reveals three important findings.

- ◆ **Although telecoms firms remain large, it is possible to have private ownership and competition.** The telecoms industry is a segmented one in which different institutions can operate independently or inter-dependently. This was not the case three or four decades ago. Although most governments that privatised over the past three to four decades have been cautious and are monitoring the situation closely, it can be concluded that the telecoms market has become open and competitive. However, a certain degree of **regulation** is still required in the telecoms industry due to the size of the utility. Government must, for instance, ensure that competition exists.
- ◆ **Either the public or the private sector can provide the service.** The telecommunication service itself is excludable from use and rival in consumption. In terms of public economics theory, the service can be categorised as a private service. As long as institutions meet the regulatory requirements and have the necessary resources, they should be able to participate in the industry.
- ◆ **It is feasible to privatise telecoms firms.** This is because it is possible to have competition in the telecoms industry and either the public or the private sector is able to provide the telecommunication service. Most telecoms firms have seen tremendous transformation as they are transferred from government ownership and control to the private sector. Telkom is not so different from telecoms firms such as STM, CTC and TELMEX. There are similarities in privatisation objectives, processes, obstacles and economic conditions in many developing countries. Like many other

developing countries, South Africa embarked on the privatisation of its fixed-line telecoms firm due to a combination of social, political and economic reasons. South Africa may tap into the experiences of other countries during the final phase of the full privatisation of Telkom.

The results from the 30 per cent sale and the subsequent IPO of Telkom indicated that telecommunication is one strategic industry that is perfectly positioned for full privatisation in South Africa. Furthermore, it can help government to achieve its economic and social reform objectives. Although there has been limited success in uplifting low-income groups, the partial privatisation of Telkom proved to be a worthwhile exercise for the country in several ways. The level of telecommunication services improved, foreign exchange was gained, government revenue was earned, capital markets were boosted and skills were developed. It may be necessary for the South African government to opt for empowering low-income groups by using the privatisation proceeds to supply social necessities to them instead of trying to distribute shares to them. However, this requires an improvement in the service delivery capabilities of government.

While the privatisation objectives outlined in the privatisation framework policy document are very important, there are challenges facing government, Telkom, and ICASA, *viz.*, commitment, further restructuring and stability, respectively. In order for the government to realise its telecoms privatisation objectives and ensure smooth competition in the industry, it is advisable to, among other things:

- ◆ Finalise the exercise by privatising Telkom in full. The sooner this is done the better for the domestic economy and the telecoms industry in general. This will further ensure that there is no unfair advantage, e.g., government backing, that Telkom may have over new competitors which may enter the market.
- ◆ Ensure that all aspects of full privatisation are met. This includes making sure that the process is:
 - ▶ transparent and all stakeholders are on board;
 - ▶ a clear guideline for the process including government's position on foreign investors is in place;
 - ▶ all regulatory measures are in place and a plan for dealing with known or potential external effects of the privatisation process is in place; and
 - ▶ ensure that a fixed-line competitor is granted a license.

Government should always keep to the main privatisation objectives. Dealing with the concerns of

labour unions is a crucial step that may ensure that investors are encouraged. Opposition to government policies does not mean that telecommunication and regulation policies should be abandoned.

The following factors are among those that may help to measure the success of privatisation as outlined in the foreign case studies and should be kept in check by government:

- ◆ See to it that the telecoms privatisation fits into the broader picture of economic reform.
- ◆ The necessary laws governing the privatisation process should be in place.
- ◆ The privatisation process should be transparent, e.g., competitiveness of the bidding process and length and size of the privatisation transactions.
- ◆ The costing procedure should be clearly stated.
- ◆ Promotion of equity should be attended to.
- ◆ Areas in the industry where expertise is required should be highlighted.
- ◆ Privileges given to the newly privatised firm should be clearly defined.

The biggest challenge for Telkom is to ensure that it continues to gear itself up for competition. The company needs to look into the following aspects:

- ◆ Internal structures.
Efficient market oriented operational methods must be adopted. This is also true for staffing. The number of employees must be suitable for the newly formed company.
- ◆ External structures.
Proper information collection and dissemination channels should be put into place. As a market oriented institution, the company will need more information for decision making.

The regulatory body, ICASA, also needs to ensure that it is a strong and effective institution that will be able to provide smooth and effective regulation to the industry. The regulatory body is currently considered by some as not financially sound enough. That may be a concern that needs to be sorted out between ICASA and government. The following are important items to be refined by the regulator:

- ◆ Legal powers.

The regulatory body must have a strong legal backing in order to perform its activities. The independence of the body is also essential.

◆ Competition strategies.

The licencing and competition strategies in the competition policy must be interpreted clearly and correctly.

◆ Privatisation objectives.

The regulatory body should regulate the industry with the main privatisation objectives as part of its priorities. Such regulation will help to achieve the privatisation objectives.

The South African economy needs policies such as telecommunication privatisation and regulation in order to grow. As in Mexico, if the South African government wants to make a firm statement about its commitment to economic and social reform, and privatisation in particular, then Telkom is a perfect candidate for full privatisation because it is a large strategic institution that can boost the economy if privatised. Government, therefore, needs to proceed with the final phase of telecoms privatisation and also continue to investigate privatisation possibilities in other industries. Although South Africa has managed to get many economic fundamentals in order, economic growth has not been pleasing in recent years. One reason is the fact that there has not been enough foreign investment coming into the country. However, government needs to deal effectively with the concerns of opponents or any setbacks that may arise due to the privatisation process.

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