

A COUNTRY COMPARISON OF BEST PRACTICES IN THE TELECOMMUNICATIONS SECTOR

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ABSTRACT

South African telecommunications industry is in the process of being liberalized. There are concerns with regard to high telecommunications prices that may hamper the delivery of broadband services, job creation and the bridging of the digital divide. This article explores delivery of telecommunications services in the international arena to detect what could be viewed as best practices. The aim is to analyze and thereafter to recommend a policy that can be applied in the South African environment with a possibility of a successful liberalized industry.

INTRODUCTION

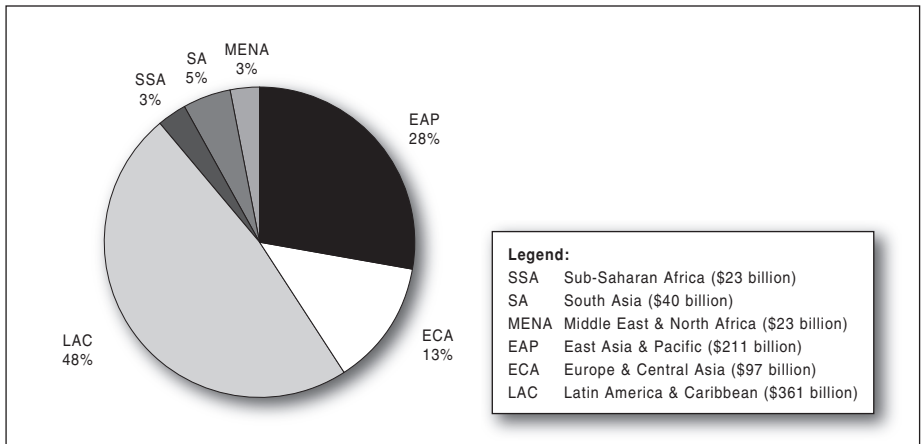
Most economists agree that privatization of telecommunications companies has emerged as a solution for improvement in the delivery of goods and services. Developed and some developing countries have experienced lower prices, and better quality, innovation and delivery of services into under-served areas because of the liberalization of this industry. Information and communication technology (ICT), like other services such as labour, transport, electricity, water and finance is a key input in all sectors of the economy and therefore any inefficiencies experienced in these sectors will affect the rest of the economy. Retrenchments of workers, amongst others, arising from a need to improve productivity have left people wondering whether it is worthwhile to privatize essential services. This paper seeks to explore the rationale for privatizing the telecommunications industry. The regulatory environment is also put into perspective in search of

effective tools that would propel privatization into producing the desired results.

(Kessides, 2004) maintains that low labour productivity, deteriorating physical facilities and equipment, poor service, chronic revenue shortages, inadequate investment, theft and non-payment of services, high telecommunications pricing coupled with low pricing of electricity, water and some segments of transportation are some of the problems faced by economies of developing countries and countries in transition.

Countries that have managed to attract foreign investment and also adopt knowledge-based technologies have by-passed regions such as the Sub-Saharan Africa in alleviating poverty. Figure 1 gives an impression of the flow of private investment into developing countries during the period 1990-2001. Sub-Saharan Africa and the Middle East and North African countries received the least (each region received only 3%) whilst Latin America and the Caribbean received the largest portion of the funds (48%).

Figure 1: The flow of Private Investment into Developing Countries 1990-2001



Source: Harris (2003) in (Kessides, 2004)

LESSONS LEARNED FROM OTHER COUNTRIES

The introduction of competition usually puts enormous challenges on telecommunications companies – challenges that range from provision of high quality goods and services at lower prices at the one end, to interconnection regulations at the other end. In overcoming these challenges, companies need to restructure their departments and introduce new products (innovate).

INNOVATION AND THE RESTRUCTURING OF DEPARTMENTS

Bachelet (2004) notes that customer focus and cost control are the key tools that companies can use to meet the challenges of convergence. They should change their attention from product-focused to customer-focused marketing strategies. He

goes further states that few companies have managed to adapt to this strategy because of regulatory constraints. For instance, British Telecom has a separate division for converged services where all businesses are offered converged services such as fixed line telephony, mobile telephony, Internet and television. Other companies such as Telkom SA do not as yet have a separate division for converged services because convergence regulations are still being formulated.

According to (The Economist, 2004) Voice over Internet Protocol (VoIP) service “involves sending voice conversations (or video calls, for that matter) as digital packets over data networks such as the Internet, alongside e-mails and web traffic”. The packet-based networks used in VoIP to carry both data and voice, are in contrast to circuit-switched networks previously used to carry voice only. VoIP is a relatively new concept and thus companies are taking an adaptive approach to implementing the concept. The IP services have an appeal because the costs of providing the service are low (except where companies still have to build infrastructure). Matkovits (2004) asserts that when the Chief Information Officers (CIOs) plan for future networking upgrade, pricing is viewed as the most important variable, followed by support; and implementation of new technology is ranked as the least important factor. The Economist (2004) maintains that VoIP services are not affected by the distance, time and area from where a caller is, meaning that costs are not apportioned in accordance with these factors. Also, consumers are not forced to buy access to broadband and the telephonic service from the same operator or same country. It should, however be noted that the introduction of IP services also poses problems. For instance, the quality of VoIP and speed of service are inferior to fixed line voice because of network congestion. A lot of spam and unwanted calls may be transmitted to customers. Lastly, it is also feared that the IP network will compromise national security. (Kandra et al, 2004; Bast, 2004)

THE REGULATORY ENVIRONMENT

The pace of liberalization depends not only on innovation, but also on the quality of telecommunications policies formulated by countries. Regulators should identify the activities that need to be regulated and also those that do not need regulations. Normally, local the residential sector is not competitive because of the huge infrastructure needed to support the sparsely populated areas with low volumes of demand. These sectors earn higher returns than the residential sector with the result that they attract competition and therefore call for light regulations.

Lessons can be learned from analyzing the following regulatory environments:

- The United States of America is selected because of its complicated, dual regulatory system and the implementation of facilities-based competition and unbundling of services, which did not encourage the building of new infrastructure.
- The United Kingdom is also analyzed because a duopoly was maintained for a long period of time. The policy also entailed facilities-based competition without the unbundling of services and thus, acceleration of competition was not encouraged as entrants into the market were forced to buy infrastructure, which is a costly.

- The Republic of Korea is selected because it is ranked number one as a country with the highest number of broadband subscribers per 100 inhabitants in the OECD countries.
- Brazil, like South Africa, portrays high and persistent income disparities. The Gini coefficient was 0,59, according to The World Bank Report of 2003. Also, like South Africa, Brazil was a latecomer in privatizing public companies as compared to other developing countries and even then the government tried to drive competition instead of transforming public companies into private companies. (Hughes, 2002).
- India is also analyzed because lessons can be learned from a country that has managed to snatch call centre business from the rest of the world; and another reason being that the company, Tata Africa, a Strategic Partner to the South African Second National Operator originates from India.

The United States of America

The regulatory environment in the United States is unique because it is dual, that is, both federal and state governments regulate the telecommunications market. The Federal Communications Act of 1934 gave birth to the Federal Communications Commission (FCC), an independent government agency reporting directly to the Congress. The FCC regulates the provision of national and international telecommunications through radio, television, wire, satellite and cable. The local fixed line market is regulated by the states through the state public utility commission. The U.S. Congress and the President formulate major telecommunications laws. (Harris *et al.*, 1997; FCC.)

The Telecommunications Act of 1996 formulated laws that would liberalize the local market for competition. Regulations paved the way for the setting of non-discriminatory pricing of interconnection networks; access to unbundled network facilities and also reselling of services. The FCC prescribed Total Element Long-Run Incremental Cost (TELRIC) plus a reasonable mark-up to cover common costs as a method of setting rates for unbundled network elements. This method allows capital expenses to be treated as variable costs to ensure full recovery of capital and other costs, whilst also ensuring the curbing of monopolistic pricing. The incumbents were not allowed to recoup incurred costs (of providing unbundled elements) that exceeded costs estimated under TELRIC. Thus the rules did not encourage the building of new infrastructure. (Harris *et al.*, 1997; OECD, 1999)

Harris *et al.* (1997) assert that the unbundling of all facilities coupled with mandatory discounts for resellers of services discouraged the building of facilities. Only facilities that are essential should be unbundled – for example in Canada, access to telephone numbers, directory listings and rural loops were considered to be essential facilities as opposed to, for instance, to urban loops. The US Federal Communications Commission has only issued the long awaited unbundling rules on the 4th February 2005. The new regulations will depend more on infrastructure-based competition. The unbundling rules will only apply in cases where there is no genuine competition. (Abate, 2005).

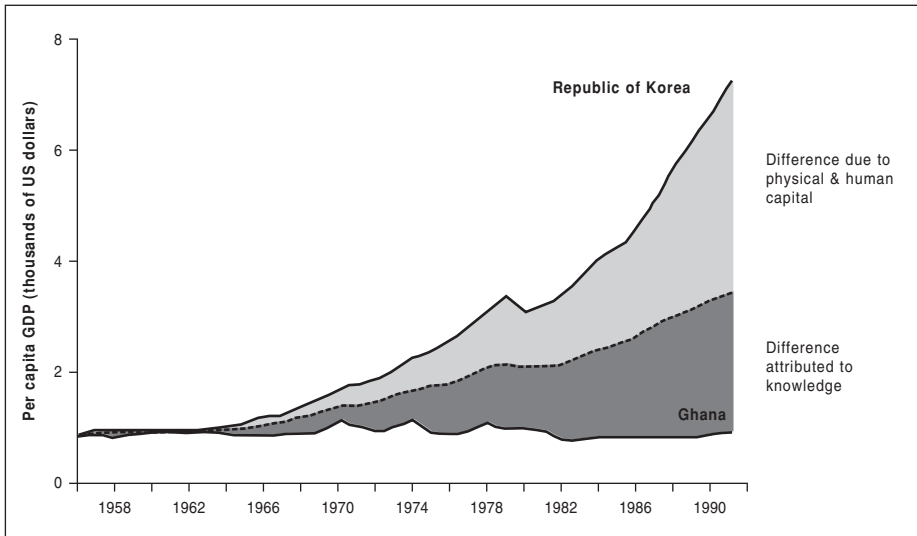
United Kingdom

The United Kingdom opted for a duopoly market. The fixed-line telecommunications licensees were British Telecom (BT) and Mercury. The industry had a duopoly from 1984 to 1991 and international facilities-based services duopoly ended in 1996. The Office of Telecommunications (OFTEL), the regulator was sceptical about the American regulations of unbundling and resale of services. Thus, regulations did not encourage the use of BT facilities by new entrants as regulations ensured that it would not be economical to use BT's infrastructure. The pace of moving into competition was therefore slowed down because competitors were channeled into building their own infrastructure, which proved costly and also because the regulatory environment only allowed for a duopoly. BT secured a significant market share for a long period of time and by 1997, it had a market share of 90%. Cable TV companies were allowed to offer voice services whereas BT was not given the opportunity to offer television services. (OFCOM, 2004; Waverman et al, 1997)

Korea

The Minister of Information and Communication (MIC) is entrusted with regulatory and policy-making powers. The department is also tasked with the telecommunications industry promotion. The regulator, Korea Communication Commission (KCC) falls within the ambit of the Department of Information and Communication. Its duties entail the regulation of competition among telecommunications providers and the protection of consumers.

Figure 2: Knowledge as a Factor in Income Differences between Countries: Republic of Korea versus Ghana, 1956-1990

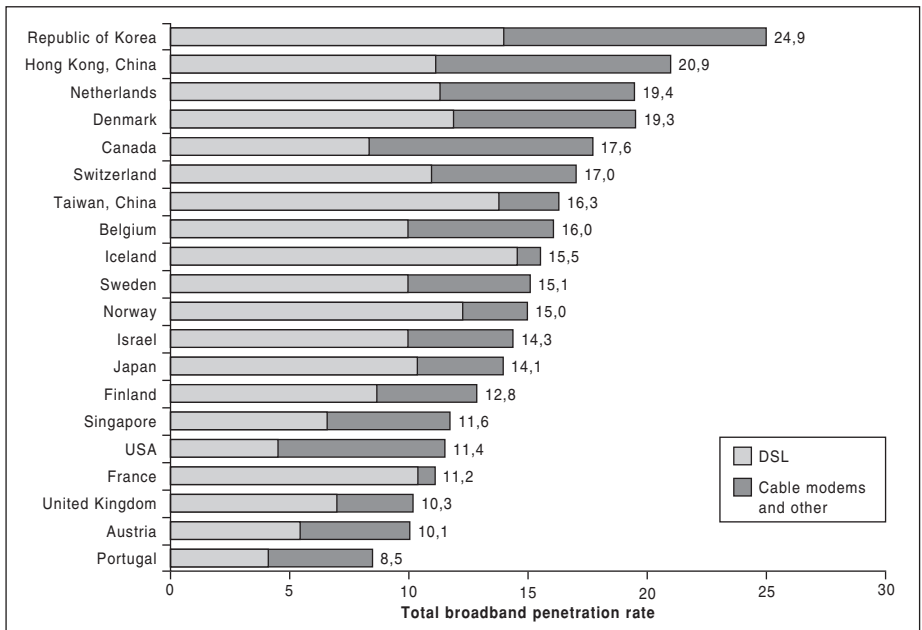


Source: World Bank 1998/1999 in Ovid

However, the final judgement lies with MIC and therefore KCC powers are limited to dealing with consumer complaints and not with the formulation of regulatory policies. Unlike regulators in Europe, United States of America and Canada, KCC is not independent. The Korea Fair Trade Commission (KFTC) is the body entrusted with policy-making duties with respect to competition. Korea's regulations facilitated for facilities-based competition for fixed line and mobile service providers. Provision was made for value-added service providers to lease facilities from facilities-based operators. From 1990 to 1997 the market was open for competition, starting with a duopoly in both fixed line and mobile markets and ending with three operators offering long distance and international fixed line services and two cellular and three personal communications services operators. Korea has a population, which is not significantly higher than that of South Africa (47,97 million for Korea versus 45,3 million for South Africa) but has a higher number of operators in the market. The Telecommunications Business Act facilitated for interconnection and access to facilities regulations. Figure 2 portrays a growing divergence between the per capita income between Korea and Ghana, which was made possible by Korea's accumulation of knowledge and innovation.

Figure 3 shows that Korea has outperformed most countries in ensuring that delivery of broadband is accelerated. OECD and ITU assigned number one to Korea with regard to broadband penetration.

Figure 3: Broadband Penetration By Technology, Top 20 Economies Worldwide, 2004 (Provisional)



Source: International Telecommunication Union (ITU) adapted from National Reports

Brazil

The economic and political crises of the 1980s delayed the liberalization of the telecommunications industry in Brazil. Chronic inflation that persisted during this period led to lower real prices (but high international calls) in the telecommunications industry. Telephone rates persistently lagged inflation as the fight against high inflation continued. The local calls were heavily subsidized. (Botelho et al). Brazil has managed to accelerate privatization of the telecommunications sector despite the fact that the liberalization process was delayed by the military rule from 1964 to 1985 prompting the process to only start in July 1998. Within two years, Brazil was able to pass the Minimum Law and General Telecommunications Law, establish an independent regulator (that was praised by the world for being the most transparent regulator), privatization of operators and the introduction of a duopoly in each region.

Constitutional Amendment No. 8, 1995 initiated an end to the public monopoly. The transformation of the government-owned monopoly company, the Telebràs, was slow because of a need to formulate the telecommunications law of 1995. The Minimum Law was passed in 1996 to facilitate the liberalization of cellular telephony, satellite telecommunications, data transmission and value added services. The General Telecommunications Law, passed in 1997, transferred regulatory powers from the Ministry of Communications to the Agência Nacional de Telecomunicações (ANATEL), a newly established regulatory body.

Privatization was driven through managed liberalization from 1998. Before this period, Embratel, a company that was established in 1965, provided local, long-distance and international services. The Telebràs was a company created in 1972 to manage the merger of 1000 small and medium state and municipal companies that provided local services only. The Telebràs became the holding company. Embratel was also included as a subsidiary of the Telebràs. The Telebràs was later divided into 12 independent companies comprised of three local fixed line Companies; one long distance Company and eight band A mobile service providers. From 1997 to 1998 ten B band mobile operators were licensed to compete with the A band mobile operators. In 1999 more companies were licensed to compete with the existing companies as duopolies in each of the 12 regions. (Hughes, 2002). Consumer protection regulations are incorporated in the Telecommunications Law in Brazil. The regulator ensures non-discrimination of delivery of services to all consumers, the quality of services and attends to consumer complaints. ANATEL was the first telecommunications regulator to receive an ISO-9001 compliance certificate in the world. (Bogdan-Martin et al., 2001; Hughes, 2002)

India

Department of Telecommunications (DoT), a government majority-owned monopoly telephone company, was originally the only company providing telecommunications services. Mahanagar Telephone Nigam Limited (MTNL) was licensed in 1984 to offer basic services in Delhi and Bombay. Videsh Sanchar Nigam Limited (VSNL) was also licensed

to provide long distance services. The separation of postal services from telecommunications occurred in 1985.

The economic reforms were started in 1991. The introduction of competition in the mobile industry took place in 1992. However, regulatory reforms were not introduced at the same time as economic reforms and thus, the old regulatory regime, the Indian Telegraph Act, 1885 was continued to be used to regulate a liberalized environment. Program entailed the provision of manufacturing of equipment, privatization of services, liberal foreign investment, new regulation in technology imports and restructuring of DoT. DoC and DoT were given powers to issue and regulate licences of new entrants (the process of issuing licences was however not transparent and exorbitant fees were charged) leading to unresolved court cases.

The telecommunications policy was reformulated in 1994 through the National Telecom Policy 1994 (NTP94). However, the policy did not pave way for privatization of the three incumbent companies. DoT had powers to implement the policies and to issue licenses to its competitors, which naturally distorted the regulations in its favour as an incumbent. Few of the objectives of this policy (NTP94) were achieved. The service arm of DoT was transformed into a corporate company renamed Bharat Sanchar Nigam Limited (BSNL). The Telecom Regulatory Authority of India Act, 1997 (TRAI Act) resulted in the establishment of an *independent* regulator, TRAI. TRAI was established to deal with issues of tariffs and to resolve disputes, but was not given powers to establish interconnection rules.

The NTP 94 did not deliver up to its promises hence the introduction of the New Telecom Policy, 1999 (NTP 99). NTP 99 addressed the independence of the regulator, and *inter alia* set up teledensity targets, drafted the convergence bill. The provision of Internet Protocol was prohibited.. The Communications Convergence Act, 2000 was in the process of being promulgated to replace the Indian Telegraph Act, 1885 and its regulations. Service-based competition and privatization of the incumbent operators were recommended. The government embraced the recommendations of TRAI that there should be full liberalization of the long distance sector.

From 2001, India experienced growth in the Internet industry. Sectors such as Call Centres and Business Process Outsourcing attracted business from foreign countries because of low labour costs. (Gupta, 2001; Hossain et al, 2003) Although India has a higher ranking in total GNP (10) than South Africa (27), however, the country has much worse GNI per capita ranking (159), which is lower than South Africa (94). (World Bank, 2005)

LESSONS LEARNED

The Favourable

Competition has led to innovation in the telecommunications industry. The introduction of broadband and IP-based infrastructure led to economies of scope and hence the lowering of prices and an increased consumer choice. The Office of Communications (OFCOM)

previously OFTEL notes that the security and quality issues are being solved by the use of multi protocol label switching. OFCOM will assess the extent of scale of economies of IP networks whether they are greater, equal or less than those pertaining to the traditional fixed line networks (public switched telephone network).

Canada has managed the process well because not all facilities were unbundled. All loops were required to be unbundled for five years only and rural loops were to be unbundled permanently. According to Harris *et al* (1997), the Canadian regulator ensured that urban loops, local and tandem switching, transport, rights of way, signaling networks, directory assistance databases and directory assistance services were not classified as essential facilities.

The U.S.A. and U.K. have higher ranking in terms of GNP and GNI per capita than Korea. However, Korea has managed to out-perform these two countries in broadband penetration. It thus appears that there is a weak correlation between GNP and broadband penetration. Figure 2 demonstrates how fast Korea improved the income per capita in comparison to Ghana. This leap in income per capita is attributed partly to acceleration of knowledge-based economy and partly due to the quality and implementation of regulations.

These countries are subjected to quality of service reviews by regulators. The FCC publishes quality of service data together with the number and nature of consumer complaints. The consumer policy has incorporated remedies that deal with non-compliance issues such as slamming – a practice whereby a consumer's fixed line service (operator) is changed illegally without permission. OFCOM and British Telecom have also taken initiatives to introduce rules governing slamming (what they call mis-selling) in line with FCC rules. (OECD, 1999; FCC; BT, 2004) OFCOM, TRAI, MIC and ANATEL require that operators publish quality of service data. ANATEL goes further to promote consumer awareness on television, an act that is unique. The delivery of services into under-serviced areas is implemented in all these countries. (BT, 2004; OECD, 2000; OECD, 2002; ITU, 2001; TRAI, 2005)

The Unfavourable

It has been demonstrated that unbundling of all services can also pose problems because this procedure may hamper the building of facilities (USA), or delay entrance of new competitors if new entrants are forced to build facilities, which can be a costly exercise (UK).

It was pointed out how important the quality and monitoring of the regulatory environment is. India delayed the liberalization of the industry by not giving the regulator an independent status. In fact, it is noted that a unique situation existed in India where the incumbent operator was given the powers to issue licenses and make policies. The delivery of fixed line and mobile telephony is therefore lower in India than in U.S.A., U.K., Korea, Brazil and South Africa. This situation can be partly attributed to a poor regulatory environment. Eventually India has opted for an independent regulator and a full liberalization of the industry.

It is expected that some players in the market will lose some of their customer base due to acceleration of competition fueled by the introduction of an IP network. The

Economist (2004) expresses a view that fixed line operators will experience a 25% fall in revenues by 2010 which will be lower than the projected decline in mobile operators' revenue of 80%. The trend in future revenues is still unclear, as the IP technology is relatively new. For instance, American telecommunications companies are in the process of merging in preparation for competition – SBC is in the process of buying AT&T (a former parent company).

HOW DOES SOUTH AFRICA RATE IN WITH REGARD TO LESSONS LEARNED?

Background

South Africa boasts of well-managed monetary and fiscal policies. It is noteworthy that the South African Reserve Bank has managed to meet inflation targets and the National Treasury has drastically reduced government debt. Standard & Poor have recently upgraded South Africa's long-term foreign currency rating from BBB to BBB+ and the local currency from A to A+ thus, boosting investor confidence. However, many problems still remain. The economy is muddled with sluggish but positive economic growth, high unemployment and the related problems of poverty and crime. Because of skills shortages the government has been forced to introduce skills development programmes. The exchange rate has had times of significant fluctuations while the savings rate has also been very low for decades.

South Africa has opted for gradual liberalization of the economy – *inter alia* gradual implementation of inflation targeting, gradual removal of exchange controls, managed liberalization of the telecommunications industry. Protective policies can delay the liberalization of markets resulting in distortions that may hamper job creation and reduction in poverty. Foreign investors may view gradual removal of exchange controls as government not having confidence in the local economy. The World Bank rating in investor protection for South Africa is 6, the same as for Korea; India has 4, USA and UK has a rating of 7. Investors' perceptions are crucial in determining the willingness to invest in a country.

The South African telecommunications sector is in the era of liberalizing and deregulating the market in order to promote competition. Currently, there is a debate with regard to fixed line and mobile telecommunications pricing arising from complaints lodged by various players in the industry. These complaints are raised even after pricing regulations are finalized and the productivity factor has been increased from 1,5 to 3,5. In other words, Telkom has to reduce prices by a change in Consumer Price Index (Δ CPI) minus 3,5. Will the liberalization of telecommunications industry lead to an increase in the supply of modernized technology at low prices? Also, it appears that South Africa, like Britain has taken a route of a duopoly and this situation may precipitate into problems of price collusions.

A comparative analysis between South Africa and Korea implies that South Africa should work hard to increase its growth competitiveness and extensive use of technology.

Table 1: Growth Competitiveness Index Rankings, 2004

Country	Growth Competitiveness Index	Technology Index	Public Institutions Index	Macroeconomic Environment Index
South Africa	41	40	35	48
Korea	29	9	41	35

Source: World Economic Forum, 2004

Table 1 shows that the overall growth competitiveness index for South Africa is **41** (2004), which is far below Korea, who ranks **29**. South Africa lags behind Korea in components of the index such as the technology index, which denotes that South Africa ranks **40** as compared to **9** for Korea. These figures imply that ICASA must accelerate the liberalization of the sector. Korea, with a population almost the same as South Africa has managed to achieve the status of a high-income OECD member country because it has relied much on the use of knowledge-based technologies (Figure 2).

The Regulatory Environment

The regulatory environment should aim at protecting investors and consumers. The Independent Communications Authority of South Africa (ICASA) is the telecommunications regulator. It has the powers to draft regulations; which are to be approved by the Minister of Communications who also, interferes in the issuing of licenses. At the moment ICASA is busy drafting regulations that will drive the liberalization process. The licensing of new competitors is unfortunately taking a long time and therefore contributing to delays in introducing competition. The independence of ICASA is currently questionable.

CONCLUSION

The transition from a monopoly to a liberalized environment will determine the rate at which the revenues for fixed line operators will decline. Declines in revenue discourage the incumbents from introducing any new technologies. If monopoly power goes on unchecked it will lead to low penetration of telephony (due to high prices) and the supply of poor goods and services. The regulatory climate should not favour one party at the expense of the other. Beardsley *et al* (2004) state that, “the facts argue for more forward-looking and economically viable regulatory solutions rather than for more lenient treatment of incumbents. Reconciling the interests of governments, incumbents, new entrants and customers have always been difficult.”

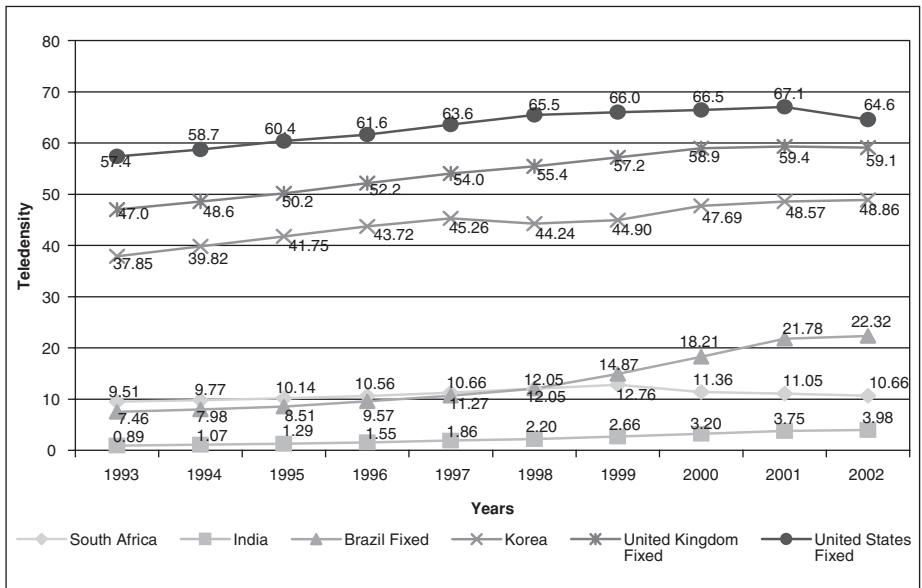
The pace of the liberalization process will also determine the rate at which the introduction of competition will be successful. USA and Korea’s privatization processes were swift and thus the benefits were higher. BT managed to have a perpetual high market share because UK opted for a duopoly. ICASA is presently looking into the possibility that

mobile operators are charging high prices; a sign that competition has not achieved the benefits of lowering prices.

The quality and implementation of regulations as well as the monitoring of such implementation will determine the success of moving away from monopoly to a competitive environment. Protection of incumbents will not assist the process. As mentioned earlier, unbundling of all services can pose problems because this process may hamper the building of facilities, or delay entrance of new competitors (UK). South Africa, as a latecomer, is still busy formulating rules that will drive competition – the country can only take cues from what happened in other countries. South Africa needs to accelerate the penetration of information and communication technologies in order to catch up with developed countries. It can only do so by accelerating the liberalization of the industry; formulate regulatory policies that are fair; encourage more investment into telecommunications industry and protect the under-served areas in order to give the licensed operators in these areas time to acquire skills and thus ensuring a viable market.

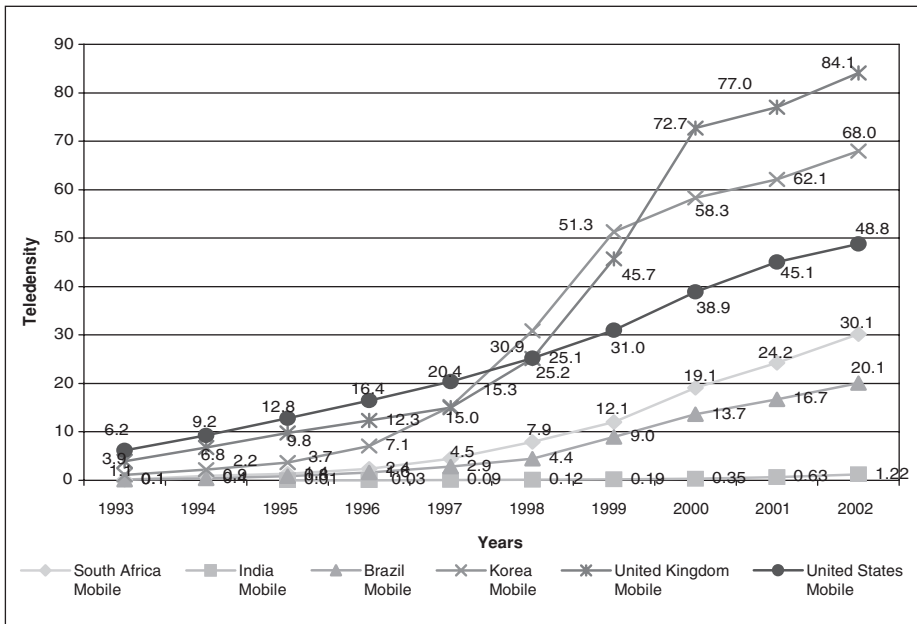
APPENDIX

Figure 4: Main Telephone Lines Per 100 Inhabitants



Source of data: International Telecommunication Union

Figure 5: Cellular Subscribers Per 100 Inhabitants



Source of data: International Telecommunication Union

BIBLIOGRAPHY

- Abate, S. New unbundling rules in the US. <http://www.ovum.com>. 16 February 2005.
- Bachelet, C. Telco structures in a converged mark. <http://www.ovum.com>. 12 February 2004.
- Bast, J.L., VoIP and the End of Monopoly, Byte.com. <http://jbast@heartland.org>. 19 July 2004.
- Bearsley, S. and Enriquez, L., A new route for telecom deregulation. *McKinsey Quarterly*; Issue 3, p. 11, 2004.
- Bogdan-Martin, D. and De La Torre, M. Effective Regulation Case Study: Brazil, International Telecommunication Union, Geneva, Switzerland. <http://www.itu.int/ITU-D/ict/treg>. 2001.
- Botelho, A.R., Ferro, J.R., McKnight, L., and Manfredini Oliveir, A.S., Telecommunications in Brazil. <http://www.rlandell.tripod.com/histbracom.htm>.
- British Telecom, BT calls for action on high level of mis-selling, <http://www.btplc.com>. 3 June 2004.
- Business Day*, SBC announces deal to purchase AT&T. 31 January 2005.
- Dahlman C., Vishwanath, T., and Kouame, A.T. Knowledge for Development. *World Development Report*. 1998/1999.
- Directorate for Financial, Fiscal and Enterprise Affairs Competition Committee, Competition and Regulation issues in Telecommunications, Organisation for Cooperation and Development. 2002

- Federal Communications Commission, Consumer Policy Issues. <http://www.fcc.gov>.
- Gupta, R. India Attempts to Give a Jump-start to its Derailed Telecommunications Liberalization Process, TPRC Conference, <http://www.arxiv.org>. 2001.
- Harris, G.R. and Kraft, C.J. Meddling Through: Regulating Local Telephone Competition in the United States. *The Journal of Economic Perspectives*. Fall 1997.
- Hossain, M., and Kathuria, R. Telecommunications Reform and the Emerging 'New-Economy': The Case of India, The DSA Conference. 10-12 September 2003.
- Hughes, R. Privatization and Modernization of Telecommunications in Latin America. Southwestern Social Science Association, New Orleans, Louisiana. 27-31 March 2002.
- International Telecommunication Union, Yearbook of Statistics, 15 March 2005. <http://www.itu.int/ict>.
- Kandra, A. Should You Switch to a Net Phone. *PC World*, Vol. 22 Issue 11. November 2004.
- Kessides, I.N. 2004. *Reforming Infrastructure, Privatization, Regulation and Competition*, A co-publication of the World Bank. Oxford University Press.
- Matkovits, N. CIOs find IP VPN ways to boost credibility, <http://www.ovum.com>. 21 April 2004.
- OECD, Communications Outlook 1999. Telecommunications: Regulatory Issues. Country: United States. December 1998.
- OECD, Regulatory Reform in the United States. Regulatory Reform in the Telecommunications Industry. 1999.
- OECD, Regulatory Reform in Korea. Regulatory Reform in the Telecommunications Industry. 2000.
- OECD, Regulatory Reform in the UK. Regulatory Reform in the Telecommunications Industry. 2002.
- OFCOM Consultation, Strategic Review of Telecommunications Phase 1. 2004.
- Ovid, T., The Changing Global Environment. <http://www.worldbank.org/education/tertiary>.
- Quality of Service Report, BT's quality of service performance from October 2003 to March 2004. <http://www.bt.com>.
- Telecom Regulatory Authority of India, The Indian Telecom Services Performance Indicators Jan-Mar, 2005, <http://www.trai.gov.in>. June 2005.
- The Federal Communications Commission, About the FCC: A Consumer Guide to our Organization, Functions and Procedures. <http://www.fcc.gov>.
- The Economist*. The phone call is dead: long live the phone call. Vol. 373, Issue 8404, 12 April 2004.
- Waverman, L., and Sirel, E. European Telecommunications Markets on the Verge of Full Liberalization. *A Journal of Economic Perspectives*. April 1997.
- World Bank, Brazil. *Inequality and Economic Development*. Volume 1: Policy Report. October 2003.
- World Bank. *World Development Indicators database*. July 2005.
- World Economic Forum. *Growth Competitiveness Index rankings*. 2004.