

			Learning Information Networking Knowledge
			Wits University Graduate School of Public and Development Management

Faculty of Commerce, Law and Management
University of the Witwatersrand, Johannesburg
PO Box 601
Wits
2050

Tel: 27-11-717-3913 / 3904
Fax: 27-11-717-3910
e-mail: gillwald.a@pdm.wits.ac.za

Stimulating Investment in Network Extension: The Case of South Africa

Alison Gillwald¹

World Dialogue on Regulation 2003

¹Research assistance provided by Stephen Esselaar, Researcher, Witwatersrand University LINK Centre.

Abstract

While South Africa was hailed as one of the early starters of telecom reform on the continent in the mid-1990s, investment in the sector has focused on maximisation of state assets at the expense of broader sector development and provisioning of affordable access. State policies to induce investment in the sector through privatisation appear to have been short-sighted and attempts to induce investment in greenfield licences marred by a lack of transparent and contradictory licensing processes.

Most significantly the strategy for privatisation of the incumbent monopoly coupled with a period of exclusivity and restrictions on liberalisation of market segments has not delivered on national objectives. These included the extension of the network to provide affordable services to unserved citizens and the acceleration of the development of the network to provide enhanced services required in a network economy. In fact by the end of the five year exclusivity period two million subscribers had been disconnected largely due to high price of services and the critical Value Added Network Services segment of the market in an economy, excluding the incumbent's VANS portion, had shrunk.

The mobile sector has flourished largely because the eyes of government and the regulator have been focused on public switched telecom services. Considerable investments in network expansion have been made particularly by the duopoly mobile operators, Vodacom and MTN, in South Africa and increasingly across the continent.

Extension of facilities based competition in fixed networks and international gateways has resulted in effectively three public network licences in this area with little foreign investment or skills transfer. While the ownership of some of these has been diluted with strategic equity and public ownership, historical legacies in some cases, and policy and regulatory constraints in others, means that South Africa is unlikely to see the relatively high risk investment and market responsiveness witnessed in the mobile sector.

While difficult to quantify, all evidence suggests that adopting a more open market structure, with an effective competition regulatory regime – such that exposed Telkom to competition with the associated efficiency gains – would have yielded a net benefit to this critical sector of the network economy and better fulfilled national policy objectives of accelerated network development and affordable access.

There is little doubt this would have resulted in significant short-term cost to government, both with regard to the initial privatisation value, premised on an extension of the monopoly, and possibly the share price of the IPO. But even this is an assumption. In fact, what the value of selling Telkom with or without its residual monopoly power would have been, remains unexamined. What is clear from international and local evidence is that determining policy and regulatory frameworks on the basis of immediate benefits for the Treasury will not serve the more strategic national interests of the country in the global economy. Further, any short-term losses that might occur from the creation of a more competitive environment need to be assessed against longer-term growth, which would reduce public expenditures and bolster revenues.

This is unlikely to happen until the structural conflict of interests that exist within the Ministry of Communication is addressed. As long as the Minister remains responsible for optimising the value of state assets in the sector while also serving as the institution responsible for creating a policy environment that is fair and encourages the development of all players in the sector, including the direct competitors to state entities, the short-term interests of state will prevail over the longer-term interests of the sector and the economy.

This paper argues that there is significant evidence that demand for communications services can innovatively met through market forces and gaps in market cost-effectively filled by enabling alternative operators to enter areas regarded as unprofitable by the incumbents. However, their success in every instance in developing countries is dependent on strategic policy and effective market regulation which includes reduced regulatory risk to induce local and foreign investment.

Contents

1. Introduction.....	5
2. The South African Telecommunications Market.....	10
3. Network Investment and Capacity.....	13
4. Network Coverage and Subscriber Numbers.....	15
5. Investment Purpose, Risk and Opportunity.....	17
5.1. <i>Political and economic stability and opportunity</i>	18
5.2. <i>Policy</i>	20
5.3. <i>Institutional arrangements</i>	21
5.4. <i>Privatisation</i>	21
5.5. <i>Regulation</i>	22
6. Policy and Regulatory Challenges.....	23
6.1. <i>Price regulation</i>	24
6.2. <i>Interconnection</i>	25
6.3. <i>Access to resources</i>	26
6.4. <i>Obligations and levies</i>	27
7. Conclusions.....	27
8. References.....	31

1. Introduction

The shift from the buoyant investment environment in telecommunications globally at the end of the last decade to the declining state of global investments during the last few years, precisely at a time that many developing countries were opening up their telecommunications sectors, makes South Africa an interesting case study.

Despite its political isolation, as far back as the late 1980s, the technological and economic drivers of digitisation and liberalisation compelled the South African state to acknowledge that the monopoly telecom utility, Telkom, was not meeting the needs of a modern economy. To do so would require significant levels of investment in the network that the state could no longer provide. Besides servicing less than 10% of the population, despite waiting lists going back years, uneven and inefficient internal investments – even after corporatisation in 1991 – had produced a gold-plated, highly indebted network. In line with global trends at the time, towards the introduction of facilities-based competition aimed at shifting the financial demands on the state for the provision of telecommunications on to the private sector, South Africa began to pry open its market in the early 1990s.

Heavily overlaid by the politics of transformation, the telecommunication sector became one of the primary areas of contestation during the 1990s. Intentions by the apartheid state of privatising state assets prior to the first democratic elections in 1994 were fiercely resisted. Such actions were viewed as asset-stripping prior to the inevitable entry of a new government. While undoubtedly politically motivated, such actions were in line with early moves towards privatisation and liberalisation. In a final act of power, but also on the grounds of attracting domestic and foreign private capital and indeed shifting the risk of new, untested network technologies such as GSM onto the private sector, two new mobile networks were controversially licensed in 1993, in the dying days of the apartheid regime.

Of the two, Vodacom, was half-owned by the incumbent. The other, MTN, was intended to include black South Africans in the telecommunications sector for the first time, and deal with the commercial aspirations of the South African state transport company's communications network, Transnet. These licences were to bring in the first foreign investment in the sector, netting R100 million (US\$ 31 million at 1993 rates) in licence fees, which laid the ground for extensive mobile network expansion, not only in South Africa but, in time, throughout the continent.

Having secured formal power in the 1994 elections, the Government of National Unity led by the African National Congress, confronted by the realities of government and global governance, increasingly aligned its emerging policies and approaches to economic growth and governance with those espoused by multilateral agencies responsible for international trade and financing. For telecommunications, South Africa adopted the prevailing multilateral model of the mid-1990s to extend and modernise the network and to provide services to the unserved majority of the population through a strategy of network roll-out through privatisation, complemented by a universal service fund.

Corresponding to a key aspect of the reform model and in compliance with WTO requirements, a sector regulator was established with the passing of the Telecommunications Act in 1996. This authority subsequently merged with the broadcasting authority to become

the Independent Communications Authority of South Africa (ICASA). The rationale for the merger was the increasing convergence of the telecommunications and broadcasting sectors, as well as the efficiency and cost benefits of a single entity and the creation of a one-stop shop for all ICT investors, operators and service providers.

In 1997 the government partially privatised Telkom through the sale of a 30% stake to a consortium, Thintana, consisting of the US conglomerate Southwestern Bell Company (SBC) and Telekom Malaysia. In line with prevailing wisdom espoused by international agencies at the time, to attract a serious bidder and decent revenues for the Treasury, the licence came with a five-year exclusivity on public switch network services. At R5.6 billion (US \$1.22 billion at 1997 rates), this transaction reflected the most significant investment in Africa that year, and the continent’s biggest-ever investment in telecommunications. As the dominant owner of this newly-financed entity, the state pursued a policy of “managed liberalisation” that would protect Telkom’s revenues during the expansion of the network and allow it time to prepare for competition.

Table 1 – Comparison of largest telecom investments in Africa

	Description of Licence	Licence Fee US \$
Morocco	35% of incumbent	2,300,000,000
	2 nd GSM Licence	1,100,000,000
South Africa	30% of incumbent	1,220,000,000
Nigeria	49% of incumbent	285,000,000
	2 nd GSM Licence	285,000,000
Tanzania	5th GSM Licence	90,000,000
Mozambique	2 nd GSM Licence	15,000,000
Uganda	2 nd GSM Licence	200,000

Sources: ITU, Communications Week International, Tanzanian Ministerial statement by Minister for Communication and Transport, Cellular.co.za and MTN Annual Report 2003.

An assessment of the impact of this investment and the conditionalities that accompanied it, on other investments in the sector during the exclusivity period, and the contributions the investment made to achieving national policy objectives, are considered below. Suffice to say here that the strategy failed to deliver on fundamental national policy objectives. Although the network was comprehensively digitised, and new technologies such as ADSL reticently deployed and quality standards improved, at the end of the exclusivity period close to two million subscribers had come off the network, largely due the lack of affordability of basic services. In addition, growth of open segments of the market that had to compete against Telkom during the exclusivity period lagged growth rates in similar-size markets over the same period (Gillwald and Kane, 2003:35)

Subsequent efforts to induce investment through facilities-based competition have been all-but scuttled by the lack of administrative capacity, convoluted licensing process and accusations of political interference. In the case of the third mobile licence, these factors resulted in a court challenge following the announcement of the winning consortium led by Saudi Oger and local consortium Cellsaf. The licensing process was drawn out for 18 months, crippling smaller players, particularly empowerment groupings that had been earmarked as beneficiaries of this process. It drained the liquidity of applicants and ultimately escalated the

start-up costs of the business to untenable levels, thus undermining strategies to enter the market by undercutting the GSM incumbents' rates.

The unintended positive consequence of this threat of competition to the duopoly mobile incumbents was that they began investing extensively in pre-paid services, as indicated in the Table 2. Previously regarded as unviable by the incumbents due to low per capita incomes and associated average revenue per user (ARPU) estimates, such services were promised by bidders for the third licence as the key to their success long before the bidding process had even begun. As the operational dates in the bidders' business plans were steadily eroded so was their potential market share. The duopoly incumbents began ratcheting up their pre-paid subscribers at such a rate that by the time the third cellular licence was granted in 2001 the incumbents between them had acquired an additional 500,000 subscribers.

Table 2 – Comparison of capital investment in network expansion in mobile sector

Operator	Billions of Rands ^a
Cell C	2.5 (US\$370 million)
Vodacom ^b	15,987 (US\$2,351 billion)
MTN ^c	8,671 (US\$1,275 billion)

Sources: ITWeb, Vodacom Annual Reports, MTN Annual Reports

^a Conversions, in this table only, into US\$ are using an average exchange rate of 6.8 for the 2004 year.

^b Calculation based on cumulative network capital expenditure per customer multiplied by total number of customers. Vodacom Group Interim Results, September 2003, p 12.

^c Same method as with Vodacom, MTN Annual Report 2003 p 30.

One of the reasons offered for the success of the mobile market, which collectively has tripled the number of subscribers on the fixed network, is the relatively low regulatory transaction costs since its inception in 1993. Based on estimations of a couple of hundred thousand subscribers each in their first five years, rather than the millions they reached, the duopoly mobile licences were sold in 1993 for a mere R100 million (US\$ 31 million at 1993 rates). For the third mobile licence, Cell C paid nothing up-front but R100 million (US\$14.7 million²) over 12 equal instalments beginning in the third year of commercial operations or the equivalent of \$2.2 per capita –a relatively small licence fee per capita compared to Morocco's 2nd mobile licence, which sold at \$39.47 per capita, and more in line with either smaller markets or where regulatory risk is generally perceived to be higher. A per capita price of \$2.44 was paid for the MTN's mobile licence in Nigeria, \$0.01 per capita by MTN in Uganda licence³ and Vodacom's \$2.74 per capitaby Vodacom in Tanzania⁴

The Value Added Network Service (VANS) providers, including ISPs, however, have not been as fortunate. Required by the law to obtain all their facilities from the incumbent Telkom, which competes with them in this competitive segment of the market, the VANS providers have seen the VANS market, excluding Telkom's share, shrink during the period of

² Using an average exchange rate for the 2004 year of 6.8 rands to the US dollar.

³ MTN Annual Report 2003

⁴ At the time of purchasing the license (for \$90 million), Vodacom owned 55% of the license, while 45% of the license was held by Tanzanian shareholders. Vodacom would therefore only have paid \$49.5 million.

the exclusivity, with the period characterised by a litany of complaints to the regulator and the Competition Commission, charging Telkom with anti-competitive behaviour.

South Africa, like other governments, both in the developed and developing world, has tended to focus on initial up-front payments rather than longer-term contributions to the economy and Treasury, such as longer-term tax revenues. The fiscal impact of licences granted already is sizeable, with taxes paid by telecommunications licencees to the Treasury in the 2003 financial year amounting to R1.922 billion⁵ (US\$254.57 million⁶). These would have also been further supplemented by taxes paid by the R5 billion (US\$662 million) VANS industry of an estimated R1.5 billion (US\$199 million).

The focus on the maximisation of state assets has compelled the state to pursue a policy of “managed liberalisation”. In the first phase, there was the focus on securing the optimal price in the partial privatisation of Telkom in exchange for rights and exclusivities that allowed the strategic equity partner to milk its investment. During the second phase of managed liberalisation, the state’s preoccupation with Telkom shifted to the initial private offering (IPO) and the creation of conditions that would maximise its share price.

After much delay, the final offer valued Telkom at R15.6 billion (US\$1.486 billion⁷), considerably lower than its R100 billion (US\$9.5 billion) valuation a few years previously, before the steep fall in the industry’s stock market value. In the year ending March 2002, Telkom had revenue of R34 billion (US\$3.24 billion), and posted a net profit of R1.2 billion (US\$110 million). At R28 (US\$2.67) per share, the initial share price that was finally settled on earned R3.9 billion (US\$370 million). This was less than half the R10 billion (US\$950 million) the government had planned to raise a year before from its major privatisations.

The IPO also represented South Africa's biggest attempt to spread share ownership amongst the black majority in an economy still dominated by whites nine years after apartheid. Historically disadvantaged individuals were offered a 20% discount to the offering price on the shares in a scheme referred to as Khulisa. In addition, if these individuals hold on to their shares for two years, they will qualify for a loyalty bonus of one extra Telkom share for every five shares they own. All other South African citizens were allowed to buy shares at a 5% discount to the offering price (Gush and Ginsberg, 2003).

However, the Khulisa offer was rejected by the biggest trade union coalition, COSATU, which contended:

that for working people, the costs of the commercialisation and privatisation of Telkom far outweigh the largely illusory benefits of a discounted share offer. Put bluntly, the vast majority of people earning under R5,000 [US\$662⁸] a month simply cannot afford any part of the Khulisa offering. ... At the same time, commercialisation and privatisation have greatly increased the cost of living for working people. In telecommunications, in particular, the commercialisation of Telkom has led to soaring costs for low-income households, although rich consumers enjoy better services and lower tariffs (COSATU Press Release, 2003).

⁵ Vodacom’s South African taxes (2003): 1.231 billion Rand – Vodacom Annual Report 2003, p. 84

MTN’s South African taxes (2003): 691million Rand – MTN Annual Report 2003, p. 84

⁶ Using an average exchange rate for the 2003 year of 7.55 rands to the US dollar

⁷ Using an average exchange rate for the 2002 year of 10.5 rands to the US dollar

⁸ Using an average exchange rate for the 2003 year of 7.55 rands to the US dollar

This did not deter the government, which has hailed the IPO as a triumph as the share price has soared to over R70 (US\$10.29⁹) a share in 2004, allaying fears ahead of the impending 2004 election of a loss in the share price. The IPO raised about R3,828 billion (at 2003 rates US\$500 million) for the South African government, which sold 25% of Telkom's shares. SBC and Telekom Malaysia paid R5.6 billion (US\$1.22 billion) in 1997 for 30%.

However, the benefits of this have come too late for empowerment consortium Ucingo, who were meant to be the beneficiaries of a 3% shareholding in the initial privatisation. They raised R565 million (US\$65.55 million¹⁰) from funders to pay R33.90 (US\$3.93) per share for the 3% holding in 2001 anticipating the price would soar when the company was listed. With the collapse of the telecom sector globally and the resultant delays in the listing, the value of the stock plummeted and the share price was finally set at around R28.00 (US\$2.67) for the listing. Highlighting the dangers of borrowing to acquire equity, Ucingo, unable to service its soaring debt, had to withdraw, negatively impacting on a string of pension investment funds which had been guaranteed returns of 30% (Mail and Guardian March 12-18, 2004).

A further 5% of Telkom that was supposed to be warehoused by the National Empowerment Fund with the initial privatisation has also not materialised.

The determination to keep Telkom's monopoly power intact to improve the immediate budget balance occurred even at the expense of other state entities. The broader policy intention to open up the sector – and particularly to provide lower-cost broadband capacity for Internet Service Providers – through the preferential granting of international gateway and multimedia licences to the publicly-owned signal distributor, Sentech (by the Telecommunications Amendment Act in 2001), was undermined by the lobbying of the Ministry and Parliamentary Portfolio Committee to protect the incumbents' revenues, and particularly Telkom. Telkom, argued that the favourable conditions proposed for Sentech would result in it effectively becoming a third public switch network operator. The resulting legislation severely compromised the ability of the regulator to licence Sentech effectively and Sentech's ability therefore to be competitive. Its attempts to become operational have consequently been severely delayed by legislative amendments, court challenges and regulatory clarification.

Investment implications of this preferential Sentech licence relate more to stimulating internal investment at this stage than securing foreign investment. However, one assumes that the purpose of granting this licence, uncompetitively and by statute, is to increase the value of this rather neglected state asset for privatisation at some point.

Two major investment opportunities in the country's telecommunications sector have been severely impacted by not only the downturn in the global economy and the sector, but also by the negative perceptions of political and regulatory risk arising from the controversies of the licensing process for the third cellular operator. None of the licences that were supposed to come into play at the formal end of Telkom's exclusivity period in May 2002 are yet operational. Hampered by the kind of licensing delays that plagued the third cellular licence, the Second National (fixed-network) Operator (SNO) licence has now been granted to consortia that will bring in very little capital, since 25% of the equity has been "warehoused" by the government until a suitable investor can be found.

⁹ Using an average exchange rate for the 2004 year of 6.8 rands to the US dollar

¹⁰ Using an average exchange rate for the 2001 year of 8.62 rands to the US dollar

The size of the investment in the SNO was limited from the start by the set-aside of 30% to be shared by the state-owned power utility's communication arm, Eskom Enterprises, and the state-owned transport company's communications network, Transtel. A further 19% was set aside for empowerment purposes and was licensed to a grouping called Nexus in a separate process. The terms of the award to Nexus require an investment of approximately one billion rand in the Second National Operator. The SNO has also been a victim of the complex co-jurisdictional nature of the licensing process for major network licences in South Africa, where licences are called for by the Communications Ministry on conditions set by it, then evaluated by the regulator ICASA, which recommends a successful bidder or bidders to the Minister, who then grants the licence, with the final licence then issued by the regulator. In two separate licensing rounds for the SNO, the regulator on both occasions declined the bids of the bidding consortia on the basis of their failure to meet the minimum requirements set out by the Ministry. This resulted in the Minister establishing a committee led by the Department of Communications to negotiate a licence with the various parties. In late 2003 the Ministry announced that both bidding parties in the final round – both of which had been rejected by the regulator – would share 26% of the remaining equity, with 25% being “warehoused” by the government until a suitable player could be found. The terms of the SNO licence are currently being finalised, but to-date Transtel and Eskom Enterprises have invested between R1.2 and R1.6 billion (US\$176.5 – US\$235 million¹¹) in the fibre optic network infrastructure that has been installed.

The focus on the SNO licensing process has happened at the expense of the initial ten Under-Serviced Area Licences (USALs), which are intended to provide services to areas with less than 5% teledensity. Initially unable to tap into the Universal Service Fund, these licences have now received a promised grant of R5 million (US\$0.74 million) upon licencing and promises of interest-free loans of up to R10 million (US\$1.5 million) over the first three years. The basic capital needs of a single local USAL network are estimated to be R20 million (US\$2.9 million), based on an international average cost per fixed line of US\$1000 (currently R650). This figure could be reduced significantly if USALs were able to share satellite platforms, software for services and billing, etc. But despite these belated funding arrangements put forward by the Universal Service Agency, the business cases of the USALs may still be doomed, not just by the delays to market, but also by ICASA's withdrawal of the proposed asymmetrical termination rates. An independent consultant proposed to ICASA at its public hearings on USALs that without a termination rate as high as 50-70% and the ability to share facilities, the USAL licencees would not be viable and therefore would be unlikely to attract sufficient investment.¹²

The remaining significant investment opportunity arising from the current law is the requirement that the regulator investigate the feasibility of the introduction of a fourth cellular licence before the 2005 financial year. With some luck this process will take place under the new proposed cConvergence legislation, which goes some way to ameliorating the currently inhibiting arrangements for new entrants and is aimed, amongst other objectives, at stimulating the rather poor investment record in South Africa's telecom sector.

2. The South African Telecommunications Market

During the ten-year period between 1992 and 2001, revenue generated by the sector grew from R7 billion to R56 billion (ITU, 2002; BMI-T, 2002: LINK Centre Analysis). In the

¹¹ Using an average exchange rate for the 2004 year of 6.8 rands to the US dollar

¹² For detailed cost study see African Ventures Financial Assessment of USAL, commissioned by IDRC 2002.

process, it grew from representing 1.9% of South Africa's GDP to 5.8%. Such figures are often used to demonstrate the success of telecom reform in South Africa. Even international comparison suggests that this growth is significant. For example, in South Korea, a shining example of ICT growth, telecommunications only represented 4.3% of GDP in 2001. However, disaggregation of the data may paint a different picture, including the reality that the increased contribution to GDP may reflect the high cost of telecommunications. That there has been increased activity and expansion in the sector is nevertheless obvious.

The partially privatised public switched telecommunications network (PSTN) incumbent, Telkom, has made impressive gains during the period of its extended monopoly from 1997 to 2003, growing its activities from R7 billion in 1992 to R43 billion in 2001 and retaining a significant 43% of total market share.

Meanwhile, the mobile cellular market has grown beyond all expectations, with over 30% of the total voice telephony market share by 2001, and more than three times the number of subscribers than the fixed network. Pre-paid services have been a key driver. According to market research firm BMI-TechKnowledge, today the pre-paid market in South Africa makes up 75% of cellular subscribers, and more than 90% of new connections are pre-paid. Indeed, new entrant Cell C estimates that 98% of its subscribers are pre-paid users. These figures are in line with the experience throughout Africa where BMI-T estimates that between 90% and 95% of cellular customers are pre-paid. However, while contract customers only make up 25% of subscribers in South Africa, they still generate around 70% of revenues due to their much higher ARPU. Vodacom's financials are fairly typical for South Africa in this respect, with post-paid ARPU standing at R547 per month, over five times the pre-paid ARPU of R93.

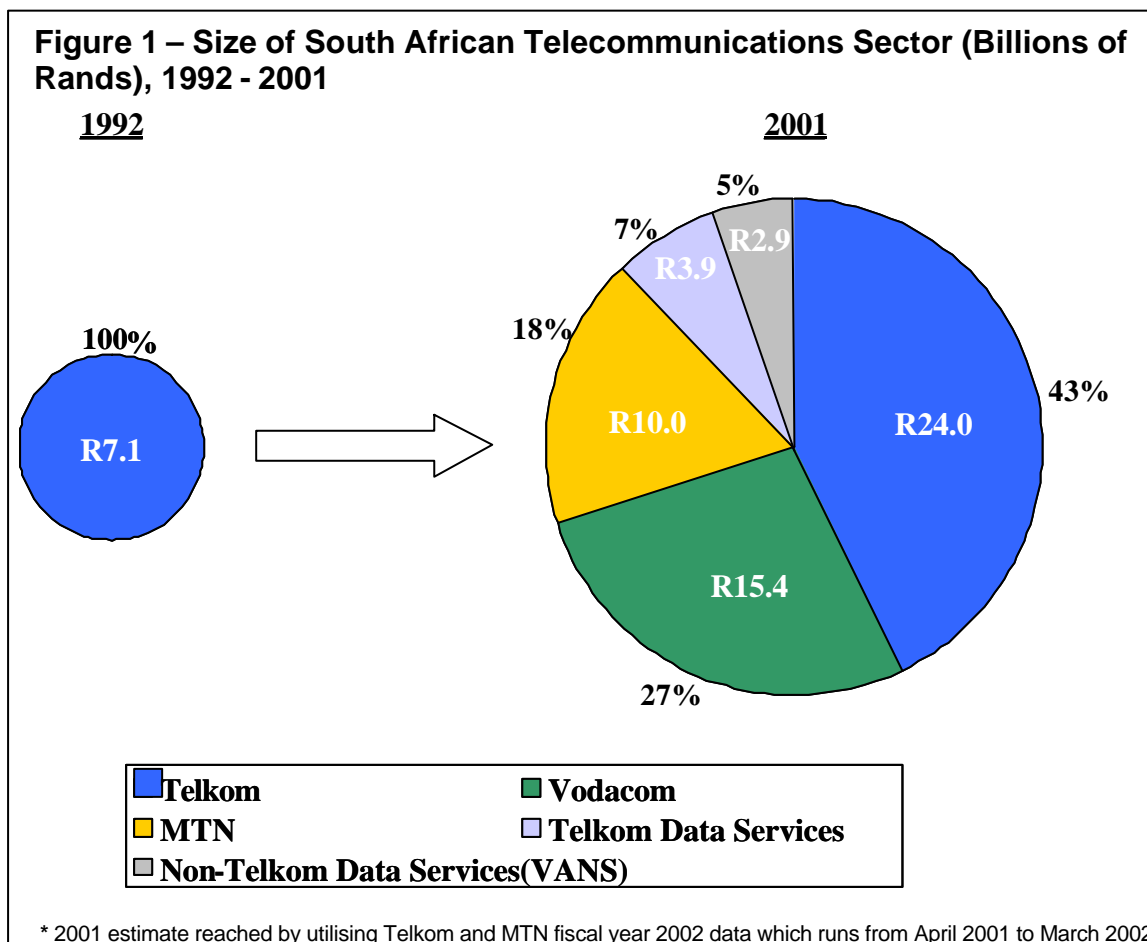
This disparity has required mobile operators in South Africa to develop a very particular business model, which has since been exported to the rest of Africa through MTN's and Vodacom's international operations. The model is quite different from the Northern Hemisphere model where such marginal customers are not generally brought on to the network, and certainly not as quickly after launch or in such large numbers as have been seen in Africa. Understanding this model, in terms of effective regulation and ensuring continued investment in network expansion, is critical to the sustainability and growth of mobile operations in South Africa and Africa more generally, where there is pressure on operators both to reduce retail and wholesale rates. Operators argue that the current relatively low retail rates can only be sustained by the relatively high termination charges on the mobile networks. The success of the mobile market in South Africa has provided the two dominant mobile companies with a launch pad to the rest of the continent, as evidenced by Table 3. South African telecommunications investment across the continent must be the most significant investment by any single country in Africa. This position will be consolidated by the recent announcement by Altech that it will set up a joint venture worth R500 million with Econet Wireless Group, the Zimbabwean-initiated African operator that has mobile interests across the continent.

Table 3 – Comparison of Cumulative Capital Expenditure by South African mobile operators

Operator	Cumulative Capital Expenditure (Rands) in South Africa	Total Cumulative Capital Expenditure (Rands)	Cumulative Capital Expenditure (Rands) in Africa excluding South Africa
Cell C	2,500,000,000	2,500,000,000	0
Vodacom	15,900,000,000	18,300,000,000	2,400,000,000
MTN	8,700,000,000	14,400,000,000	5,700,000,000

Sources: ITWeb, MTN Annual Report, Vodacom Annual Report

Figure 1 breaks down the contribution of the various parts of the South African telecommunications sector to the total revenue generated by the sector. As can be seen, both the size and the composition of the sector have changed dramatically over the past ten years as Vodacom, MTN and the competitive VANS providers have entered the market. The composition of the sector continues to change, as Cell C entered the market in late 2001 (and was therefore not included here), and will change further, following licensing delays, when the SNO is licensed, in the final quarter of 2004. Data services, which include leased lines, Internet, corporate networks and virtual private networks, continue to grow and now represent 12% of the sector, or just under R7 billion a year – an amount equal to the size of the entire sector in 1992.



* 2001 estimate reached by utilising Telkom and MTN fiscal year 2002 data which runs from April 2001 to March 2002.
Sources: ITU World Telecommunications Indicators Database (2002), Telkom IPO Prospectus, 2002 MTN Annual Report, 2002 BMI-TechKnowledge Communications Handbook, (Gillwald and Kane, 2003:11)

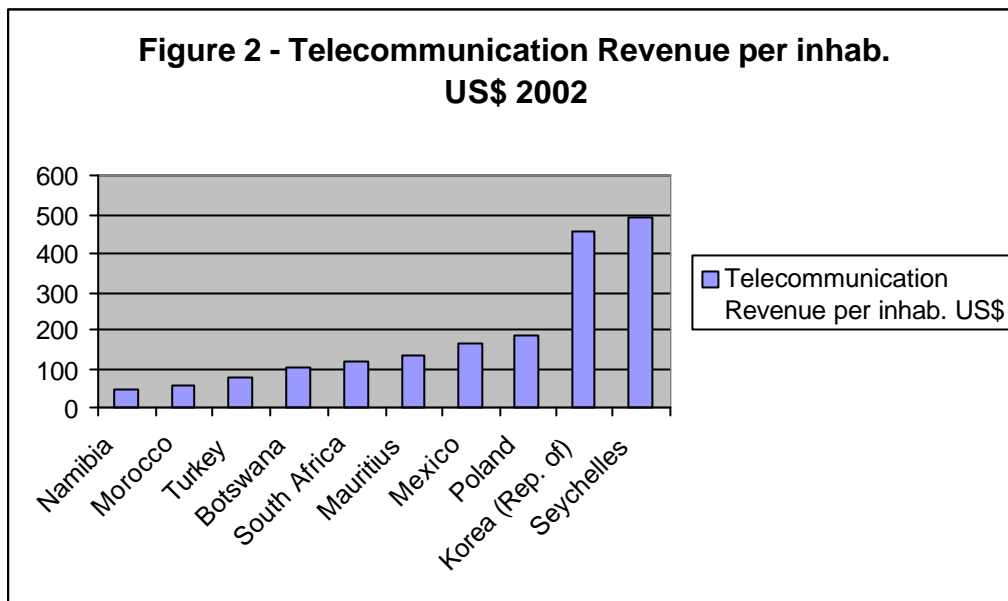
Moreover, these figures only measure the direct contribution of telecommunications to the economy. Through its enabling indirect effects, telecommunications may be the most important sector of the future economy. The sector reflects the application of continuously improving technologies emanating from the telecommunication equipment, computing hardware, software and consumer electronics industries. Integration of these technologies into the telecommunication network, and in terminal devices connected to the network such as personal computers and mobile phones, has provided the foundation for the continuous development of new electronic information and communication services, including the Internet, referred to in Figure 1 under Value-Added Network Services (VANS), which are being applied throughout the entire economy.

The value-added services market in South Africa is both large and varied, with market research firm BMI-TechKnowledge estimating that, not including Telkom, the South African data services market was worth R2.88 billion in 2001. Telkom's 2002 Annual Report states that its data business revenues were R3.9 billion, putting the total value of the data services market at a little under R7 billion – equal to the size of the total market in 1992 when the process of liberalisation began. While Telkom's data business line item in its Annual Report may not correlate exactly with its VANS activities, a 58% share of the revenues generated in the data services market would indicate that its value-added services market share is significant.

In terms of Internet connectivity, the South African market has five Tier 1 ISPs; that is ISPs that manage at least some of their international bandwidth and fully manage their own national networks. There are also hundreds of Tier 2 ISPs (ISPs that purchase their bandwidth from a Tier 1 ISP) and Tier 3 ISPs (virtual ISPs that only handle the sales and marketing of their brands) in South Africa. There were estimated to be 250 ISPs providing digital leased-line services in 2003 (Goldstuck, 2004).

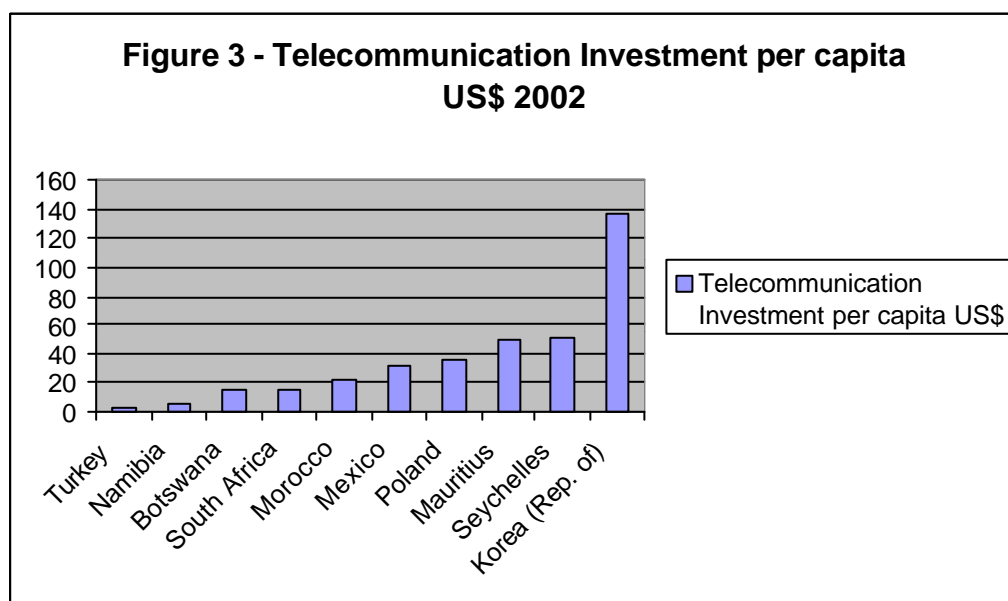
3. Network Investment and Capacity

Traditionally, the amount of telecom revenue per capita of countries has been used to provide some indication of activity in the telecom sector. With the minimal penetration of fixed-line in developing countries, the telecom revenue per capita has been correspondingly low. While South Africa's telecom revenues per capita are relatively high in comparison with other countries in the Southern African region. As a middle-income country according to UN classification, South Africa's comparative telecom spend per capita has been low. As can be seen from Figure 2, at \$117.5 in 2002 South Africa had the highest telecoms revenue per capita among SADC countries (with the exception of the island states of Mauritius and the Seychelles) and was in the middle of the pack with regard to other middle-income countries (Poland, South Korea and Mexico having higher revenues; Morocco, and Turkey having lower). These five middle-income countries were chosen for comparison given their similarity to South Africa in terms of income levels and telecommunications penetration in 1996, when the Telecommunications Act was passed, and as such their performance over the last six years can then be compared with that of South Africa. Morocco was chosen because the execution of its reform and liberalisation process is often held up as an example of an African success story in the telecommunications sector.



Source: ITU World Telecommunications Development Report (2003). ITU: Geneva.

The reverse side of revenue generated by telecommunications activities is of course the investments made in the network itself. While the level of telecommunications investment per capita can fluctuate significantly from year-to-year as major capital projects are begun or completed, the figures do provide an idea of the commitment of respective countries to expanding their networks and joining the information society. Given the massive amounts that South Korea has invested in telecommunications (see Figure 3), it is perhaps not surprising that it now leads the world in broadband and 3G deployment and, in the past six years, has rocketed up most ITU statistical tables.



Source: ITU World Telecommunications Development Report (2003), ITU, Geneva.

The rise and fall of the South African level of investment reflects the capital expenses associated with the 2.8 million lines that Telkom was required to roll out during its exclusivity. This totalled nearly R50 billion during the exclusivity period. The decline in these

figures in recent years reflects the completion of this exercise and Telkom's stated intentions in its 2002 Annual Report:

As we reach the end of our licence obligations, we have changed our capital spending decision process to ensure that adequate returns on investment are achieved. We are focused on reducing capital expenditure in our segment without impacting service levels. This year we started the process by reducing our capital spend to R6.9 billion, 25% of revenues, from R8.1 billion in 2001, 31% of revenues.

Telkom is, however, the dominant shareholder of the SAT 3 undersea cable, in which it has invested almost \$85 million to secure a 16% shareholding and a right to 30% use of the cable. It also has the contract to manage the cable. This is not a very significant investment for a company of Telkom's size, but with further investments expected, including the intention to complete the African cable by connecting the outstanding African east coast countries, it is clear that Telkom sees the hubbing of African traffic as a significant portion of future business that it is willing to expand into while reducing national investments.

In line with its larger economy and higher GDP, current levels of investment indicate that South Africa is investing significantly more in its telecommunications infrastructure than other SADC countries for which data is available. In terms of middle-income countries internationally, however, South Africa invests less than Poland, Mexico, and South Korea but more than Morocco and Turkey, both of which have lower GDPs. With the exception of Mexico and Morocco, South Africa has significantly fewer total telephone subscribers per capita than the other middle-income comparison countries, and one would therefore expect to see higher investment rates if this gap were to be narrowed. The extent, quality and price of the backbone infrastructure is a significant consideration for investors wishing to offer services exploiting the backbone facilities and indeed for investors in other sectors requiring high-volume, low-cost, guaranteed services.

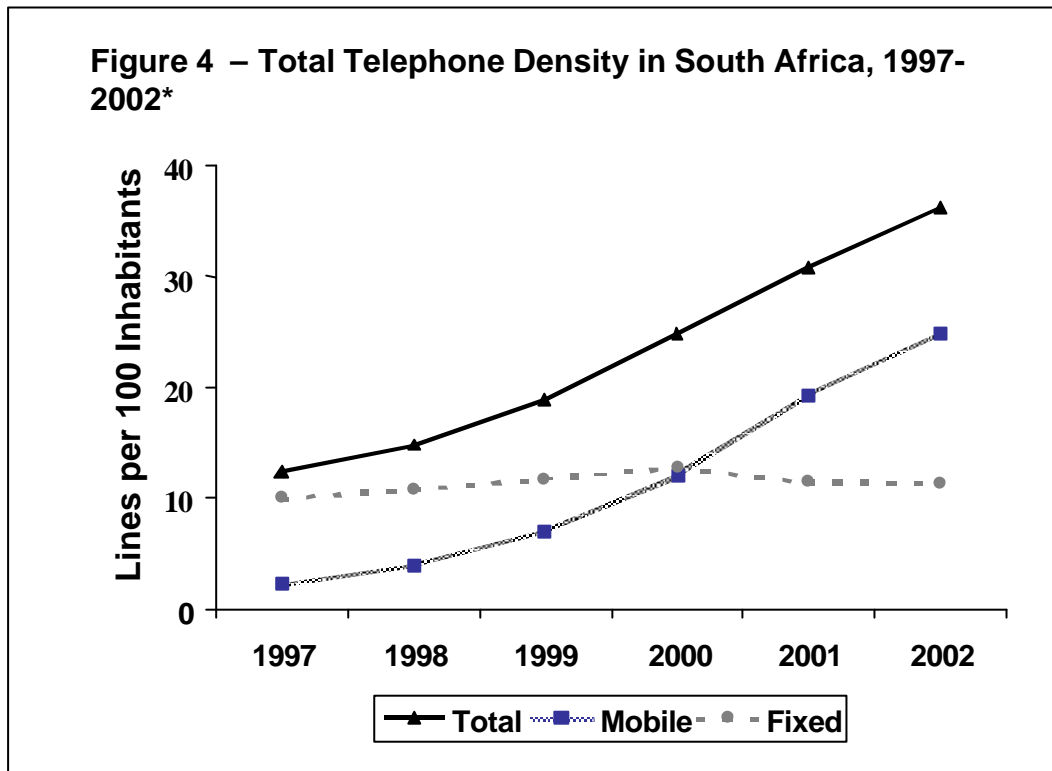
4. Network Coverage and Subscriber Numbers

In addition to GDP, a further factor for consideration of investment is the saturation levels that exist for the services being considered. The declining number of fixed-line subscribers over the last two years is concomitant with the exponential rise of mobile service in South Africa, and indeed throughout the continent. While figures across the Southern African region are impressive, in terms of global comparisons they are still behind Asia, which is taking over from Europe as the region with the most rapid growth in mobile market penetration (Melody *et. al.*, 2002)

By the end of 2001, the ITU estimated that 28 African countries, representing more than half of the countries in the region, had more mobile users than fixed-line users. Sometime during 2002, mobile subscribers were expected to pass the one billion user mark globally, and to pass the total number of fixed-line subscribers not only in Africa but also worldwide. While the difficulties of accurately measuring mobile take-up are numerous, especially with regard to active and non-active pre-paid user accounts, the ITU strongly recommends that "policy-makers and regulators must overcome their fixation with fixed-lines and look to mobile as a way of achieving social policy goals"(ITU, 2002:8). The ITU has found that in developing countries, mobile penetration, due to the mechanism of pre-paid accounts, is not as heavily dependent on income as are other types of telephony. This conclusion, supported by the

phenomenal growth rates, yields hope that mobile can address some aspects of the digital divide, which is largely income-based. However, despite the achievements of mobile it is also clear that fixed lines will continue to be an important developmental measure.

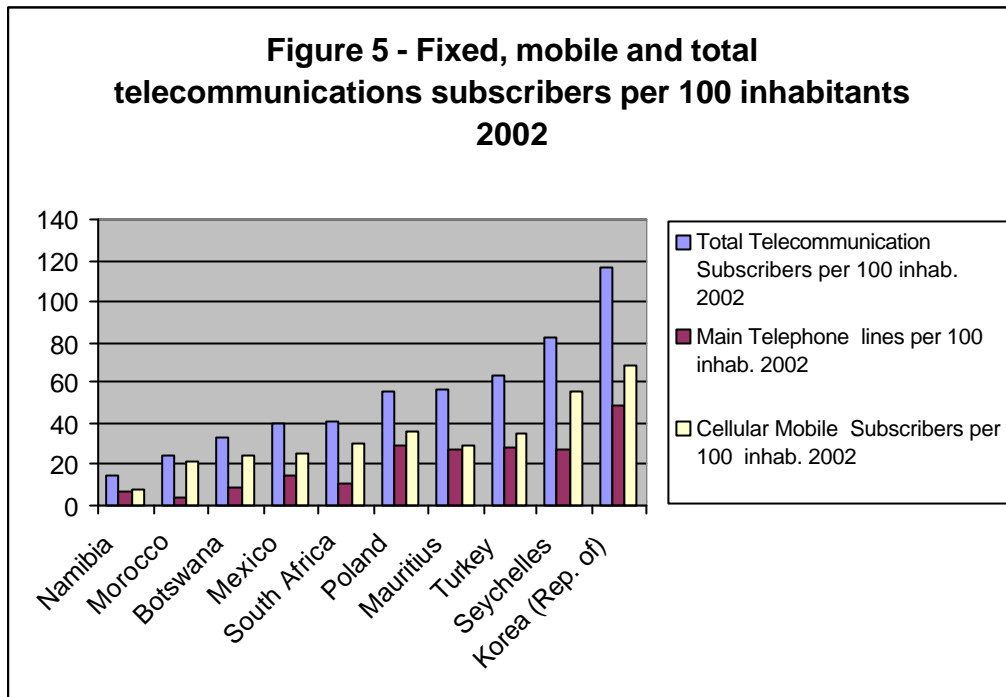
This is especially true in terms of access to the Internet, which is not yet feasible through the GSM technology that has thus far been the *de facto* standard of the global mobile boom. To gain a more accurate figure of the changes in teledensity in South Africa over the last six years, fixed, mobile, and total teledensity are presented in Figure 4. When fixed and mobile growth is combined, South Africa's figures show impressive annual growth during this period, although 95% of this growth was generated by the increase in mobile subscribers.



* - For the year ending in March
 Source: 2002 Telkom Annual Report

Internationally, the figures tell a similar story, with the majority of universal service growth achieved in Africa during the latter half of the 1990s coming as a result of the growth in mobile penetration. In terms of fixed-line growth in SADC and the middle-income comparison countries, as can be seen in Figure 5, only Morocco, Zambia and the war-torn Democratic Republic of Congo have worse performance than South Africa in terms of annual growth over the past six years.

Around the world, the performance of mobile over the past six years has been nothing short of extraordinary, with many countries achieving subscriber increases in excess of 100%. While South Africa's growth rate is lower than this, it is nonetheless impressive given the relatively large initial base of 2.35 million subscribers from which it was achieved. Compared to middle-income countries, South Africa performs well, having slightly fewer mobile subscribers per capita than Poland, slightly more than Mexico, and significantly more than Morocco and Turkey. Once again South Korea ranks significantly further ahead of all the other middle-income countries.



Source: ITU World Telecommunications Development Report (2003), ITU, Geneva¹³.
Note: Botswana and Lesotho CAGRs only calculated for 1996 -2000

In terms of overall subscriber growth, South Africa performed relatively well compared to other SADC countries when factoring in its large user base. However, the performance of the fixed-line sector has put a drag on this growth, with countries such as Botswana, and the island states of Mauritius and the Seychelles recording growth rates significantly higher than those of South Africa. While South Africa's growth rate is also in line with other middle-income countries, its current growth trajectory would not seem to allow it to narrow the teledensity gap between it and the best performing middle-income countries of South Korea, Turkey, and Poland. It is also increasingly apparent that the presence of strong national information infrastructures and knowledge and skills bases are in and of themselves a central criterion that decides where capital is invested.

5. Investment Purpose, Risk and Opportunity

While a host of factors, including overall macroeconomic and political stability, are obviously important in attracting private investment in telecommunications, the 2001 World Development Report claims that in order to encourage private investment in the telecoms sector, two factors in developing countries need special attention: political reform and the establishment of independent regulators as part of efforts to enhance the credibility in the government's regulatory frameworks. Policies that allow for full cost recovery and that ensure the investor a reasonable rate of return without government contributions are the preferred alternative for expanding private investment. Often, governments have failed to adopt such policies, or to implement them through credible regulatory arrangements, thus actually deterring private investment.

¹³ Note that the figures for South Africa in Table 4.2 are slightly different from those in Table 4.1 due to the fact that Telkom reports figures for its financial year (ending in March) while the ITU reports figures on a calendar-year basis.

Unfortunately, South Africa has been an example of this trend, with irregularities in the third cell phone operator licensing process leading one observer to comment that “there is not more than one foreign investor that would be happy to recommend South Africa as an investment destination after this process” (ITWEB, 30/06/2000), while US trade representative Robert Zoellick has questioned South Africa’s “commitment to a competitive telecommunications market and its long-term ability to attract foreign participation in its high-technology sector” as a result of changes planned under the amended Telecommunications Act (Business Day, 04/04/2002).

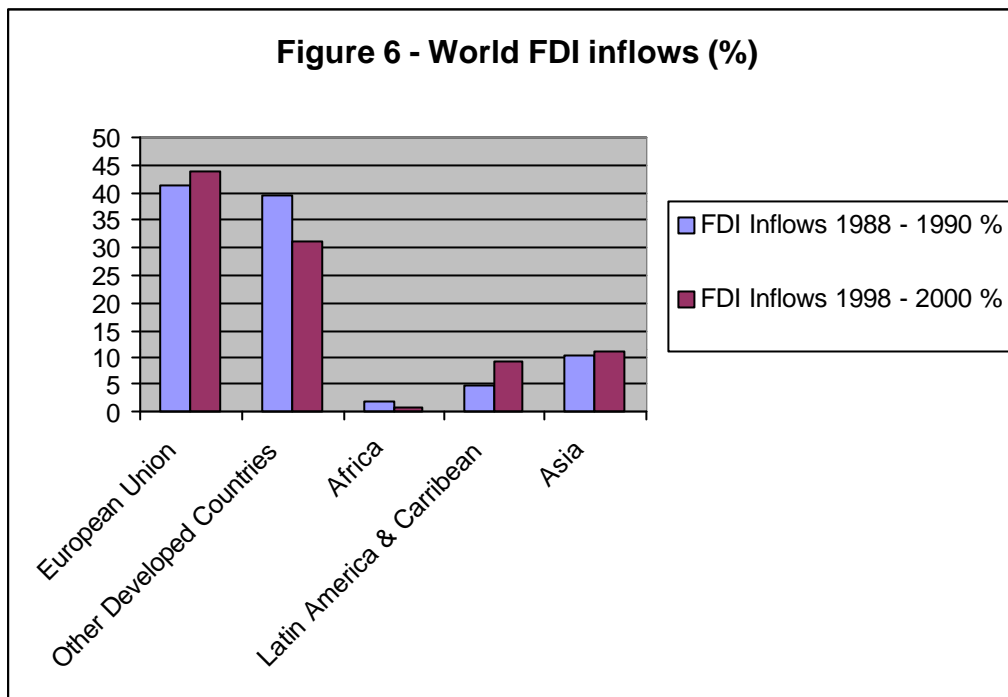
The types of activity proposed in the UN Trade and Development Report (2002), if undertaken in South Africa, would increase the competitiveness and ICT capacity base of local firms, thus making the national economy more attractive to future investors. There is a clear role for government to play in supporting sustainable investment by MNCs beyond privatisation. First, it can help to overcome potential MNC-supplier information gaps by making sure that multi-nationals are aware of the presence and capabilities of prospective local partners. For example, in promoting South Africa as an investment destination, Trade and Investment South Africa (TISA) could make relevant telecoms and ICT infrastructure statistics and reports available on an annual basis. Secondly, as a condition of investment, governments can require MNCs to engage in supplier development programmes that include technology transfer, training, information-sharing, and the provision of finance.

The latter conditionality is a particularly important one for middle-income countries, such as South Africa, as they seek to move away from basing their competitiveness for attracting FDI primarily on the basis of cheap labour, a production factor which is readily available in numerous other developing countries.

5.1. Political and economic stability and opportunity

The unsaturated markets in Africa have been identified as a major attraction for investors on the continent, but this has historically been offset by the poor political and economic conditions in many African countries, particularly the low per capita incomes. For Africa, the perception of high-risk investment conditions have pushed up rates of return on investment in the telecommunications sector and resulted in demands for guarantees on returns even where actual risks are relatively low.

Despite high, often guaranteed returns offered by African countries and the pressure on them to improve market access, there has been very little foreign direct investment (FDI) in the continent. Only 0.8% of total world FDI was in Africa between 1998 and 2000, which represented a slump compared to the 1.8% of FDI between 1988 and 1990.

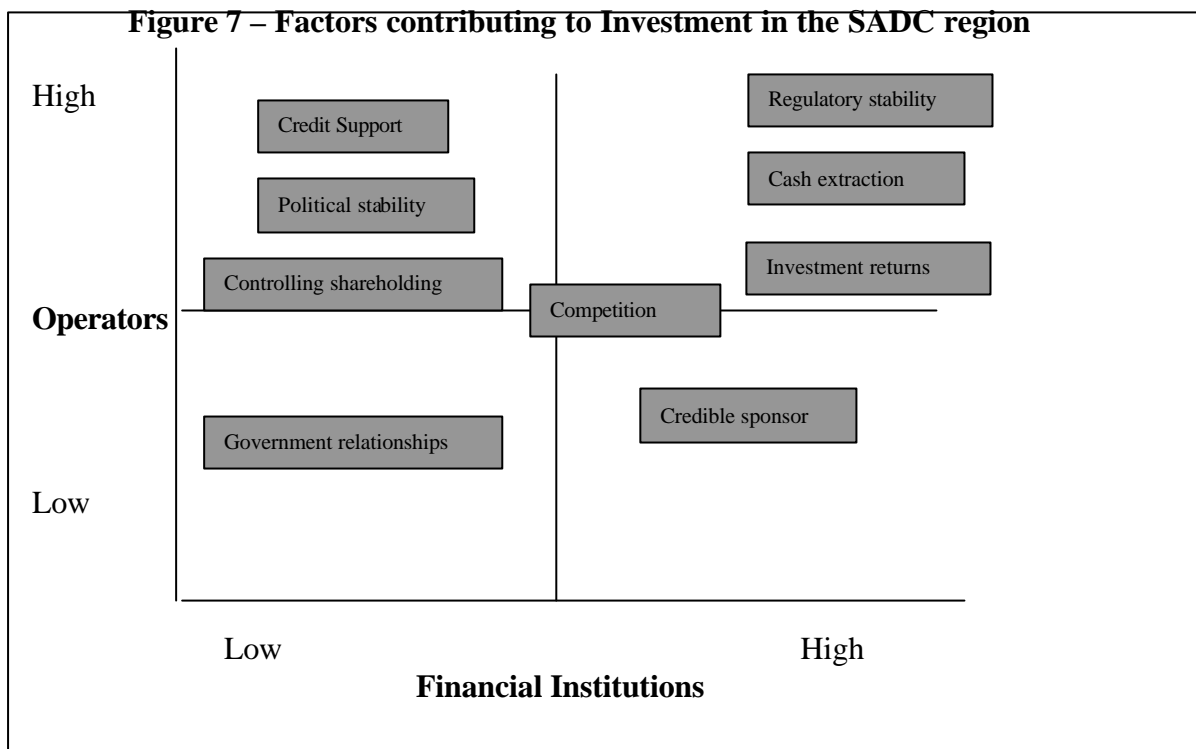


Source: UNCTAD World Investment Report (2001)

In this regard, South Africa should be a relatively attractive investment destination. It has by far the continent's highest per capita income at \$2293 (2002), and compares favourably with other lower-middle-income countries. Now in its tenth year of democracy, it is also politically stable. Its network and services markets remain largely untapped, other than for mobile, which is still far from saturated, and it has the most advanced backbone on the continent. The backbone connects to all the major undersea cable routes and can thus be seen as a gateway to Africa. However, investment expectations in the telecommunications sector in South Africa have not been fulfilled.

A SADC investment report prepared for the region in 2003 lists factors identified by both operators and financial institutions as contributing to patterns of investment in the region:

- Adequate return on investment;
- Government relationship, particularly the strength of relationships between operator management and specific country government officials;
- Market demand and knowledge;
- Level of competition – market potential;
- Regulatory stability;
- Possibility of majority shareholding or control;
- Economic and political stability;
- Ability to extract earnings; and
- Public and institutional financial support.



From SATCC (2003) Policy and Regulatory Harmonisation in the SADC Region, PPIAF and World Bank.

Studies for other parts of the world confirm similar investor patterns and preferences. Among these are the opportunities offered by the policy; the obligatory costs that accompany that opportunity; the certainty of the regulatory environment under which the firm will have to operate; and the effectiveness of the regulator to ensure a fair competitive environment if the firm is a new entrant. While many developing countries have complied with the WTO Basic Agreement on Telecommunications requirement of establishing an independent regulator, a lack of capacity within the regulatory agency together often with a lack of political will to ensure the effectiveness of the regulator, have often led to a failure to reduce investment risk. The policy and regulatory sections below seek to explain how market structure and the resulting regulatory framework emerging from privatisation practices, and other privileged investment arrangements, make the reduction of regulatory risk very challenging, especially when combined with the dearth of human capital in the regulatory agency in most developing countries.

5.2. Policy

Reform mechanisms of privatisation, competition, and independent regulation – evidence of which comes largely from OECD countries – have been hailed as resulting in network investment; faster roll-out of infrastructure and new-technology price decreases; improvement in service quality; and more choice for consumers. On the basis of these successes telecom reform has been sold to cash-strapped African countries as a mechanism to transform their debilitated communication infrastructures and integrate their countries into the global economy. The outcomes of the first phase of telecom reform in South Africa have had far more mixed outcomes.

5.3. *Institutional arrangements*

In line with international trends and in compliance with WTO commitments, the highly consultative first phase of policy reform in South Africa identified the need for a sector regulator to implement policy; to create a transparent and certain regulatory environment for investors and consumers; and to contribute to building a stable and well-functioning market.

However, the resulting legislation reflected the need of the Ministry to retain control of the terms of agreement with the incumbent's strategic equity partner, Thintana. The Ministry had to establish its credibility with the international investment community by ensuring protection of the biggest investment on the continent at the time (the Thintana 30% stake in Telkom), and of course at the same time protect its own asset. The Act as a result permitted the Ministry to retain core regulatory powers, which seriously undermined the authority of the regulator and its ability to create an attractive environment for further investors.

The requirement that regulations be approved by the Ministry created a serious regulatory bottleneck, with regulations vital to the development of the sector – most particularly the critical interconnections and facilities-leasing framework and the rate regime review for the incumbent – being delayed in the Ministry for months and even years. This has allowed various interests to lobby the Minister after decisions have already been reached by the regulator in accordance with the public processes required by law, creating uncertainty in the industry and often resulting in time-consuming and costly court challenges to gain clarity. Most significantly it has impacted negatively on the investment environment, with several major investors vowing publicly, after the controversial licensing of the third mobile cellular operator, to never become financially involved in the telecommunications sector.

The need for a further mechanism to ensure universal access was identified in the policy and in accordance with this the 1996 Act established a Universal Service Agency to manage the Universal Service Fund. Suffering from staffing problems, budget constraints and some overlap with the consumer affairs portfolio of the regulator, this agency was brought closer to the Department of Communications in the 2001 amendments to the principal Telecommunications Act. The Agency has largely failed to deliver on its mandate to ensure access to services by needy people or to support the extension in network roll-out into under-serviced areas.

With its fourth CEO in six years, the Agency has recently provided some indication of an awareness of its ability to stimulate activity within the sector, which may reduce resistance to the Agency and Fund from operators. Recent proposals by the Agency that USAL licensees will qualify for a R25 million grant and R2.5 million loan scheme at 5% interest payable over ten years, with an additional guarantee up to R10 million, if adopted may go some distance toward contributing to viable business operations which up until now have not received any financial or regulatory support. This development may be even more important than originally thought, as the regulator has backtracked on its proposed interconnection regime for USALs – which included asymmetrical termination rates. At public hearings on the terms of the licences, aspirant USALs argued these favourable interconnection terms were a critical component of most of their business plans.

5.4. *Privatisation*

Common to countries where the gains of reform are not evident appears to be the privatisation of the incumbent through an extension of the fixed-line monopoly. The rationale for

extending the monopoly was that the indebted monopolies needed the injection of capital and skills and the technology transfer, to meet the challenges of expanding and modernising the usually minimal and outmoded network, and to prepare for competition by introducing cost efficiencies into the company. But the anticipated benefits of network expansion, improved efficiency and cost-based prices are not evident in South Africa.

While formally concerned with policies to achieve affordable access, the reform models in themselves represented a compromise between the market access desires of multilateral agencies, their member countries and multinational operators, and the reluctance of developing countries to lose a major source of income generation – ineffectual as the incumbents might have been in providing public services. As these reform processes have played themselves out in licence negotiations in South Africa and elsewhere, they have tended to focus on the optimisation of the value of the state asset in exchange for the granting of increased rights and opportunities to generate revenues to the privatised entity, rather than focussing on the broader policy objectives of affordable access and sector development.

This has often resulted in incumbents securing the rights to the other areas of restricted competition – either mobile, VANS or ISPs. Very often, to further protect the revenues of the privatised incumbent – ostensibly to roll-out services – players in the competitive market segments have also been required to acquire their facilities from the incumbent.

The resulting vertically-integrated dominant operator provides the basis for what has become the standard market structure that has accompanied the opening up of developing country markets. It is also at the core of the failure of the reform project in developing countries. The anti-competitive incentives that arise in a market structured around a vertically-integrated national company – with a monopoly on its upstream activities while competing downstream against rival firms – are impossible to counter without constant checking and adjusting of the integrated entity's behaviour by the regulator. This problem is compounded where rival firms are required to acquire their non-competitive facilities from the vertically-integrated monopoly in order to operate, as required in South Africa and many other developing countries.

Similar structural forces come into play for other networks having to interconnect in order for their customers to access the historically larger number of subscribers on the incumbent's network. This creates anti-competitive incentives for the incumbent to deny access to its network to rival firms, whether through delays or pricing strategies. While largely anecdotal, stories abound of the driving away of direct investment in the competitive segments of the market by the unrestrained anti-competitive behaviour of the incumbent, despite an official interconnection framework. Investment in other high communication usage sectors, location of regional offices, and call centre development have all been identified as suffering from the high costs of communication.

The second phase of privatisation, which typically focuses on the IPO of shares in the incumbent, has exacerbated this situation with little consideration of how a longer-term policy and regulatory vision might improve the state's budget balance and compensate for any immediate negative impact on sale proceeds from privatisation.

5.5. *Regulation*

Historically, the regulatory response to the market structure that tends to arise wherever a former public utility enters into a competitive market is access regulation. At its broadest, this can include retail tariff regulation, either through a Price Cap Model or through a rate-of-

return regime, to ensure affordable access to the service by end-users. On the wholesale side, this type of regulation focuses on ensuring access through the setting of wholesale tariffs for facilities and compelling cost-based interconnection. All of these regulatory mechanisms depend on relatively complex costing models that are particularly onerous to enforce, especially when the former public utility's accounts are not clearly separated and there is not a sense of what constitutes real costs. Even once costs are realistically allocated, there are inherent information asymmetries that disadvantage the regulator, as the incumbent operator will always have better knowledge of its own costs than does the regulator.

This resource-intensive regulatory approach arising from the vertically-integrated nature of the incumbent places an enormous regulatory burden on any country seeking to ensure affordable access through the creation of a fair competitive environment. It requires experienced and skilled regulatory staff to apply the access regulation regime effectively. Countries with far more experience in regulation, and with far greater skills and finances than South Africa, continue to struggle to implement access regulation successfully. Expecting newly-established, under-resourced regulators, often established in the absence of political will, to fulfil this task would appear to be setting them up for failure – and regulatory failure in such a highly interventionist regime means system failure. High levels of regulatory risk are therefore endemic to such markets, leading to the associated negative investment decisions.

6. Policy and Regulatory Challenges

At the core of the challenge for developing countries such as South Africa lies an understanding of the changing circumstances of global investment and the need to stimulate investment in network roll-out rather than laying down terms and obligations that may no longer be feasible in a recessionary environment. Certainly the welfare gains of liberalising service sectors such as telecommunications needs to be more fully appreciated and demonstrated in more integrated policy frameworks. Konan and Maskus (2002) quantify how service liberalisation differs from that of goods liberalisation – in terms of welfare, the levels and composition of output, and factor prices – within developing countries. They find that goods trade liberalisation yields a gain in aggregate welfare but re-orientes production toward sectors of comparative advantage, while increasing FDI through reducing services barriers and increasing competition generates larger welfare gains.

Moreover, service liberalisation tends to increase economic activity in all sectors and raise the real returns to both capital and labour. Overall welfare gains of comprehensive service liberalisation amount to over five percent of initial consumption. The bulk of these gains comes from opening markets for finance, business services and telecommunications. Because these are key inputs into all sectors of the economy, their liberalisation cuts costs and drives large efficiency gains overall (Konan and Maskus, 2002:1).

It is essential that a more enabling policy environment is accompanied by a perceived reduction in regulatory risk. This will include demonstrating that investors will receive a fair return on investment, particularly at the time when they are required to re-invest in the expansion of the network.

These new circumstances require not only a more strategic response from investors and policy-makers, but also particularly from regulators. While independent regulation may be a necessary condition of policy success in order to create the transparency and certainty required for sector investment, it is no longer a sufficient condition. In order to deal with the

extraordinary developmental challenges facing Africa, regulators will additionally need to regulate innovatively, strategically and in a manner appropriate to the very different conditions that exist in African markets.

6.1. Price regulation

Price regulation, traditionally identified as a determinant of investment, provides a case in point. One of the most critical issues in regulating a developing country market with a dominant incumbent, as is usually the case, is getting services to be efficiently delivered and cost-based. A complex political and economic process in any regime, the regulatory rationale for price regulation can be quite different in developed and developing economies, and uncritically adopting the rationale of developed markets may not contribute to achieving national objectives in a developing nation.

Regulation in developed countries tends to focus primarily on the consumer and keeping tariffs as low as possible. The public interest rationale in developing countries focuses primarily on securing access for those citizens who do not receive services at all. This often requires increased tariffs – to cost-based levels – for those that already have services, to allow for getting services out to those who do not. In most developing countries, those who already receive services tend to represent a small and influential elite, who have usually been the beneficiaries of subsidised local services. Without regulatory clarity, the effect of their resistance to cost-based price increases could result in reduced infrastructure expansion, either due to lack of investment because of the inability of investors to receive a reasonable rate of return, or because of telephone companies already invested in the country not being able to generate sufficient revenues to invest internally in network expansion.¹⁴ Establishing real costs is extraordinarily difficult in most monopolies, where typically there has historically been little cost allocation between different services, even after corporatisation. Transparent allocation of costs is, of course, central to ensuring an effective interconnection regime, which is, in turn, a critical determinant of investment by new entrants.

As a result of new technologies, new services, competition and efficiencies in network management, the costs and prices of telecom services have been declining for several years. In contrast, Melody points out that South Africa's incumbent Telkom has been increasing prices annually by substantial margins. Between 1997 and 2002, residential connection charges were increased by 56%, monthly subscriptions by 53%, and peak rate local calls by more than 3.5 times (R0.31 to R1.11 for 3 minutes). The 2003 price increase was 9.5% overall and 12.5% for residential services. As Melody observes, a disconnection of more than two million subscriber fixed lines is associated with these price increases (Melody, 2003).

Melody notes that Telkom announced excellent financial results during the last quarter of 2003. Net profit increased 158% while earnings per share increased 171%. The number of employees has decreased by over a third since the start of the privatisation. Fixed-line operating cost reductions of R536 million (US\$71 million¹⁵) and cash flow of R4 billion (US\$530 million) have allowed for debt reduction of R3.5 billion (US\$464 million) and a 90c (US\$0.12) per share dividend. The stock price has more than doubled since the public offering in March 2003. But only about 30% of households remain connected to Telkom's fixed network.

¹⁴For more detailed argument of this positions see Samarajiva (2001) 'Making Regulation Pro-Poor', <www.itu.int/TELECOM>.

¹⁵ Using an average exchange rate for the 2003 year of 7.55 rands to the US dollar

The government may be happy about its highly profitable investment in Telkom, but surely it must realize that these results are those of an ineffectively regulated monopolist exploiting its power in providing an essential public service to citizens, businesses, government agencies, schools and other organisations. Short run monopoly profit to a few is being purchased at the expense of long-term development of South Africa's information society. This is both inefficient and inequitable. As a government sanctioned practice, this is mercantilism, not economic development (Melody, 2003).

The protection of the Telkom share price continues to impact on the sector and to be applauded by government with apparently little acknowledgement of the negative impacts on consumers, users and potential investors.

6.2. *Interconnection*

Of course, while charges for access services remain high, ICT diffusion will be constrained. Currently, between 70 and 80% of all ISP and VANS costs are incurred through the obligatory acquisition (from Telkom) of the facilities required for them to operate. For this reason consumer tariffs and interconnection charges must be brought in line with costs. This is a key to the efficient allocation of resources within the market and to creating the conditions for fair competition that will stimulate both internal investment by the incumbent and investment by new entrants.

Particularly in anticipation of the new licensing opportunities mentioned above, South Africa set about establishing a cost-based interconnection regime, with the ultimate goal of adopting a Long Run Incremental Cost framework. The law, however, allowed Telkom the entire period of exclusivity to develop a chart of accounts (COA) and cost accounting manual (CAM), which rendered LRIC, or any other cost accounting method for that matter, redundant. Even with the COA and CAM in place, as mentioned above, the information asymmetries together with the complexities of the method and lack of capacity within the regulator to apply it have thus far made it relatively unworkable. Without an accurate measure of real costs, attempts to ensure the efficient investment in incumbent and new entrant networks become impossible.

From the point of view of assessing regulatory risk, this is a critical issue. Most rulings made by the regulator in terms of this framework have been taken on review by the incumbent, paralysing new entrants or those wishing to secure mission-critical facilities. This has resulted in a spate of disputes that have tied up the regulator and Competition Commission for years, and in the interregnum, potential investors in the competitive segments of the market have turned to other markets that offer greater clarity. Following a two-year delay, the Competition Commission ruled in 2004 against Telkom's anti-competitive behaviour, in a dispute brought by the Value-Added Network Service providers, and recommended to the Competition Tribunal a fine of 10% of total revenues – amounting to R3.7 billion (US\$540 million).¹⁶ This now has to be heard by the Tribunal, which could take years and the pressures not to do anything that will reduce the share price of Telkom will be strong. Still, the definitiveness of the Competition Commission ruling and the recommendation of such a large fine are significant.

¹⁶ Using an average exchange rate for the months of January and February 2004 of 6.8 rands to the US dollar.

A further problem relates to the apparent disjuncture between official regulations and their implementation. Several investor surveys highlight the problem of regulatory policy and practice not being aligned, so that while the rhetoric might sound attractive to investors, failure to implement investor-friendly regulations or the perpetual challenging of regulations, may frighten investors off.

When an interconnection regime is applied in a developing country context with a history of a single provider it is also likely to challenge certain practices and indeed myths about costs and where they are incurred. Traditionally, largely due to monopoly provision and the sender and receiver being on the same network, costs have failed to recognise both origination and termination costs. However, as markets have been opened up and calling and access charges have become more cost-based, the reality of the differential costs in the provision of services has become apparent. An interconnection regime that recognises the asymmetry between the cost of terminating calls in high-density, low-cost urban areas and terminating them in low-density, high-cost rural areas, together with the incorporation of cost-effective new technologies, can make rural services viable and draw investments into areas traditionally regarded as unviable. In most African countries, however, these innovative mechanisms of reaching rural areas cannot be introduced due to the existence of state or private monopolies on basic services.

6.3. *Access to resources*

In recognition of the need for access to resources, including rights of way, spectrum and numbering, pro-competitive regulatory measures were introduced in the South African amendment legislation in 2001, specifically number portability and carrier pre-selection. These measures reflect an understanding of the need to enable competition and attract investment in the new opportunities created by the 2001 Amendment Act, such as the SNO and USALs. However, to be effective this strategy requires a highly skilled and resourced regulator to ensure a level playing field and, in turn, to instil confidence in investors. Telkom, having unsuccessfully lobbied for the removal of such mechanisms from the law and achieved certain delays, has already indicated that it will not be able to comply with certain requirements as the exercise would be too costly for it (ITWeb April 2001).

There is evidence, however, that the Government is aware that new entrants should not pay too high a price for spectrum and should be guaranteed access to existing spectrum. After some excitement around the value of 3G licences in Europe, the initially proposed price of 1800 Mhz spectrum to be determined by the Ministry was apparently very high, but the negative impact the high licence fees in Europe had on the liquidity in the sector there – and the inhibitions on network development and the high cost of services if the network was rolled out – appear to have resulted in more favourable terms being granted to South African mobile operators.

This followed negotiations with the government, during which the mobile operators agreed to put four million free SIMS cards, over a period of five years, into the market as a contribution to universal access. In addition, the mobile operators would pay R100,000 in access fees per year, plus a R5 million annual radio frequency spectrum fee plus 5% of net operating income. The Under-Serviced Areas Licences Group, representing bidders, believes this to be the final straw, on top of the delays in getting to market, that have left the aspirant bidders cash strapped.

Attempts to innovatively allocate scarce resources and rights, in order to stimulate investment and encourage new entrants, have largely been undermined by overriding policy or licensing processes, as the country struggles with the balance of stimulating timely and efficient investment both in incumbents and new entrants and securing social returns on investment. It had been the intention of the regulator to licence Cell C with 1800MHz rights, to provide it with some leverage to enter into commercial negotiations with the duopoly over the acquisition of access to its lower cost 900MHz spectrum. This attempt to create a leg up for the new entrant appears to have been overtaken by bidders' intentions not to build out their networks significantly in the first instance but rather to roam on the existing networks.

6.4. *Obligations and levies*

In terms of the Telecommunications Act of 1996, every licence holder operating in South Africa is required to pay prescribed annual contributions to the Universal Service Fund, which currently stands at a maximum of 0.5%¹⁷ of annual turnover. The money in the fund is intended to be used exclusively to subsidise telecommunications services in underserved areas, and to assist needy persons to access services. This, however, has not transpired. The failure of decision-makers to see the benefits for the sector of increased calling opportunities created by subsidising either users or network expansion has been a major frustration for operators who have called for the introduction of a "pay-or-play" principle, rather than requiring them to both meet roll-out targets and pay levies.

At hearings to determine the USF rate following the lifting of the R20 million ceiling that had been set on the fund annually during the 1997-2002 Telkom exclusivity, the industry indicated that they would take on review the increased maximum levy of 0.5% allowed by law if it was introduced, on the grounds that the Universal Service Agency had failed to fulfil its mandate and had provided no indication by way of business plans of how it would do so in future. The industry was clear that they wished the fund to be used to generate growth within the sector and would support the use of the fund to support USAL licences or even user subsidies.

Levies such as the USF levy, especially where they are perceived as not contributing to the viability of the industry or providing effective social welfare, can add to a sense of regulatory risk among potential investors.

7. **Conclusions**

Policy and regulatory interventions have long been utilised to induce network investment, often with unintended consequences. Traditionally, investment in the network has been secured through regulatory mechanisms that guaranteed a rate of return on investment, which reduced the risk for the investor, sometimes entirely, in order to attract the investor into high-risk markets. Information asymmetries generally made the application of mechanisms to ensure efficiency gains impossible, as network operators sought to extend the terms of their guarantees.

The trend away from rate-of-return regulation to price-capping on wholesale and retail tariffs reflects the desire to shift the investment risk from the state to the private sector through privatisation and liberalisation strategies. One of the primary motivations for the liberalisation of the telecommunications sector in developing countries has been to secure the necessary

¹⁷ Section 27 of the Telecommunications Amendment Act, 2001

investment in network development to meet the needs of modernising economies to deliver affordable services to the citizenry, and to integrate national economies into the global economy.

This has often compelled developing countries to attract investment by privatising the monopoly incumbent and offering a guaranteed rate of return on investment or a favourable wholesale and retail rate regime. South African has adopted such strategies, reflected in the 'managed liberalisation' policy adopted by South Africa nearly a decade ago, to reform the telecommunications sector in the country. Despite the international acclaim that accompanied the first reform stage, the sector is currently not well-placed to meet the needs of a modern economy.

The increased contribution of telecommunications to the economy, from less than 2% of the Gross Domestic Product in the early 1990s to just under 6% currently, conceals several policy failures and market inefficiencies that have inhibited even better sector growth. State policies to induce investment in the sector through privatisation appear to have been short-sighted and attempts to induce investment in greenfield licences have been marred by a lack of transparency and by contradictory licensing processes. Most significantly, the strategy of privatisation of the incumbent monopoly coupled with a period of exclusivity and restrictions on liberalisation of market segments have not delivered on national objectives. These objectives included the extension of the network to provide affordable services to unserved citizens and the acceleration of the development of the network to provide enhanced services required in a network economy.

All of the licensing activity might suggest that there has been significant investment in the telecommunications sector over the last decade, but in comparison to other lower-middle-income countries the investment has been relatively low. Again, while there are serious concerns to be raised about fixed-line network investment and the underutilisation of network capacity, mobile investment and network expansion look very positive. While the eye of the government and regulator have been focussed on the incumbent, the mobile operators have responded to market demand by making considerable investments in network expansion in South Africa, and increasingly across the continent.

The restructuring of the sector and granting of effectively three public network licences – to Telkom, the SNO and Sentech – will result in competition between three state-owned entities with the potential to collude and inhibit innovation in the sector. While the ownership of some of these has been diluted with strategic equity and public ownership, historical legacies in some cases, and policy and regulatory constraints in others, mean that we are unlikely to see the relatively high risk investment and market responsiveness in the fixed market that has been witnessed in the mobile sector.

All this suggests a need to review the policy framework and its impact on investment behaviour. The proposed Convergence Act clearly has such intentions but serious questions hang over its ability to do so as currently framed in the Bill. There appears to have been little adjustment to the licensing or regulatory framework from the heady days of the dot.com bubble – during which Telkom was licensed with a set of stringent demands from Government – to the currently more austere investment environment. Longer-term public interest views of the strategic need for investment in knowledge infrastructure continue to be overridden by shorter-term maximisation of value on licence fees and sector levies, monopoly

profits, and high share prices – resulting from a lack of regulatory restraint combined with unsustainable social goals.

The current frameworks have left Telkom with significant residual market power and the access regime has not resulted in the development of alternative networks or effectively competitive services in the market. This has significant implications for the development of a network economy, where the opportunity to provide critical new services such as broadband – which the incumbent has been slow to provide or has charged monopoly prices on – have been denied or delayed. Privatisation of Telkom without regulatory reform has simply entrenched its dominant position. The introduction of weak, primarily state-controlled, competitors is likely to result in oligopoly with a sharing of rents between ineffective competitors, which will allow Telkom to extract monopoly rents at the expense of the telecom sector and the economy. This is likely to result in few efficiency gains for the country.

The alternative is to ensure that competitors can use Telkom's network at efficient prices and on an equal competitive basis to Telkom's own retail services. However, as indicated, this requires a high level of regulatory competence and this is unlikely to be available in South Africa, as in most developing countries, for some time.

Therefore, the option of structurally separating out the market needs to be considered – a move that would allow retail competition to develop on the back of an efficient wholesale market for interconnection services. Telkom's profitability would be driven by its ability to efficiently utilise its network irrespective of which services were operating off it. Such a market structure would require a far less onerous regulatory or competitive framework.

The terms under which market access is most likely to occur has been tacitly set by the WTO. But compliance with these are a necessary but not sufficient condition for creating investor confidence in the new, stringent investment environment the sector finds itself in globally. South Africa will need to induce investment through the creation of a policy and regulatory framework that is effectively and unequivocally implemented and which creates opportunity for investment in the critical network expansion required by the country to meet the needs of the network economy.

This will require not only an enabling policy and regulatory framework – even with the less-resource-intensive regulatory framework proposed above – but also the human capacity to implement it strategically and innovatively. Investment in the development of human capital will be as critical as investment in the knowledge infrastructure.

Invariably for countries that have successfully attracted significant investment in network development and services through the creation of conditions conducive to investment, there has been some commitment by the state or its agencies to create this human capacity. This has not been the case in South Africa. There has been relatively little budget allocation and training for regulators or policy makers, with shortfalls in capacity being fulfilled by external consultants – consultants who have not focussed on formal skills transfer. This reliance on consultants has often resulted not only in inappropriate regulation, but also a stripping of the regulator's ability to develop the capacity and understanding needed to effect reform.

The reform model as implemented, with its focus on privatisation at the expense of liberalisation, and the short-term optimisation of state assets at the expense of longer-term sector development (and revenues for the state), together with the severe lack of regulatory

capacity that is evident in most developing countries in Africa, make these markets inherently risky for investors.

8. References

- African Ventures (2002), *Financial Assessment of Under-Serviced Area Licences*, commissioned by IDRC.
- BMI-TechKnowledge (2002), *Communication Handbook 2002*, Johannesburg.
- Bruce, R. & Macmillan, R. (2002), *Telecommunications in Crisis: Perspectives of the Financial Sector on Regulatory Impediments to Sustainable Investment, Feedback to Regulators from Investors*, Telecommunication Unions Global Symposium for Regulators, Hong Kong.
- Cellular.co.za (2002, 10 June), 'Vodacom gets Mozambique Contract', <www.cellular.co.za/news_2002/061002-vodacom_gets_mozambique_contract.htm>.
- Cellular.co.za (2003, July 11), 'Sim Swap Gives 1800MHz to SA Operators', <www.cellular.co.za/news_2003/060503-cellphone_deal_looks_at_needs_of.htm>.
- Competitive Carriers Coalition (2002), *Further Reform of Australian Telecommunication Regulation and the Budgetary Impact of the Privatisation of Telstra*, prepared by Access Economics Pty LTD, Canberra, <www.accesseconomic s.com.au/reports/T3Budget.pdf>.
- De Wet, P. (2001, 9 April), 'Telkom likely to oppose Sentech licence', <www.itweb.co.za/sections/telecoms/2001/0104091111.asp>.
- De Wet, P. (2002, 27 May), 'Europe-Africa-Asia Submarine Cable Launched', IT Web, <www.itweb.co.za/sections/telecoms/2002/0205271141.asp?O=E>.
- Gillwald, A. & Kane, S. (2003), Sector Performance Review, *LINK Public Policy Research Paper* No. 4, <link.wits.ac.za/papers/tspr2003.pdf>.
- Gillwald, A. (2003), 'National Convergence Policy in a Globalised World: Preparing South Africa for Next Generation Networks, Services and Regulation', *LINK Public Policy Research Paper*, No. 3, University of the Witwatersrand, Johannesburg, <link.wits.ac.za/papers/tspr2003.pdf>.
- Gillwald, A. (2003), 'Transforming Telecom Reform for Development', IDRC meeting on ICT for Poverty Alleviation, Harvard University, <link.wits.ac.za/papers/trd2003.pdf>.
- Goldstuck, A. (2004), *Internet Access in South Africa 2004*, World Wide Worx: South Africa.
- Gray, V. (2002), *Morocco – Leaving the Others Behind*, ITU, Geneva, <www.itu.int/ITU -D/ict/cs/letters/morocco.html>.
- Gush, G. & Ginsberg, J. (2003), 'South Africa Raises \$500 Mln in Telkom IPO', New York University, <pages.stern.nyu.edu/~igiddy/cases/telkomsa.htm>.
- Intven, H. (2000), *Telecommunications Regulation Handbook*, infoDev, World Bank, Washington, DC, <www.infodev.org/projects/314regulationhandbook>.
- ITU (2002a), World Telecommunications Development Report, ITU, Geneva.
- ITU (2002b), World Telecommunications Indicators: Basic Indicators, ITU, Geneva.
- ITU (2003), World Telecommunications Development Report, ITU, Geneva
- Kelly, T. (1999), *Process and Impact of Commercialisation/Privatisation: Worldwide Trends*. ITU, Geneva.
- Konan, D. & Maskus, K. (2002), *Quantifying the Impact of Services Liberalisation in a Developing Country*, World Bank, Washington, <econ.worldbank.org/files/32582_wps_32582>.
- Melody, W.H. (2002a), 'Trends in European Telecommunication: 2002 Status Report of Denmark's Progress in Telecom Reform and Information Infrastructure Development', prepared for

- National IT and Telecom Agency IT, Denmark International Discussion Forum, Denmark, 17 –19 October.
- Melody, W.H. (2002b), 'Assessing Telkom's 2003 Price Increase Proposal', *LINK Public Policy Research Paper* No.2, <link.wits.ac.za/research/wm20021130.htm>.
- Melody, W.H. (2003), 'Roadblocks on South Africa's Information Superhighway', *This Day*, 1 December.
- Melody, W.H., Currie, W. & Kane, S. (2003), *Value-Added Network Services in South Africa*, Southern African Journal of Information and Communication, Issue 4, LINK Centre, Witwatersrand University, Johannesburg.
- MTN (2003), Annual Report.
- Muoka, R. (2001, April 2), 'Nigeria Opens Mobile Market', *Communications Week International*, <www.findarticles.com/cf_dls/m0UKG/2001_April_2/73180807/p1/article.jhtml>.
- Mwondosya, M. J. (2001), Statement by Minister for Communication and Transport at the Handing-Over ceremony of TTCL to MSI-Detecon, February, <www.psrtz.com/Press%20Releases/Prof.%20Mwandosya's%20Speech-280201.htm>.
- OECD (2001), *Structural Separation in Regulated Industries*, Directorate for Financial, Fiscal and Enterprise Affairs, Committee on Competition Law and Policy, DAFEE/CLP, 2001: 11.
- RSA (1996a), White Paper on Telecommunications, Government Printers.
- RSA (1996b), Telecommunications Act, Government Printers.
- RSA (1999), Broadcasting Act, Government Printers.
- RSA (2000), ICASA Act, Government Printers.
- RSA (2001a), Electronic Communications and Transactions Act, Government Printers.
- RSA (2001b), Telecommunications Amendment Act.
- Scott, I. (2004, 22 January), 'R500m Deal Two Years in the Making', *ITWeb*. www.itweb.co.za/sections/financial/2004/0401220947.asp?A=FIN&S=Financial&T=Financial&O=L
- SATCC (2003) Policy and Regulatory Harmonisation in the SADC Region, PPIAF and World Bank paper prepared for SATCC ICT Investment Workshop, Maputo, 2003.
- Teljeur E, Gillwald A, Steyn G & Storer D (2003), 'Regulatory Frameworks: Impacts and Efficacy', Report Prepared for SA Presidency, TIPS DPRU Annual Forum, <www.tips.org.za> or <link.wits.ac.za/papers/rfie2003.pdf>.
- Telkom (2001), Annual Report, <www.telkom.co.za/index.jsp>.
- Telkom (2002a), Annual Report, <www.telkom.co.za/index.jsp>.
- Telkom (2002b), IPO Prospectus <www.telkom.co.za/index.jsp>.
- World Wide Worx (2003), *Arthur Goldstuck Report*, <www.worldwideworx.co.za>.
- Woroch, G. (1998), *Facilities Competition and Local Network Investment: Theory, Evidence and Policy Implications*, <groups.haas.berkeley.edu/imio/crtp/publications.html>.