VERTICAL INTEGRATION IN
SOUTH AFRICAN TELECOMMUNICATIONS:
A COMPETITION ANALYSIS

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Abstract
This article develops an analytical framework that can be used to assess competition in South African telecommunications and, thereafter, applies this framework in an evaluation of vertical integration patterns in the telecommunications industry. It is shown that, despite recent regulatory reforms, substantial vertical competition concerns remain unaddressed in both fixed line and mobile telecommunications markets.
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1. INTRODUCTION
This year will finally see the full functioning of the new fixed line telecommunications operator (aptly named the Second Network Operator (SNO)) and will spell the end of Telkom’s fixed line monopoly in South Africa. This liberalization of the country’s telecommunications network is an important step in the improvement of overall competitiveness. In countries that have implemented similar liberalization policies, the cost of telecommunications has been reduced significantly – resulting in an overall decline in the cost of doing business.

This study is part of a larger research effort towards understanding, from a competition economics perspective, how liberalization efforts and rapid technological evolution are altering the structure of telecommunications in South Africa. Focusing on issues of vertical integration, the article shows that vertical integration can solve some of the coordination and transaction problems, but may also give rise to competition concerns under the Competition Act (no. 89 of 1998).

In order to analyse competition issues in the telecommunications industry, a framework has to be developed which can be used to evaluate efficiencies and competitiveness. The paper develops such an analytical framework – complying with practice in other...
competition jurisdictions, but recognizing the South African circumstances. Hence, the article proceeds by considering, firstly, the definition of relevant competition markets in telecommunications (distinguishing between voice and data markets). Secondly, this framework is used to study vertical integration in South African telecommunications. This is followed by a brief discussion of the effects of increased convergence in telecommunications markets.

2. REGULATORY REFORM IN SOUTH AFRICAN TELECOMMUNICATIONS

As noted in the introduction, regulatory reforms are altering the South African telecommunications industry. Given the importance of the institutional matrix in the proper functioning of markets, this section provides a very brief outline of regulatory changes prior to our discussion of the market definition in the following section.

Until the start of the eighties, the telecommunications industry, in most jurisdictions, was organized as a regulated monopoly, extending from terminal equipment to voice services. This was based on a particular policy approach to network industries, of which the telecommunications industry is an example.

(a) Network industries

The telecommunications industry (both fixed line and mobile technologies) is a good example of a network industry, exhibiting high initial fixed costs and exhibiting increasing returns to scale. Where the average cost curve in a traditional market declines over time and reaches a point where it starts to rise again, in network industries average cost might be declining over a long period as network effects are realized. The initial capital costs are high, but are recovered over time. The mobile industry in South Africa is a good example. High initial costs in the mobile industry often mean that firms only become profitable after 6-8 years.

Figure 1 shows the ratio of debt to profit1 for MTN during the period 2000-2005. Until 2003/2004, the ratio is positive; indicating that a long period elapsed (from 1994, when MTN commenced operations) before the company repaid the debt incurred in the setup of its network in South Africa.

The telecommunications industry exhibits substantial economies of scale on the supply side – as the cost of adding an additional member to the telephone network approximates zero. Consequently, in smaller markets, only one telecommunication firm may be efficient. In addition, telecommunications industries also exhibit demand side economies of scale. This refers to the positive externality created by an additional customer joining the network – increasing the social benefit more than the private benefit. These network effects preserve the “first-mover” advantage of the incumbent firm. As the marginal cost of granting another user access, or making another call, is very low, telecommunication

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1 Specifically, the ratio is that of net debt to EBITDA (earnings before interest, taxes, depreciation and amortization).
network operators are granted licences to promote investment in the necessary infrastructure.

Figure 1: Net debt to EBITDA (2000-2005) for MTN

Source: MTN (2005)

(b) Current regulatory issues

Starting in the mid-1980’s, regulatory changes brought about more liberalized telecommunications markets in many jurisdictions. In South Africa, Telkom was a state-owned monopoly until 1991. During that year, Telkom was incorporated and registered as a public limited liability company under the SA Companies Act, as part of a privatisation process aimed at liberalizing the telecommunications sector. This process of liberalization led to the listing of Telkom on both the JSE Securities Exchange and the New York Stock Exchange in March 2003. Telkom was granted a five-year exclusivity period until May 2002, during which it had to prepare for a competitive environment and had to achieve certain rollout targets (Telkom, 2003). However, de facto, Telkom enjoyed a much longer exclusivity, with the process of appointing the SNO being a long, unpleasant exercise plagued by political issues. The SNO will finally commence operations during the third quarter of 2006.

In spite of all of the mentioned reforms, the telecommunications industry in South Africa remains a strictly regulated one. Prices (and, therefore, price adjustments) as well as other conditions in telecommunications markets are strictly regulated by the Independent Communications Authority of SA (ICASA). Apart from this body’s regulatory powers, the competition authorities also maintain jurisdiction over competition issues in the South African telecommunications industry. This regulatory overlap has created significant problems.
Previously, the regulators have attempted to address overlap issues in an agreement between ICASA and the Competition Commission (2002). The agreement stated that the Commission would deal with aspects relating to restrictive horizontal and vertical practices as well as abuse of dominance, while ICASA would address contraventions of telecommunications and broadcasting licensing conditions and legislation. The new Electronic Communications Act of 2006 (ECA) has not clarified the situation – again granting both ICASA and the competition authorities joint jurisdiction over competition matters in telecommunications. The new ECA attempts to delineate the bodies’ respective spheres of regulation quite rigidly and includes a chapter on competition matters. For example, the competition authorities may now be called upon to advise ICASA on the definition of relevant markets. However, ICASA may now also intervene in competition issues such as price controls and accounting methods. It is clear from the above discussion that South African regulators do not appear to have found common ground – a situation that has generated a host of failed anti-competitive lawsuits against incumbent operators.

3. MARKETS IN TELECOMMUNICATIONS: DEFINITIONAL ASPECTS

Given the above background, a competition economics framework may be helpful in studying evolving competition within the South African telecommunications industry. Such a framework may assist in describing markets for regulation purposes as well as in evaluating market power in competition investigations. This section considers how the principles of conventional market definition can be applied to the markets in the telecommunications industry.

In competition investigations, markets are defined by considering the extent to which the firm under investigation has the potential market power to raise profits without substantial market reaction. This notion is captured by the so-called SSNIP (small but significant non-transitory increase in price) test used by competition authorities in the United States, European Union and South Africa to delineate markets² (US Department of Justice and Federal Trade Commission, 1992: 3). Hence, the European Commission (1997: 2) argues that “[a] relevant product market comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products’ characteristics, their prices and their intended use”. A similar line of reasoning may be applied to the geographic dimension. Consequently, the SSNIP test delineates competition markets along two dimensions:

- The product dimension, considering substitutability of products or services supplied by the firm under investigation with those supplied by other firms.

² Specifically, the Horizontal Merger Guidelines of the US Department of Justice and the Federal Trade Commission (1992: 3) argues that “[a] market is defined as a product or group of products and a geographic area in which it is produced or sold such that a hypothetical profit-maximising firm, not subject to price regulation, that was the only present and future producer or seller of those products in that area likely would impose at least a ‘small but significant non-transitory’ increase in price, assuming the terms of sale of all other products are held constant. A relevant market is a group of products and a geographic area that is no bigger than necessary to satisfy this test”.
• The geographic dimension, considering substitutability of products or services supplied in the geographic region in which the firm under investigation is operating with products sold in other geographic regions.

However, the definition of telecommunications markets is particularly challenging, due to rapidly changing technologies. More specifically, convergence of technologies may alter market definition boundaries, as more products become substitutable for one another. Therefore, it must be borne in mind that the proper market delineation is always case specific. Nonetheless, the following sections identify a set of telecommunications markets according to the broad principles of substitutability, considering both services provided and technologies employed. The market definitions can easily be adapted to a specific case (such as a complaint or merger before the competition authorities) when the need arises.

Supply chain approach

A description of the telecommunications industry requires a distinction between network operation and service provision. Achterberg (1999:5) argues that “[n]etwork operators provide the links between exchanges that enable communication to take place between one point and another”, while “[s]ervice providers use network operations to … provide various communication services to end-users”. Hence, the European Commission distinguishes between two types of relevant product markets in telecommunications: retail (or services) markets and wholesale (or access) markets (European Commission, 1998).

Wholesale markets become particularly important during liberalization and they receive the larger part of the attention. As noted by the EU Commission (1998:9): “Liberalization of the telecommunications sector will lead to the emergence of a second type of market, that of access to facilities which are currently necessary to provide these liberalized services. Interconnection to the public switched telecommunications network would be a typical example of such access”. This is also true of the current liberalization process in South Africa, where new entrants require access to some of the existing infrastructure.

Figure 2 illustrates the relationships between wholesale and retail markets in the form of a supply chain. Operators by definition own a significant part of the physical (copper, fibre, radio frequency) infrastructure related to the telecommunications network that they provide. As mentioned earlier, operators typically have government granted licences, as the cost of establishing networks is very high and unrestrained competition (at least initially) would prevent the necessary investment in physical infrastructure by the operator. In South Africa operators include companies such as Telkom, MTN and Vodacom.
Service providers typically require access to operators’ infrastructure as they usually lease infrastructure in bulk from these operators. This input is used to create certain value added network services (such as content provision and application provision) and to sell the infrastructure access and value added network services (VANS) to end-users. Examples of service providers adding value in fixed line telecommunications in South Africa are Internet Solutions, MCI, MTN Network Solutions, Dimension Data and M-Web. In mobile telecommunications Nashua Mobile, Autopage and iTalk Cellular are examples of services providers.

In addition, the literature also considers the ability of telecommunication market participants to gain access to networks of their counterparts. Interconnection to another network is a typical example of such an access market. In the EU Access Directive (European Commission, 2002: 11) interconnection is defined as “the physical and logical linking of public communications networks used by the same or a different undertaking in order to allow the users of one undertaking to communicate with the users of the same or another undertaking”. The EU Access Directive defines several different “interconnection markets”, including markets for:

(i) call origination in the fixed public telephone network,
(ii) call termination in the fixed public telephone network,
(iii) transit services in the fixed public telephone network,
(iv) call origination on public mobile telephone networks, and
(v) call termination on public mobile telephone networks.

The distinction between wholesale (access) and retail (services) markets, as shown by the supply chain in Figure 2, is further explored in the following two sections. In particular, the sections distinguish between markets in fixed line telecommunications and markets in mobile telecommunications3.

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3 This framework focuses on product markets.
4. FIXED LINE MARKETS (MONOPOLY MARKETS)

(a) Access markets

Access markets are important as they provide companies with the necessary connectivity to network infrastructure. The EC (98/C 265/02) stated that:

“For a service provider to provide services to end-users it will often require access to one or more (upstream and downstream) facilities. For example, to deliver physically the service to end-users, it needs access to the termination points of the telecommunications network to which these end-users are connected…It can also be achieved either through a service provider who already has these end-users as subscribers, or through an interconnection provider who has access directly or indirectly to the relevant termination points”.

The importance of access markets is illustrated by the fact that all South African Internet service providers currently depend on access to Telkom’s infrastructure and its network in order to participate in the Internet service provision market. As a holder of a public switched telecommunications network (PSTN) licence, Telkom is obliged, in terms of the provisions of section 36 of the Telecommunications Act, to provide local, national and international telecommunications services. However, Telkom itself also holds a VANS licence – implying that the structure of access markets may be important to the structure of services markets.

The literature distinguishes between two broad types of wholesale (access) markets: wholesale narrowband and wholesale broadband. Narrowband refers to those communications linkages with limited bandwidth and include the traditional fixed line telephony services (Koboldt, 2004):

(i) Local, national and international calls and calls to non-geographic numbers;
(ii) Fax calls;
(iii) Dial-up Internet calls, i.e. circuit-switched on-demand access.

Narrowband is based on the existing fixed line telephone network. The current problem in these access markets is that although a second network operator (SNO) will also be granted a PSTN licence, it is likely that the cost of rolling out a fixed line network will deter it from setting up a complete duplicate fixed line network. Consequently, at least in the short to medium run, the SNO will be more of a “glorified” VANS provider with its own backbone and international gateway facilities (Africa Analysis, 2005).

Wholesale broadband is usually defined as “always-on” connections of higher bandwidth. The difference between broadband and narrowband is, however, not necessarily a purely technical difference in terms of a particular bandwidth threshold. The focus is on the type of services rendered through these types of electronic communication. Access to

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4 Although the SNO also has a PSTN licence, it is only expected to commence operations during the 3rd quarter of 2006 (as mentioned earlier). While government is preparing policy that will enable local loop unbundling, it is not expected that the SNO will duplicate all infrastructure – rendering it dependent on Telkom for access to its infrastructure.
broadband services is provided using a number of different technologies, including the copper loop, fibre optic cable, satellite, fixed wireless, mobile wireless and power lines (Cave, 2004). In the access markets for wholesale broadband, buyers are mainly service providers who typically resell capacity to end-users (in the form of broadband access) or sell other value-added Internet services.

Furthermore, both national and international access markets may be identified, although this paper will not suggest particular markets. The important point is that access to the existing PSTN is crucial. As stated by the EC (2003: 24): “the only reasonable widespread means of supplying the end user market … is over the local access network loops of the PSTN which have been enhanced to provide broadband access services”. From a national perspective, it is possible that South African competitors could be provided with some access to the narrowband and broadband component in the near future. Given the regulatory changes, it is clear that the authorities wish to achieve this via the development of independent access networks with a local scope. For example, the legislative changes now enable local authorities to use their electricity distribution networks to build optical fibre and wireless networks in partnership with the SNO, Internet service providers and mobile operators. Transtel and Eskom, both government owned, are potentially important players in such local access markets. However, for the moment Telkom remains the principal player in the national access market, as it seems that the SNO will start its operations with international wholesale services. It has been reported that government has given the SNO access to Eskom’s infrastructure, while the SNO had also bought Transtel’s infrastructure for R 256 million.

As far as international wholesale access markets are concerned, access to international bandwidth is essential for both voice and data communication. In South Africa such access is provided primarily via submarine cable systems in which Telkom owns capacity. Traditionally submarine cable systems have been built using either of two ownership models: a single operator or a “club consortium”. The latter is the model adopted for the SAT-3/WASC/SAFE submarine cable system servicing South Africa: each consortium member has a monopoly on landing capacity in its own country and Telkom holds the monopoly for South Africa (Genesis, 2005).

Each shareholder in the cable system has access to a predetermined portion of capacity, but may purchase more capacity at a later time. Of the thirty-six shareholders in the SAT-3/WASC/SAFE system, Telkom is the largest. Shares in the cable system are not openly tradable and ownership can only change with permission of all consortium members. In addition, Telkom holds the contract to manage the allocation of capacity on the cable system. This gives Telkom direct insight into the activities of other members of the consortium. Consequently, Telkom arguably holds a monopoly position in the international wholesale access markets.

At the moment, access via satellite does not appear to be a viable substitute for access via submarine cable, as the quality of satellite currently is inferior to cable access (Genesis, 2005: 39-40). Therefore, although the SNO (via Transtel’s satellite network) will be capable of providing international gateway services to clients, submarine cable access is a separate market in which Telkom continues to hold a monopoly position in SA.
(b) Services markets

The service provision markets are retail markets, where final consumers buy fixed line telecommunications services from the incumbent or buy value added network services indirectly, through the service providers (mainly the VANS players).

The retail service provision markets that rely on access to the fixed line operator’s network can be further divided into several sub-markets: narrowband voice markets, narrowband data markets, broadband data markets, and value-added market areas. The discussion that follows will only deal with the most pertinent aspects of these markets, in order to develop the arguments on vertical integration in later sections.

In the narrowband voice markets, Telkom continue to hold a de facto monopoly position, although, as argued earlier, the entry of the SNO will change this. Note that the mobile voice markets are dealt with separately below, as these constitute separate markets based on the SSNIP test. The narrowband data markets involve access to the Internet using a dial-up model that transforms digital signals from the computer to analogue signals capable of travelling over the PSTN (and vice versa). The consumer is linked up with a so-called modem bank provided by her Internet service provider and, from there, is linked up to the Internet. Narrowband data markets (including dial-up and ISDN markets) are separate from broadband data markets. A consumer using a dial-up connection will not necessarily switch to broadband if there is an increase in price for dial-up connection. For the dial-up service, the consumer already has access through her normal fixed line to the service and has to pay a flat monthly fee to an Internet service provider of her choice (currently in the region of R100).

A broadband Internet connection provides more bandwidth than a standard dial-up connection and this increases the speed of Internet access. An analogue connection may provide maximum speed of 50kbps, while ADSL can provide speeds of 1024kbps. In South Africa, as elsewhere, the dominant form of broadband access is via the copper loop, with the principal technology in South Africa that of ADSL (asymmetric digital subscriber line). Broadband access is also possible via fixed wireless services (such as Wi-Fi) and third generation (3G) mobile wireless services. In May 2004, Sentech launched a wireless broadband service called “My Wireless”, offering a similar speed to DSL (ICN, 2006). However, it seems that due to problems with the quality of the Sentech offer, the product is not fully substitutable, at least for the moment.

There are approximately 200 Internet Service Providers (ISPs) in the retail narrowband and broadband data markets, serving about 5.2 million Internet users (Telkom, 2005: 13). In fact, these ISPs provide a variety of services that broadly fall within the definition of Value Added Network Services (VANS). Therefore, apart from narrowband and broadband data markets, several markets for value-added network services (including markets for voice-over-Internet protocol and for wireless applications) may be identified, but these will not be discussed in this paper.
5. MOBILE MARKETS (OLIGOPOLY MARKETS)

Similar to the fixed line market description above, this section distinguishes between access markets and service provision markets in mobile telecommunications.

(a) Access markets

Mobile access markets include:
(i) markets for access and call origination on public mobile telephone networks;
(ii) markets for voice call termination on individual mobile networks; and
(iii) the wholesale national market for international roaming on public mobile networks.

When first introduced in South Africa in the early 1990s, mobile telecommunications was seen as a premium service that offered mobility of voice calls. Since then, its rapid penetration has challenged the voice monopoly traditionally held by Telkom – to the extent that South Africa now has far more mobile than fixed line telephones.

Internationally, the scarcity of radio spectrum is, arguably, the greatest challenge for mobile phone industries. Valletti (2004) notes that, while there has been notable international achievement in relaxing it, the spectrum constraint remains a formidable barrier to entry – resulting in the oligopolistic structures that characterize mobile telecommunications markets. This is also true for South Africa, where only three licensed operators (MTN, Vodacom and Cell C) service the South African mobile market. Virgin Mobile has entered the South African market during 2006, but it will operate as a mobile virtual network operator (MVNO) and will not be included in the discussion on the three SA operators that follow.

Figure 3 illustrates the market shares of the three players, in terms of subscribers. While the current oligopoly structure in the mobile markets is certainly more competitive than in the fixed line markets, there are significant problems at the wholesale level generating higher retail prices.

Figure 3: Mobile market shares in terms of subscribers

Source: ICASA (2005)

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Wholesale (or access) markets in mobile telecommunications exist primarily because of the need for interconnection between different mobile operators. Mobile customers make different types of calls, including calls on the same network (e.g. calls between two Vodacom subscribers) and calls to customers of other networks (e.g. calls between one MTN and one Vodacom subscriber). For the latter type of call, costs are influenced (among other things) by interconnection fees charged by the other network for terminating the call. In South Africa, recent studies argue that interconnection rates are excessively high and are not cost-based (as is required by regulation) (South Africa Foundation, 2005b: 17). While all three of the mobile operators may be charging these high interconnection fees, these fees may significantly reduce the competitiveness of Cell C. Because of its small size relative to Vodacom and MTN, Cell C subscribers are likely to make a large number of calls to Vodacom and MTN subscribers. The high cost of the interconnection may therefore serve as an incentive for potential customers to subscribe to either of the two larger networks (rather than Cell C).

(b) Service markets

Similar to fixed line service markets, mobile service markets include both data and voice markets. However, this section focuses on the mobile voice telephony services market. It is important to remark why mobile and fixed line markets are considered separately. Evidence from the literature suggests that mobile and fixed line voice telephony services are not substitutes, as mobile telephones have the distinct functional advantage of portability, while prices for mobile services are significantly higher than those of fixed line services. The European Commission (2001:15) has concluded that “from a demand-side point of view, mobile services and fixed telephony services constitute separate markets”. According to ComReg (2004: 18): “The difference in price between fixed and mobile retail services combined with the inability of other firms, such as fixed operators, to switch to providing mobile services indicate that mobile services are in a separate market to fixed services”.

The market definition framework presented in the preceding sections can be used to evaluate competition in South African telecommunications markets. This paper focuses on vertical integration in telecommunications, where the most important concern is that the incumbent (usually vertically integrated) may leverage monopoly or market power held in its regulated business into its unregulated business, thereby restricting competition in what otherwise would have been a competitive market (ICN 2006:13). The earlier distinction between upstream access to infrastructure markets and downstream service provision markets is important in the South African context: traditionally network operation and service provision were integrated and provided by Telkom. The following sections consider vertical integration in fixed line markets and mobile markets respectively.

6. VERTICAL INTEGRATION AND PROBLEMS IN FIXED LINE MARKETS

As liberalization continues, incumbents (such as Telkom) face declining income from voice. The challenge for Telkom, therefore, is to use its dominant position as a network operator to grow market share in downstream service provision markets. Telkom’s
Internet service provider, branded Telkom Internet, entered the Internet access market in 2000 with an ordinary dial-up service. Given its initial dial-up subscriber base of 10,000, Telkom Internet was then one of the smallest ISPs in the country. This position changed significantly from 2002 when Telkom Internet geared for rapid growth by introducing a range of high-speed access technologies, including ISDN, satellite powered Internet and ADSL. By April 2002, Telkom Internet had more than 50,000 dial-up subscribers and, a year later, this figure had doubled to 100,000. After reaching the 150,000-mark in June 2004, Telkom Internet continued to grow and, as of 31 March 2005, had a total of 202,410 dial-up Internet subscribers. Telkom’s increased focus on data markets are illustrated by Figure 4 – showing the proportion of Telkom’s revenue derived from data services.

Vertical integration, however, can raise problems of both exclusion and leveraging by a monopolist. As none of the currently available infrastructures can integrate all services, all companies depend on Telkom for access to the last mile infrastructure\(^6\). Even the SNO will initially require access to at least some of Telkom’s infrastructure in order to provide services.

\textit{Figure 4: Telkom revenue growth and data contribution, 2000-2005}

\textit{Source: Africa Analysis (2005)}

\(^6\) The last mile infrastructure is that infrastructure connecting subscribers’ premises to the local telephone exchange and includes the local loop.
(a) Problems created by vertical integration in fixed line markets

It was stated earlier that Telkom is the holder of both a VANS licence and a public switched telecommunications network ('PSTN') licence. Both Telkom and the SNO hold PSTN licences, but the SNO is yet to start operations. Telkom therefore occupies both a strong horizontal and a vertical position within the telecommunications market, by virtue of its ability to offer access to network services and telecommunications facilities, as well as services to the final consumer.

A telecommunications operator that controls an essential facility often has both the incentive and the means to limit access to the facility by competitors. This is a dangerous position, as problems normally associated with vertical integration are ‘foreclosure’ and ‘raising rival’s costs’. Telkom is currently an upstream monopoly, being the exclusive provider of network facilities that the Internet service providers need access to. It is also a service provider and provides services in both the retail and wholesale (access) markets, defined above. Being vertically integrated, it can easily raise the cost of access to its competitors, as there is no competition in the upstream market.

During May 2002, twenty VANS providers filed a complaint to the Competition Commission against Telkom, claiming that Telkom is abusing its dominance in the upstream market by “refusing to provide backbone and access facilities to certain VANS providers”, “refusing to lease access facilities to VANS providers” and “charging more for telecommunication facilities” connecting to other VANS providers than to its own VANS networks (Competition Commission, 2004:17).

The largest VANS market is that of web hosting services (BMI-T, 2004). In South Africa, the main first tier providers in this market are Telkom, Internet Solutions (IS) and MCI. A first tier provider is a firm who accesses international Internet traffic and provides Internet connectivity to the downstream users. A first tier provider can either provide services directly to a customer or, alternatively, to another Internet service provider (establishing a second tier in the web hosting supply chain). Similarly, the second tier provider is entitled to service end-users or what would be termed the third tier service providers.

There is a need for connectivity between the various tiers. The first tier participants require a connection to infrastructure of their international counterparts. In South Africa, Telkom provides the necessary infrastructure. Companies such as IS and MCI, therefore, have no choice but to buy connectivity from Telkom. As mentioned, Telkom is part-owner of the SAT-3 cable that provides this connection. In the case of connection within each tier (i.e. between all market participants in all successive tiers),

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7 According to the European Commission (1998: 15): “If there were no commercially feasible alternatives to the access being requested, then unless access is granted, the party requesting access would not be able to operate in the service market. Refusal in this case would therefore limit the development of new markets, or new products on those markets, contrary to Article 86(b), or impede the development of competition on existing markets. A refusal having these effects is likely to have abusive effects”.
Telkom is the sole provider of the infrastructure necessary to facilitate the connection. The Competition Commission has referred the 2002 VANS complaint to the Competition Tribunal and this legal process has not been completed to date.

(b) Future issues in fixed line markets

(i) “Call termination at fixed location” wholesale market

Because of the initial small size of its customer base, the SNO will have to pay the interconnection fees to connect its subscribers to the majority of fixed line subscribers in South Africa – who use Telkom as operator (South Africa Foundation, 2005a: 9). This may be even more severe if the SNO is to provide only long-distance telecommunication services – in that case the SNO is a buyer in the call origination wholesale market – a market in which Telkom will then hold a monopoly.

(ii) Unbundled access to the local loop

The unbundling of the local loop is the ultimate achievement in telecommunications liberalization. It entails the allowance of all telecommunications operators to use the fixed line connections between the telephone exchange and the subscriber’s premises. It seems as though the government is moving in this direction, although, regretfully, at a slow pace. Given possible local loop unbundling, it is not expected that the SNO will attempt to construct a duplicate local loop in residential areas (South Africa Foundation, 2005a: 8).

(iii) Potential competitive constraints

An important future development for the narrowband voice markets is the increasingly strong competition from the mobile operators and the VANS providers (in the form of voice-over-Internet protocol). While not currently considered substitutes, the so-called fixed-mobile convergence could significantly alter the substitution possibilities for fixed line consumers. Dobardziev (2005), however, notes that this type of convergence may only become a reality once 3G networks reach full capacity. Clearly, given that 3G has only been introduced in 2005 and is aimed at higher-income groups in South Africa, such a situation will only occur well into the future. Therefore, mobile operators may have little incentive to consider integrating with fixed line operators. Telkom and the SNO can be expected to increasingly enter data markets, especially given that both operators have the right to 3G licences.

7. VERTICAL INTEGRATION AND PROBLEMS IN MOBILE MARKETS

Mobile operators are interdependent, as they are structurally linked in the form of cooperation agreements (on, for example, the termination of voice and data traffic as well as roaming relationships). This interdependence is a well-known characteristic of oligopoly (and duopoly) markets. Furthermore, an oligopolistic market is more likely to have a structure conducive to coordinated effects, as operators are aware of common interests and anticipate one another’s behaviour. This section describes how the
oligopolistic nature of South African mobile telecommunications markets affect vertical integration patterns, given that all three mobile operators are also vertically integrated into the downstream service provision market.

Mobile service providers create the link between the consumer and the primary market. In fact, the Competition Tribunal (2003:3) concluded that “the role of service providers is to provide the networks with a customer base.” Mobile service providers provide a comprehensive range of cellular products and services and aim to provide customer support. They have the responsibility of marketing different services, billing customers, setting credit limits, collecting debts and offering after-sales service and technical support. Each has an individual brand and competes in terms of value added services such as customer care, itemized billing insurance and general customer satisfaction. It should be noted that tariffs are set by ICASA and the terms of contracts by the operators. Hence, mobile service providers have no product or pricing power, although they can give discounts on certain service aspects.

In the late 1980s, the United Kingdom required their mobile operators to use independent service providers to facilitate vertical differentiation between networks and consumers, thus enhancing competition. When the South African authorities issued two cellular licenses to MTN and Vodacom, they also recognized the competition problems created by this duopoly. Consequently, the UK concept was adapted for the South African market and it was believed that it would provide another layer of competition in the mobile telecommunications supply chain. This layer would not require any form of regulation – avoiding the barriers to entry created at the operator level. As such, it was intended to be a competitive market. However, in contrast to the UK, the SA network operators were allowed to establish their own service providers or allocate this function to a party of their choice.

Initially, many service providers entered the downstream mobile service provision market. However, there has been large-scale consolidation since then, with the number of firms declining significantly over recent years as firms either failed or merged. The market has shrunk to only two independent service providers, Autopage Cellular and Nashua Mobile. These two collaborate with all three networks and are not exclusively obligated to one. The remaining three service providers are individually connected to the three network providers (or at least in part). Vodacom owns VSP (the dominant market player), which includes Teljoy, GSM Direct and Smartcom. MTN holds a 41% stake in iTalk and owns MTN SP (previously M-Tel), both of which are exclusively bound to MTN. Cell C also has its own service provider.

The vertical integration in this market by the operators has already been identified as a concern by the Competition Tribunal in the Vodacom/Tiscali merger. The following section discusses how the strong vertical integration in the mobile markets has led to competition concerns similar to those in fixed line markets.

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8 Although the exclusivity period of iTalk has expired, it is still a de facto exclusive service provider.
(a) Problems with vertical integration in mobile markets

With a joint share of over 90% of mobile subscribers, it can be argued that MTN and Vodacom have a jointly dominant position. Figure 5 shows market shares in the mobile service provision market for contract subscribers. The figures were estimated by Altech (owners of Autopage) and were reported in their 2005 annual report. It is clear from the graph that the service providers owned by Vodacom and MTN have the largest market shares in the downstream market. This was also noted by the Competition Tribunal in the recent Vodacom/Tiscali merger (2005:3): “Concerns were notified to the Commission to the effect that Vodacom was entrenching its market power in the contract subscriber market by buying out all service providers. The concern was raised that this would increase its vertical links in the supply chain and allow it to eliminate all discounts currently given, thereby increasing Vodacom's margins in a saturated market and entrench their market power to set high prices on a take it or leave it basis”.

![Figure 5: Market shares in the service provision market for contract subscribers](image)

The Competition Tribunal has expressed its concerns about exclusivity contracts enforced by specifically Vodacom and MTN. When Cell C was consulted in the merger case between Vodacom, GSM and Teljoy, they made the following statement (Competition Tribunal, 1999:6): “The purchase of Service providers to facilitate vertical integration does not concern our client as much as the practice of limiting the number of distribution outlets through exclusivity agreements, either directly or through service providers or either of the operators. Both Vodacom and MTN appear to be engaging in these practices, which we believe are anti-competitive, and warrant the attention of the Competition Commission.”

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9 These are the best estimates of market shares, as it is difficult to get individual subscriber numbers.
This led the Tribunal to express its concerns about foreclosure in the retail market. They concluded that the elimination of strategic outlets could raise rivals’ cost considerably and inhibit entry into the market (Competition Tribunal, 1999). Apart from the current concerns, several future developments could alter the competitive dynamics of mobile telecommunications in South Africa. The following sub-section considers some of these expected developments.

(b) Future issues in the mobile markets and potential competitive constraints

(i) The potential role of a “fringe” competitor

Actual or potential competition is the most important disciplining factor in a market that is conducive to coordination. Even a smaller “fringe” competitor can exert enough competitive pressure to change the behaviour of larger firms in an oligopoly. The presence of a competitive fringe will, in theory, tend to limit the scope for coordination. A competitive fringe firm may not be able to eliminate market power of the larger firms completely, but it may erode it to a certain degree.

In the SA mobile market, entry is regulated and potential entry is therefore non-existent, at least in the short to medium term. However, Cell C entered the market in 2001 and has gained some market share since then. Cell C entered the market with a specific focus on the pre-paid sector, through competitive pricing and innovative products (e.g. per second billing on pre-paid). However, ICASA has stated in its 2005 report on Mobile Pricing that the entrance of Cell C has not led to significant tariff reductions. Cell C also had a “late mover” disadvantage, having entered the market considerably later than its competitors. The earlier entrants had time to establish subscriber bases and to reduce unit costs, as shown earlier.

(ii) The role of Virgin Mobile as an MVNO

Virgin Mobile has entered the SA mobile market during 2006 as a mobile virtual network operator (MVNO). An MVNO does not own a network infrastructure but buys network time from traditional mobile companies, brands it and resells it to its customers. Although an MVNO can also be described as an “enhanced service provider”, it is usually seen as competing more with traditional mobile companies than with traditional service providers. According to Virgin Mobile they will offer innovative products and the same tariff will be offered to pre-paid and contract customers. This will certainly bring competitive pressure to a market that has always offered differential prices for pre-paid and contract customers. Although Virgin Mobile will use Cell C’s infrastructure, it will operate as a completely separate brand, in competition also with Cell C. The success of this strategy will be heavily dependent on the successful introduction of number portability. International experience shows that in markets where MVNOs have been

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10 Number portability is the ability of a subscriber to retain his number while switching between network operators, between geographic locations, or between services (e.g. fixed to mobile). Many countries have mandated number portability as a pro-competitive measure.
introduced, they have helped to drive down prices and reduce profit margins. As a virtual operator, Virgin Mobile does not face the same late-comer disadvantages as Cell C did. Hopefully, the entry of Virgin Mobile will provide enough competitive pressure to the current oligopoly to finally force down mobile prices.

(iii) 3G mobile data markets

Vodacom is presently dominant in the mobile broadband (3G) market, with a 90% market share. However, as Telkom and the SNO also have 3G licences, competition in this market is likely to increase in the future as 3G becomes increasingly substitutable with other broadband technologies. However, it was argued earlier that Vodacom is a dominant player in the mobile voice market with a market share of more than 50%. It is therefore unsure whether it may use its dominant position in the mobile voice market in an anti-competitive way (through cross-subsidisation or any other means) to capture the 3G market.

8. CONVERGENCE

The previous sections have developed arguments on market definition and vertical integration based on separate analyses for the fixed line and mobile telecommunication markets. However, the gradual convergence of voice and data technologies is changing the way telecommunications companies traditionally operated. Consequently, there is increasing focus on the so-called information and communications technology (ICT) sector, with traditional information technology (IT) and telecommunications companies increasingly adopting a strategy combining telecommunications and IT services.

Fixed line telecommunications operators, such as Telkom, are no longer content to offer connectivity services alone and many are considering expanding into IT services as a way of increasing revenue. The report by The Yankee Group summarizes this approach well: “[Operators’] objective is to capture more revenue from existing clients, and win new business from others – and do both ahead of the competition of pure-play IT services companies. The provision of IT services combined with connectivity services is emerging as a way fixed telecom operators can move up the value chain.” (The Yankee Group, 2003:39; own emphasis). For example, since 2002, Telkom has significantly expanded its data services by moving into managed data networking services. As of 31 March 2005, Telkom was managing 11 961 data sites on behalf of corporate and business customers (a 55% rise compared to March 2003).

While convergence may effect a win-win situation – where operators’ costs are lowered and customers benefit from improved, integrated services – it may also create anti-competitive situations. Since February 2005, firms are allowed to use voice over Internet protocol (VoIP) for purposes other than internal communication. This allows VANS to provide voice services in addition to their data transmission services and promises to finally reduce the high costs of phone calls in South Africa, especially for high volume operators. Unfortunately, the bandwidth constraint is still a major problem, where Telkom, using its monopoly power, controls the infrastructure. Although there are continuous technological improvements that may render these infrastructure facilities
obsolete in the near future, VoIP is not delivering the benefits it currently could due to Telkom holding on to the limited infrastructure bandwidth available and firms facing too stringent costs in the process.

The complexity and wide-ranging impact of convergence prevents a complete analysis in this paper. However, it is clear that convergence of IT and telecommunications services are creating alternative vertical integration patterns (as shown by Telkom’s expansion into data networking services). From another perspective, convergence may require adjustments to conventional market definitions (as would e.g. happen if VoIP were to become a feasible alternative to traditional voice telephony).

9. CONCLUSION

This paper introduces a generic market definition framework that can be used in the delineation of telecommunications markets from a competition economics perspective. Using the conventional SSNIP test for market definition, a range of fixed line and mobile telecommunications markets are defined within a South African context. Thereafter, the framework is applied in an analysis of vertical integration patterns in the South African telecommunications industry. The results support the conclusion that the institutional legacy of the previous regulation regime continues to influence competitive dynamics. Reforms have been slow and the most recent attempt, the Electronic Communications Act, has not addressed the regulatory overlap between ICASA and the competition authorities. This may also create competition problems in the IT industry, as technological changes fuel the convergence of IT and telecommunications services.

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20


