

# The Interface between Competition and Sector-Specific Regulation in the Telecommunications Industry: The Case of Mobile Termination Rates (MTRs)

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## 1 Introduction

Recent experiences with MTR regulation in South Africa illustrate the need for better coordination between the competition authorities on the one hand, and the sector regulator (ICASA) on the other. Both regulators have signed a Memorandum of Understanding (MoU) which governs their interaction, but in practice the nature and degree of coordination are often unclear. In this paper it is argued that the regulation of MTRs has had positive effects on telecoms prices, and that ICASA is correct in their focus on wholesale rates. However, telecoms markets are characterised by tariff mediated network effects which can often result in distortions in retail markets. More specifically, large levels of asymmetry in MTRs<sup>1</sup> can lead to large on-net/off-net price differentials and spillover effects in retail markets. This is an unintended consequence of the regulation of wholesale MTRs and an issue which calls for close cooperation between the Competition authorities and ICASA.

## 2 Some Theoretical Principles

### 2.1 Concurrent jurisdiction in telecoms

According to section 3(1A)(b) and 82 of the Competition Act (as amended), concurrent jurisdiction over competition matters applies where a sector is subject to regulation by another regulating authority. The Competition Commission (CC) and the regulatory authority can enter into a MoU to clarify how such overlap should be handled. If one looks at the MoU between the CC and ICASA (dated 2002) it is stated that the CC has a responsibility to negotiate agreements with any regulatory authority...“to ensure the

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<sup>1</sup> High (symmetrical) MTRs can also lead to large on-net/ off-net price differentials, by increasing termination costs. However, in this paper the focus is on the link between asymmetry and tariff differentials.

consistent application of the principles of the Competition Act.” In principle the aim is to ensure policy coordination, but the practical application is often fraught with problems, as illustrated by the MTR case.

## 2.2 Guidelines – *ex ante* vs. *ex post* regulation

In general, sector regulation relies on detailed *ex ante* interventions, e.g. price controls, in which regulatory agencies take a forward-looking view of different business activities and place restrictions on certain actions. In contrast, the competition approach usually operates on an *ex post* basis and is basically a harm-based approach, where firms face the risk of being penalised if their conduct is found to be an abuse of a dominant position or market power.

As a result, firms will generally face less uncertainty with regulatory interventions. For instance, interconnection pricing is one of the most important issues in network industries. Although it is typically easier to judge *ex post* if a price is unfair than to set a fair price *ex ante*, the *ex post* aspect of competition policy may create uncertainties for new entrants. This is especially the case if they have to make large investments without any clear information on the interconnection charge and its future evolution. In this case, traditional competition policy may not provide the smooth competitive environment it is supposed to create and may take several years, which could be a time period too long to bear for new entrants.

*Ex ante* regulation can be particularly useful when the lack of effective competition in the industry is due to structural problems, which make the development of normal market dynamics impossible. It may also be necessary when firms with market power can potentially implement multiple forms of abuse, usually involving behaviour that is difficult to detect, including exclusionary and exploitative conduct.<sup>2</sup> The general differences between sector-specific regulation and competition policy are shown in Table 1.

**Table 1: Differences between competition policy approach and sector-specific regulation**

	Sector-Specific Regulation	Competition Policy Approach
<i>General Approach</i>	<i>Ex ante</i> , prescriptive business conduct	<i>Ex post</i> , harm-based approach
<i>Institutional Design</i>	Sector-specific institution: sector-specific engineers & economists	Horizontal institution: lawyers and economists
<i>Amount &amp; Nature of Information Required</i>	General and detailed information on the sector	Only information on the allocated abuse
<i>Nature of Remedies Imposed</i>	Detailed conduct remedies requiring extensive monitoring	Structural (or behavioural) remedies address specific abuse
<i>Nature of Public Intervention</i>	Part of sector-specific regulation, replaced by more effective competition law	Permanent, based on general competition principles

Source: Buigues (2006)

<sup>2</sup> Buigues, P. 2006. “Competition Policy Versus Sector-Specific Regulation In Network Industries – The Eu Experience.” UNCTAD's Seventh Session Of The Intergovernmental Group Of Experts On Competition Law And Policy, Geneva, November 2006.

## 2.3 Telecommunications

The telecoms sector is an important example of a sector where competition problems may easily arise. There is often an incumbent player which owns a large network and is also usually vertically integrated. This network operator is usually dominant in at least the upstream access market and sometimes also in the downstream markets. Typically, a dominant player with market power can engage in any of the following categories of anti-competitive behaviour:

- 1) Refusal to deal, i.e. denying access or refusing to deal with downstream firms. This is especially problematic where the dominant firm controls essential inputs and can leverage its dominance into downstream markets;
- 2) Non-price strategies such as bundling and tying, delaying tactics, quality issues, etc.
- 3) Price strategies such as price discrimination, predatory pricing and cross-subsidisation.

Several features of competition policy can make it an inappropriate default regime for the telecoms sector. For instance, relying only on competition law in telecoms is not efficient because it is not designed to address structural concerns or situations of entrenched market power on an *ex ante* basis. Instead, competition policy usually removes the effect rather than the cause. Moreover, competition policy can only be applied once the abuse has been committed and the anti-competitive aim achieved. The fact that the decisions are only binding on parties to the action and lack a wider effect can lead to a proliferation of proceedings on narrow issues and an uneven application of the rules.

The most common instruments of regulatory intervention are the control of entry, prices, earnings and quality standards. In many respects these instruments are not separable. Entry restrictions are most evident where licenses are issued, but access is also dealt with if competitors need access to facilities owned by other firms, e.g. to the local loop in fixed-line networks or to mobile infrastructure for MVNOs<sup>3</sup>. In most cases, mandated access is accompanied by access price regulations. Price controls are among the most common regulatory instruments and can take many forms, including requisite price approval and price caps.<sup>4</sup>

## 3 Regulation of MTRs

Having distinguished between *ex ante* regulation and *ex post* competition policy and the respective role of each, we now turn to the regulation of MTRs by ICASA in South Africa, as an example of the required interaction between the various authorities. There is a strong argument that the regulation of MTRs is a necessary regulatory intervention which should be used to ensure that wholesale prices are cost based.

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<sup>3</sup> Mobile Virtual Network Operators

<sup>4</sup> Landgrebe, J. 2002. "The mobile telecommunications market in Germany and Europe: Analysis of the regulatory environment." Ludwig-Maximilians-University of Munich.

In the EU, three criteria have been developed in order to determine whether a market is a candidate market for *ex ante* regulation. These are:

- a) the presence of high and non-transitory barriers to entry;
- b) a market structure which does not tend towards effective competition within the relevant time horizon;
- c) the insufficiency of competition law alone to adequately address the market failures concerned.

The first criterion, the presence of high and non-transitory barriers to entry, is usually of a structural, legal or regulatory nature in the communications sector. One of the key purposes of the EU Framework Directive is to tackle bottlenecks that block the emergence or the sustainability of effective competition. In principle, communications markets require regulation due to the existence of high and non-transitory entry barriers and the existence of natural monopolies. Structural barriers to entry exist when the state of technology and the resulting cost structures create asymmetric conditions between incumbents and new entrants, preventing or impeding market entry. High structural barriers may exist when the market is characterised by high sunk costs and by substantial economies of scale, scope and density. Structural barriers can also exist when the provision of services requires a network element that cannot be technically or economically duplicated. Legal or regulatory barriers are not based on economic conditions but have a direct effect on the conditions of entry, e.g. the number of undertakings that have access to spectrum. Paradoxically, this kind of regulation may make entry barriers appear higher than they are. This criterion is static and is a necessary but not sufficient condition for a market to be included, since such a market may still tend towards effective competition.

The second criterion examines the state of competition behind the entry barrier and tries to assess whether a market will tend towards effective competition over time. This criterion is a dynamic one, which requires the regulator to take a longer-run dynamic into account. Given the technological innovations in the communications markets, entry barriers may become less relevant where competitive constraints result from potential competitors (and innovations) not currently in the market. For instance, in the mobile sector prices tend to fall in anticipation of entry. In other words, the potential for disruptive technology also helps to contain market power. Yet, end-users should not be left unprotected over a lengthy period. A further important element is the role of corporate control. Even in the face of regulatory barriers, there is the possibility of a change in firm ownership and management. In this way, a form of entry is possible that does not change the number of competitors but may still change the nature of competition. This is important in the mobile sector where underperforming firms are subject to take-over bids. This criterion should also be a warning against allowing regulation to act as a deterrent to competitive investment, e.g. excessive regulation of DSL could discourage the upgrading of cable systems.

The third criterion considers the adequacy of competition law (absent *ex ante* regulation) to address the relevant market failures or competition concerns. It takes account of the particular characteristics of the

telecoms sector and the desirability of limiting *ex ante* regulation to cases where it is strictly necessary. Competition law also applies when there is *ex ante* regulation. Nevertheless, there are situations where *ex ante* regulation has particular advantages. For example, this can be the case where compliance requirements of the intervention are extensive, where frequent intervention is required, or where creating regulatory certainty is important. Furthermore, emerging markets in which market power exists because of “first mover” advantages should not be subject to *ex ante* regulation in principle. This is particularly important in telecoms industries and often ignored by regulators. These considerations justify, but also limit the role of regulation. Thus, again, regulation and competition law are complementary instruments. The efficacy of the two modes of intervention will depend upon the legal framework and the capacity and competence of the NRA involved.<sup>5</sup>

In summary, the decision to impose *ex ante* regulation should be based on an overall assessment of the effectiveness of competition within the market, taking into consideration not only static but also dynamic criteria. These criteria, each of which is necessary but not sufficient, should be applied cumulatively. If only one criterion fails, *ex ante* regulation is not necessary. The EC Recommendation provides a list of markets to be regulated based on these three criteria. This list is not binding and NRAs may define additional markets to be regulated, as long as they obtain the Commission’s approval before imposing obligations on the industry. In other words, the EC enjoys a “veto power” to extend regulations to markets outside of the ones listed in the Recommendation.<sup>6</sup>

Wholesale (or access) markets in mobile telecommunications exist primarily because of the need for interconnection between different mobile operators. In the South African case, MTRs were traditionally set through commercial negotiations – and approved by ICASA – up until 2010. However, research on the competitive interactions among mobile operators has shown that the industry exhibits strong features of a natural oligopoly, where only a limited number of operators with different coverage can survive in equilibrium, due to spectrum constraints. It can therefore be expected that MTRs will not settle at competitive levels, and moreover, such markets can yield specific competition problems.

In fact, the first negotiated MTRs were set at very low rates; MTN and Vodacom paid each other R0.20. This was much lower than the termination rate of R1.09 (peak time) on MTN and Vodacom’s networks, of all calls originating on the Telkom network. The reason for the very low MTRs was the fact that volumes of calls between mobile networks were expected to be small and so the call termination rate for mobile calls did not matter as much.<sup>7</sup> This changed as subscriber numbers increased and by July 2001 (at the time of Cell C’s entry into the market) the MTR was R1.19 during peak times and R0.65 during and off-peak times.

<sup>5</sup> Cave, M., Stumpf, U. and Valetti, T. 2006. “A Review of certain markets included in the Commission’s Recommendation on Relevant Markets subject to *ex ante* Regulation.” *European Commission*

<sup>6</sup> Buigues, P. 2006. “Competition Policy Versus Sector-Specific Regulation In Network Industries – The Eu Experience.” *UNCTAD’s Seventh Session Of The Intergovernmental Group Of Experts On Competition Law And Policy, Geneva, November 2006.*

<sup>7</sup> Hawthorne, R. 2014. “Review of economic regulation of the telecoms sector.” *CCRED*

Since the issuing of mobile licenses in South Africa in 1993, the question around the appropriate cost of interconnection was not addressed explicitly until October 2010, when ICASA finally determined a cost for carrying a voice call on a network. In these regulations ICASA<sup>8</sup> introduced a three year glide path for asymmetry from March 2011 to March 2014.

During the MTR process of 2010, ICASA identified the following market failures in mobile access markets which required pro-competitive terms and conditions:

- a) a lack of provision of access;
- b) the potential for discrimination between licensees offering similar services;
- c) a lack of transparency;
- d) inefficient pricing.

Subsequently, during early 2014, ICASA announced new MTR regulations with a further three year glide path for asymmetry. However, these were set aside by the High Court subsequent to a hearing in April 2014. Although the 2014 regulations were set aside, the MTR of R0.20 and the asymmetric rate of R0.44 have been imposed for a period of 6 months until 30 September 2014. ICASA is now in the process of reviewing the MTR regulations. It has to decide on the correct cost standard, as well as whether asymmetry is required and, if so, what the appropriate level and duration of asymmetry should be.

## 4 Basis for Asymmetry

In regulating MTRs (as a wholesale rate), ICASA has to consider three issues: the level of the MTRs, whether smaller operators are allowed some measure of asymmetry, and the duration of such asymmetry. ICASA<sup>9</sup> has recently announced that it has decided to adopt a Long Run Incremental Cost Plus (LRIC +) standard for the determination of the level of MTRs. This means that the MTRs set by ICASA will reflect the true underlying cost (plus some allowance for common costs), of terminating a call on a specific network.

The focus in this paper is not on the *level* of MTRs and the appropriate cost standard, but rather on the issue of asymmetry. Cell C (and Telkom Mobile) have received 3 years of asymmetry up to March 2014, and this has now been increased and extended until the end of September 2014, while the MTR regulations are being reviewed. In the next section an overview is provided of the principles that should guide the determination of the level and duration of asymmetry, as set out in the literature.

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<sup>8</sup> The Independent Communications Authority of SA - *Government Gazette No. 33698, 29 October 2010*

<sup>9</sup> ICASA (15 August 2014) "Briefing note on cost standard to be used to determine the cost of mobile and fixed wholesale voice call termination"

## 4.1 Rationale for Asymmetry

The rationale for asymmetric MTRs is well-established in the literature. Regulators (especially European regulators) have typically used asymmetry to compensate for the exogenous cost differences that smaller players face when entering a network industry. This was on the basis that larger operators (incumbents) enjoyed some cost advantages that could not be matched by smaller operators (or later entrants).

It is not appropriate to grant asymmetry to an inefficient operator as asymmetry does not provide an incentive for efficiency. But if an operator faces higher costs because of exogenous factors – i.e. higher costs that are beyond their control – which prevent them from adjusting to the most efficient operator, then these cost differences should be reflected in asymmetric MTRs. This is necessary to encourage competition between players and for the development of the market.

Asymmetric MTRs allow smaller operators to recover their higher costs linked to exogenous cost disadvantages. A report by the European Regulators Group (ERG)<sup>10</sup> argues that asymmetry could be justified on the following grounds:

- i. Scale disadvantages: costs spread over a smaller subscriber base leading to higher unit costs;
- ii. Spectrum disadvantages: may require more (or higher density) base stations to achieve the same coverage due to lack of scarce spectrum;
- iii. Network disadvantages: tariff mediated network effects due to on-net/off-net pricing differentials and smaller networks.

These aspects are discussed in more detail below.

### 4.1.1 Scale disadvantages

Asymmetry is used to encourage the development of a new entrant that suffers from a lack of scale due to late market entry. The majority of NRAs allow initial asymmetries based on delayed entry. Generally, the rationale is that the late entry of a mobile network operator (MNO) puts it at a disadvantage, particularly in a network industry. While incumbent MNOs already have an established subscriber base and benefit from economies of scale, a new entrant's costs are spread over a smaller subscriber base leading to higher unit costs for all services (including termination) and lower efficiency. MNOs with higher volumes will benefit from economies of scale and enjoy lower unit costs, but this does not necessarily imply that they are operating efficiently or that smaller operators are operating inefficiently. If the source of a smaller operator's higher unit costs is its low initial volumes (meaning that it does not benefit from economies of scale), asymmetry allows it to recover higher termination costs.

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<sup>10</sup> European Regulators Group. 2008. "ERG's Common Position on symmetry of fixed call termination rates and symmetry of mobile call termination rates." ERG (07) 83 final 080312

Accordingly, asymmetry has been justified as a method to allow smaller MNOs to gain market share in order to benefit from economies of scale and enhance efficiency. Asymmetry allows for the realisation of higher profits over a shorter period, which increases competition in the market. Smaller MNOs are able to use these profits to invest in infrastructure which allows for the further expansion of competition in the wholesale and retail markets. This could be applicable in the South African market where neither Cell C nor Telkom Mobile has acquired the necessary scale to compete effectively against the incumbents.

Taking market shares into account is not straightforward, as this factor is not entirely outside an operator's control. Yet this factor is important, given that economies of scale are directly related to market share and an efficient late entrant needs time to acquire a significant market share. It appears that asymmetry towards operators with a very small market share is a widespread phenomenon in Europe, although there are major variations in the actual levels attained.

#### 4.1.2 Spectrum disadvantages

It is often argued that the biggest source of enduring cost differences between operators is spectrum allocation. This disadvantage can relate to the quantity and/or type of spectrum. It is generally accepted that operators with lower frequency spectrum (e.g. 900MHz) can achieve the same level of coverage as an operator with higher frequency spectrum (e.g. 1,800MHz) with fewer base stations, due to the propagation characteristics of radio waves. Where operators build networks in areas that are coverage constrained, rather than capacity constrained, lower frequency operators will typically have fewer stations and lower costs.<sup>11</sup> Spectrum disadvantages can be ameliorated, for example, by aligning the spectrum endowments of operators or by introducing a market mechanism such as a secondary market.

The issue of spectrum is specific to each country, and each NRA must determine the effect that actual spectrum allocations are likely to have on an operator's actual costs. In the majority of European countries mobile operators were licensed and entered sequentially. As a result they have often obtained the rights to different spectrum frequencies that support different technologies. This may imply that MNOs with different spectrum endowments have different costs. Differences in spectrum allocation (i.e. licensees that have historically benefitted from more efficient, lower band spectrum), was one of the pro-competitive conditions ICASA included in the 2010 MTR regulations.

#### 4.1.3 Network disadvantages

Asymmetry has also been used to compensate small operators for the adverse effect of MTRs that are above costs, as has been the case in South Africa from the outset. A delay in implementing cost orientation may disadvantage smaller operators in particular through on-net/off-net price differentials. As

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<sup>11</sup> PricewaterhouseCoopers. 2008. "The setting of mobile termination rates: Best practice in cost modelling." *GSM Association*.

long as on-net calls are cheaper than off-net calls (i.e. the MTR plus call origination costs), there is an incentive for MNOs to promote on-net offers. This incentive and potential competition issue is compounded when the MTRs charged by large networks are significantly above true termination costs.

If the MTR of a smaller operator is higher as a result of asymmetry, then the larger operator has a justification to increase its off-net price (relative to on-net) by the difference between its own MTR and the MTR of the small operator (i.e. the asymmetry). This may contribute to increase the network effect, which is contrary to what is intended.

The magnitude of the impact on competition due to these network effects will depend on a number of factors and is likely to vary between countries. In South Africa, the smaller operators have faced this disadvantage since their initial entry.

#### 4.1.4 Dynamic efficiency

The ERG cautions against asymmetric MTRs that do not only cover higher per unit costs faced by new entrants, but also subsidise retail services, as this could act as a disincentive for efficiency gains and could distort retail competition among operators. However, while asymmetric MTRs can introduce productive- and allocative inefficiencies into the market, it can also promote entry and expansion and enhance competition in the long run, with consequent increases in dynamic efficiency. Indeed asymmetric MTRs allow higher expected profits in the short term and strengthen the relative competitive position of later entrants, thereby leading to increased competition in the long term to the benefit of end users.

In other words, a regulator may trade off short term inefficiency for longer term dynamic efficiency. Whether this trade-off is appropriate depends on the circumstances of each country. The less competitive the market the stronger the case for asymmetry, as the competitive gains will be more substantial and the short term inefficiencies relatively less significant. Therefore the benefits of promoting long run competition may be larger in relatively concentrated retail markets, as is the case in South Africa. Nevertheless, regulators should keep in mind that asymmetric regulation is only sustainable for a transitional period. In the following section we investigate international evidence on the implementation of MTRs, focussing specifically on the rationale and the circumstances of the regulatory policy.

## 4.2 International evidence – rationale for asymmetry

As explained above, exogenous cost differences are the theoretical rationale for asymmetric MTRs. However, NRAs have used a variety of justifications for asymmetry, usually corresponding broadly to the

disadvantages discussed above. For instance, in an examination of asymmetric MTRs across countries, Spectrum Value Partners<sup>12</sup> (SPV) found that asymmetry was justified primarily on the following grounds:

- 1) To offset a monopolistic/oligopolistic situation in the market due to:
  - i. Advantages enjoyed by early entrants resulting in a dominant market share;
  - ii. High switching costs for customers (e.g. due to long term contracts, absence of mobile number portability) resulting in limited market churn and thus limited potential for later entrants to grow their subscriber base.
- 2) To negate exogenous cost differences beyond the control of the operator, including:
  - i. Spectrum allocation disadvantages, which could lead to increased CAPEX for new entrants;
  - ii. Spectrum licensing processes, when licences are not granted at market prices or prices do not accurately reflect the cost of technology.

The first rationale, which is to off-set a monopolistic/oligopolistic market structure, roughly corresponds to the idea of scale disadvantages, but it also implies a broader pro-competitive rationale, which concerns a lack of competition in the retail market and barriers to growth for smaller operators (i.e. high switching costs). Specifically, SPV argued that asymmetry should be justified by factors that cannot be influenced by late entrants, including institutional barriers to entry like monopoly rights, switching costs and exogenous cost differences due to spectrum allocation disadvantages and licencing processes.

Table 2 lists the rationale provided by the NRAs of several countries that have introduced asymmetric MTRs. The factors usually cited include a lack of scale, low market churn, a highly concentrated market, spectrum disadvantages and traffic imbalances. Again, the justifications often mirror the disadvantages discussed above, but they also address wider pro-competitive aspects. It seems that the market structure (i.e. the number of MNOs, the level of concentration and the degree of competition), was a particularly important consideration when MTRs were implemented, in addition to exogenous cost differences.

**Table 2: The rationale for asymmetric MTRs**

Country	Introduction	Scale & Monopoly/ Oligopoly Structure	Spectrum Allocation	Network Effects	Other objectives
France	2001	X (low market churn)	X	X	
Bahrain	2005	X (monopoly)	X		
Belgium	2001	X	X		
Germany	1998	X	X		
Greece	1998	X			
Italy	2005	X			Encourage investment & promote competition
Ireland	2002	X			
South Korea	2002	X	X		

<sup>12</sup> Spectrum Value Partners. 2008. "White Paper: Asymmetrical pricing for Mobile termination charges."

Switzerland	2000	X (switching costs)	X	X	
UK	1999		X		
Turkey	2006	X	X		
Algeria	2005	X		X	
Colombia	2012	X		X	
Nigeria	2009	X			
Peru	2006	X	X		Promote competition & fixed operator integration

Source: Econex

## 5 Tariff Mediated Network Effects

An unintended consequence of asymmetric MTRs is that it can distort competition in retail markets. This can take the form of high differentials between off-net and on-net mobile rates and has been observed in many countries, with regulation that has been designed to address this. As long as on-net calls are cheaper than off-net calls (i.e. the MTR plus call origination costs), there is an incentive for MNOs to promote on-net offers. This incentive and the potential competition issue are compounded when the MTRs charged by large networks are significantly above true termination costs. The extreme situation can appear when on-net prices are lower than MTRs. Thus, if the MTR is above the retail price (i.e. the incumbent's on-net price), then the smaller operator may be forced to incur a loss on its off-net calls in order to be competitive. If there is a significant differential between on-net and off-net rates, then there is a real incentive for subscribers to remain on the larger networks.

This is something which observers have pointed out exists in the SA retail mobile markets.<sup>13</sup> The question is whether it can be addressed by ICASA or whether it can lead to a competition action. In fact, in 2013 Cell C already brought a complaint to the CC regarding on-net/off-net pricing. In order to understand this issue better, an overview is provided below of the relevant literature on this point.

### 5.1 Literature review

While it has been standard practice for MNOs to set off-net prices higher than on-net prices, recently there has been concern among economists, marketing researchers, and telecoms regulators that termination-based price discrimination may be used by operators as an anti-competitive instrument. In line with these concerns, various recent theoretical papers have considered the impact of network effects and price discrimination on competition and pricing in mobile markets.

<sup>13</sup> Mhlanga, C., Ramohlola, S. E. and Ravhugon, T. 2013. "The Interplay between Call Termination Rate Regulation and Exclusionary Abuse Prohibition: A case of On-net/ Off-Net Call Price Differentials". Paper delivered at the 7<sup>th</sup> Annual Conference on Competition Law, Economics & Policy.

### 5.1.1 Theoretical studies

In telecommunications markets consumers derive utility from being able to call other consumers on their own or other networks. If the networks are perfectly compatible, welfare simply increases with the number of mobile consumers. The telecommunications market is therefore characterised by network externalities. However, if there are several network operators competing for market shares, they may have an incentive to reduce compatibility to other operators using termination-based price discrimination, creating so-called tariff-mediated network effects (a term coined by Laffont et al. 1998).

*Termination-based price discrimination* refers to operators charging different retail tariffs for different calls, depending on the network on which they terminate. An operator usually charges a higher price for calls placed on rival networks (off-net calls) and a lower price for calls placed on its own network (on-net calls). Thus, termination-based (or on-net/off-net) price discrimination will reduce the compatibility between mobile operators' networks, even though there is full interconnection.

This price discrimination will lead new customers to favour the larger mobile operators, since a higher proportion of their calls will be on-net and therefore cheaper. For the same reason it will limit the incentive for customers of larger mobile operators to switch to smaller operators. This price discrimination therefore induces so-called *tariff-mediated network effects*, because it lowers compatibility between operators' networks and makes it convenient for subscribers to choose the operator with the largest customer base.

As a result, this form of price discrimination will lead to higher switching costs for consumers by making it more expensive and less convenient to switch between mobile providers. Switching costs are defined as all costs associated with switching from one provider to another, in monetary and psychological terms. The increase in switching costs means that consumers will be less likely to switch to alternative providers, which will limit competition in the mobile market.<sup>14</sup>

The results of the theoretical literature have generally supported this basic argument. Studies usually take the form of mathematical models that rely on different simplifying assumptions. One of the key conclusions from this literature is that externalities create a strategic motive for termination-based price discrimination. By charging higher prices for off-net calls, large operators can reduce the number and duration of calls received on smaller networks, which enables them to leverage their larger base and make smaller networks less attractive. This creates an entry barrier for newer network operators, who are unable to replicate incumbents' pricing strategies in a profitable way. This is often accompanied by a net outflow of termination fees for the smaller operator, reducing their profits further.<sup>15</sup>

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<sup>14</sup> Srinuan, P. 2012. "The Impacts Of Network Effects And Multi-Service Provision On Consumer Switching Costs In The Swedish Telecommunications Market." *Chalmers University of Technology*.

<sup>15</sup> Hoernig, S. 2007. "On-net and off-net pricing on asymmetric telecommunications networks." *Information Economics and Policy*, Vol. 19, No. 2 (171-188).

Thus, strategically inducing network effects can be a profitable strategy for obstructing market entry, reducing competition from new entrants and impeding the growth of rival networks. It can also be a successful strategy for gaining and maintaining market share.<sup>16</sup> This is a significant advantage for incumbents in a capital-intensive industry like mobile telecommunications. Later entrants require a substantial market share in order to match their significant initial capital investment with sufficient revenue from on-going operations.

The theoretical literature has demonstrated that concerns about the use of termination-based price discrimination as an anticompetitive instrument are legitimate. In general they have found that tariff-mediated network effects can result in welfare losses by making larger networks more attractive, placing smaller networks at a competitive disadvantage and damaging to long-run entry and competition.<sup>17</sup> However, the theoretical literature is quite complex, which makes it difficult to draw clear conclusions for policymakers. In the next section we look at how some of these theories have been tested empirically.

### 5.1.2 Empirical studies

A number of empirical studies have examined the impact of tariff-mediated network effects on mobile telecommunication markets. Early studies<sup>18</sup> confirmed that consumers preferred mobile networks with the largest number of subscribers, i.e. that there are network externalities, and that the largest networks would get a larger share of new subscribers compared to their smaller rivals when they used termination-based price discrimination. The literature also confirmed that price discrimination had an impact on network traffic. Since subscribers of large networks spend more airtime on their own network, and since on-net call prices are usually cheaper, mobile subscribers choose the larger operators rather than smaller providers in order to minimise their phone bills.

Birke and Swann (2006)<sup>19</sup> examined the role of network effects on the choices of mobile providers by consumers in the UK. One of the most notable results was that higher charges for off-net calls led to fewer off-net calls by subscribers. Also, the decision of a consumer to subscribe to a specific mobile operator could be influenced by their social networks or calling clubs. This is based on the phenomenon that individuals do not place their calls randomly across networks, but have a bias toward calling other members of their calling club (e.g. family and friends). In other words, consumers take their calling clubs into account when subscribing to a mobile operator, making this group more valuable than the population

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<sup>16</sup> Claussen, J., Trüg, M. and Zucchini, L. 2011. "Termination-Based Price Discrimination: Tariff-Mediated Network Effects and the Fat-Cat Effect." Working Paper. *Ludwig Maximilians University: Munich*.

<sup>17</sup> Harbord, D. and Pagnozzi, M. 2010. "Network-based price discrimination and 'bill-and-keep' vs. 'cost-based' regulation of mobile termination rates." *Review of Network Economics*, Vol. 9, No. 1 (1-44).

<sup>18</sup> Srinuan, P. 2012. "The Impacts Of Network Effects And Multi-Service Provision On Consumer Switching Costs In The Swedish Telecommunications Market." *Chalmers University of Technology*.

<sup>19</sup> Birke, D. and Swann, G. 2006. "Network effects and the choice of mobile phone operator." *Journal of Evolutionary Economics*, Vol. 16 (65-84).

of subscribers. This is known as a local network effect. Since a subscriber will call his family and friends more frequently, it will be more convenient for him to be on the same mobile network as them.

Several studies investigate the role of local network effects on the choices of mobile users. Birke and Swann (2006) also examined the role of local network effects in the UK and certain Asian countries. They found that an individual's choice of mobile operator was heavily influenced by the choices made by household members and friends. These effects were far stronger than the effects of overall network size. Maicas et al. (2009)<sup>20</sup> showed that the probability of a customer selecting a mobile provider increased with the number of members of their social network already subscribed to that operator.

Srinuan (2012)<sup>21</sup> looked at the impact of termination-based price discrimination and calling clubs on switching costs in Sweden. The findings suggested that tariff-mediated network effects could lock-in existing mobile subscribers to larger mobile operators. In addition, the results showed that local network effects could create switching barriers, particularly for customers of larger mobile operators. Since they received lower monthly bills than customers of smaller operators, they were less likely to switch to smaller operators. Gerpott (2008)<sup>22</sup> examined the impact of termination-based price discrimination in European mobile communications markets and also concluded that price discrimination increased switching costs for end-customers.

Thus, termination-based price discrimination can potentially have an impact on the initial decision to select a mobile operator, switching decisions of mobile subscribers, as well as network traffic.

### 5.1.3 Some Conclusions

Mobile networks are highly compatible with each other from a technological point of view. Those using one operator can easily call those using another operator. It would therefore be wrong to say that large operators yield greater network effects simply because they have a large subscriber base. Tariff-mediated network effects are induced by operators when they charge higher prices for off-net relative to on-net calls, i.e. termination-based price discrimination.

In general, both the theoretical and empirical literature supports this idea. Studies show that larger mobile operators can gain significant benefits from utilising tariff-mediated network effects and local network effects, since these influence consumers' choices. A consumer selects a mobile operator according to the size of its customer base and the number of his calling club who are already subscribers, in order to exploit the benefits from network effects, such as cheaper prices and greater convenience.

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<sup>20</sup> Maicas, J. P., Polo, Y. and Sese, F. J. 2009. "The role of (personal) network effects and switching costs in determining mobile users' choice." *Journal of Information Technology*, Vol. 24 (160-171).

<sup>21</sup> Srinuan, P. 2012. "The Impacts Of Network Effects And Multi-Service Provision On Consumer Switching Costs In The Swedish Telecommunications Market." Chalmers University of Technology.

<sup>22</sup> Gerpott, T. 2008. "Termination-discriminatory pricing in European mobile communications markets." *International Journal of Mobile Communications*, Vol. 6 (564-586).

## 6 Role of ICASA vs. the CC

### 6.1 Spillover effects in retail markets

In general, the sector regulator is responsible for *ex ante* regulation and the competition authorities are responsible for *ex post* regulation. In terms of the principles of *ex ante* regulation and what the role of ICASA should be, it is interesting to look at the EU guidance on this issue. The European Commission published a Recommendation on Relevant Markets<sup>23</sup> that may be subject to *ex ante* regulation. Where substantial competition problems in retail markets arise in the absence of regulation, a sequential examination is made of the likely presence of significant market power in the underlying wholesale markets. If the likely remedies on a wholesale market do not eliminate the competition problem, other wholesale markets and, in the limit the retailing activity itself, are examined. This approach limits regulation as far as possible to wholesale markets, and to the smallest set of markets possible.<sup>24</sup> This confirms the viewpoint of ICASA which has been focussing on wholesale markets to date, on the presumption that this will filter through to retail markets.

In the Explanatory notes to the Draft MTR regulations (2010:61) ICASA said the following: *“Pass-through’ refers to the passing on of wholesale call termination reductions to retail calls. On one hand it is argued that regulation of wholesale rates should be sufficient to enable competition in the retail market and thus reduce prices (e.g. Denmark); however it is noted that if the reduction in wholesale rates is greater than the reduction of retail rates this leads to a high retention rate, but relatively little direct impact on consumer prices...The Authority intends to impose wholesale call termination market regulations, and as such will not at this stage, without having reviewed the retail market, impose regulation to require a set level of pass-through.”* While this approach is in line with best practice internationally, ICASA cannot simply assume that pass-through to retail markets will take place, but should take cognisance of potential negative spillover effects into retail markets.

The historic process, as well as the current review of MTRs, is therefore aimed at creating incentives in the wholesale market for lower retail rates. ICASA is not currently looking explicitly at retail markets. However, retail markets and spillover effects are also important, described as follows by Harbord & Pagnozzi (2008:6)<sup>25</sup>: *“Indeed, it is plausible that high off-net call charges are a distortion in the structure of prices potentially as serious as the distortion in prices that the regulation of mobile termination charges*

<sup>23</sup> EU Commission. 2003. “Commission Recommendation of 11/02/2003 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC.” *Brussels, 11/02/2003.*

<sup>24</sup> Cave, M., Stumpf, U. and Valetti, T. 2006. “A Review of certain markets included in the Commission’s Recommendation on Relevant Markets subject to *ex ante* Regulation.” *European Commission*

<sup>25</sup> Harbord, M. & Pagnozzi, D. 2008. “On-Net/ Off-Net price discrimination and ‘Bill-and-Keep’ vs. ‘Cost-Based’ Regulation of Mobile Termination rates

*was designed to repair in the first place (i.e. the subsidy of mobile subscription via high termination charges), and are particularly damaging to competition from smaller networks and new entrants.”*

The problem is that regulating MTRs only fixes one side of the problem, i.e. the wholesale side. The problem on the retail side is the large price differentials. This must cease as it creates anti-competitive effects both in the short run and the long run. The obvious remedy for this is a flat rate, but there is a very real concern of unintended consequences if ICASA were to impose such a remedy on retail markets. Price discrimination could be a rational strategy for any mobile operator, and it is only if the levels are excessive and if it leads to foreclosure that it could create competition problems.

The question that is relevant here is whether *ex ante* regulation can be designed to prevent on-net/off-net price differentials. The problem seems to be that attempts to regulate wholesale markets in SA (cost-oriented MTRs), have in fact contributed to the price differential problem. This has been pointed out by ICASA researchers<sup>26</sup>: *“The 2010 Call Termination regulations have had some positive effects on the market. However, the dominant operators have established on-net/off-net call rates as a means to mitigate the intended effects of the regulations.”* If this was indeed the case, then the issue ICASA has to grapple with at the moment is how extended asymmetry will impact competition in retail markets. An interesting case study is used to illustrate possible policy responses.

## 6.2 Case study - Portugal

The case of Portugal is interesting in considering this issue, as asymmetry was *reintroduced* after it was phased out. After conducting several market reviews (2005, 2008 and 2010), Portugal’s National Communications Authority (ANACOM) attempted to set MTRs in line with the European regional average.<sup>27</sup> The incumbent operators, TMN and Vodafone, launched in 1992, while the third operator, Optimus, launched in 1998. In 2006, TMN and Vodafone had market shares of 44% and 36%, while Optimus had a market share of 20%. These market shares remained roughly constant over the period.

In ANACOM’s 2005 review of the wholesale mobile termination market, they found that a large percentage of calls were on-net. They further acknowledged that the price differentials of the two larger operators, combined with higher MTRs, led to a competitive disadvantage for Optimus and could potentially foreclose the smaller operator, which translated into a difficulty in obtaining and retaining customers from its larger rivals.

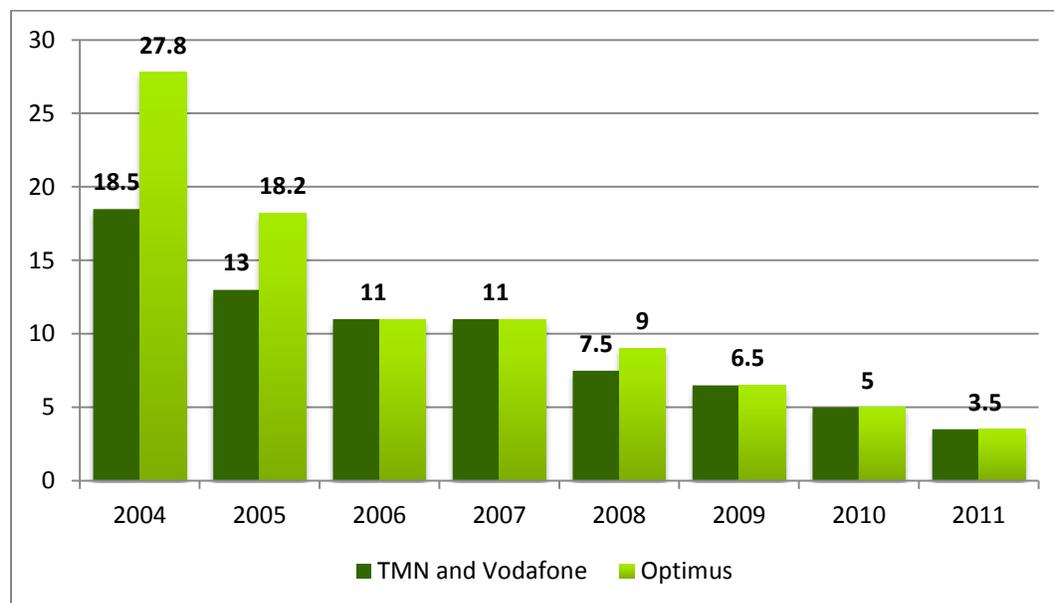
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<sup>26</sup> Mahlanga, C; Ramohlola S.E.; & Ravhugoni, T (2013) “The Interplay between Call Termination Rate Regulation and Exclusionary Abuse Prohibition: A Case of On-Net/Off-Net Call Price Differentials”. Paper presented at the Seventh Annual Conference on Competition Law, Economics & Policy, September 2013.

<sup>27</sup> TMG. 2011. On-net/Off-net Price Differentiation: Review of International Precedent

ANACOM aimed to address these competition concerns by relying solely on MTR regulation.<sup>28</sup> Figure 1 illustrates the level of MTRs in Portugal over the period. ANACOM used a benchmark published by the Independent Regulators Group (IRG) to implement a reduction schedule over 2005–2006. TMN and Vodafone had MTR reductions of 30% and 15%, respectively, while Optimus had reductions of 35% and 40% in 2005 and 2006.<sup>29</sup> ANACOM’s aim was to achieve symmetrical MTRs by October 2006, adopting larger reductions for Optimus, the smallest MNO.

**Figure 1: Level of MTRs in Portugal (EUR cents/min)**



Source: TMG (2011)

However, following a 2008 market review of the MTR reductions, ANACOM found that MTR reductions had been insufficient to address the competition concerns that resulted from on-net/off-net differentiation in the previous market review. It is important to note that MTRs in Portugal continued to be above cost, which the theory would suggest is why on-net/off-net differentials continued to be a problem.

Instead of directly regulating the on-net/off-net price differential, ANACOM decided to reintroduce asymmetric MTRs. This time, Optimus was allowed to charge higher termination rates than the other operators. This would eventually be phased out according to a differentiation schedule, whereby all operators would end at an MTR of €0.65 per minute by 2009. ANACOM based its determination on a regional benchmark, while setting a cost-based path to reach symmetric MTRs by October 2009.

<sup>28</sup> This was because the retail mobile market was not included in the list of relevant markets susceptible of *ex ante* regulation issued by the European Commission (EC). Also, retail regulation would imply subjecting the MNOs to disproportionate regulation which would excessively limit the MNOs commercial strategies.

<sup>29</sup> TMG. 2011. On-net/Off-net Price Differentiation: Review of International Precedent

In its 2010 review, ANACOM found that although the asymmetric MTRs reduced the traffic imbalances and termination payments of Optimus, there were high and increasing on-net/off-net price differentials.<sup>30</sup> As explained above, high and asymmetric MTRs can exacerbate the problem of on-net/off-net price differentials. If MTRs are used as a measure to combat such abuse, then a move towards symmetry would be beneficial.

The point of the Portuguese example is to illustrate that high on-net/off-net differentials have been used as a reason for higher asymmetry and that asymmetry can be reintroduced if the market is not yet competitive. The duration of asymmetry depends therefore uniquely on the specific country and circumstances.

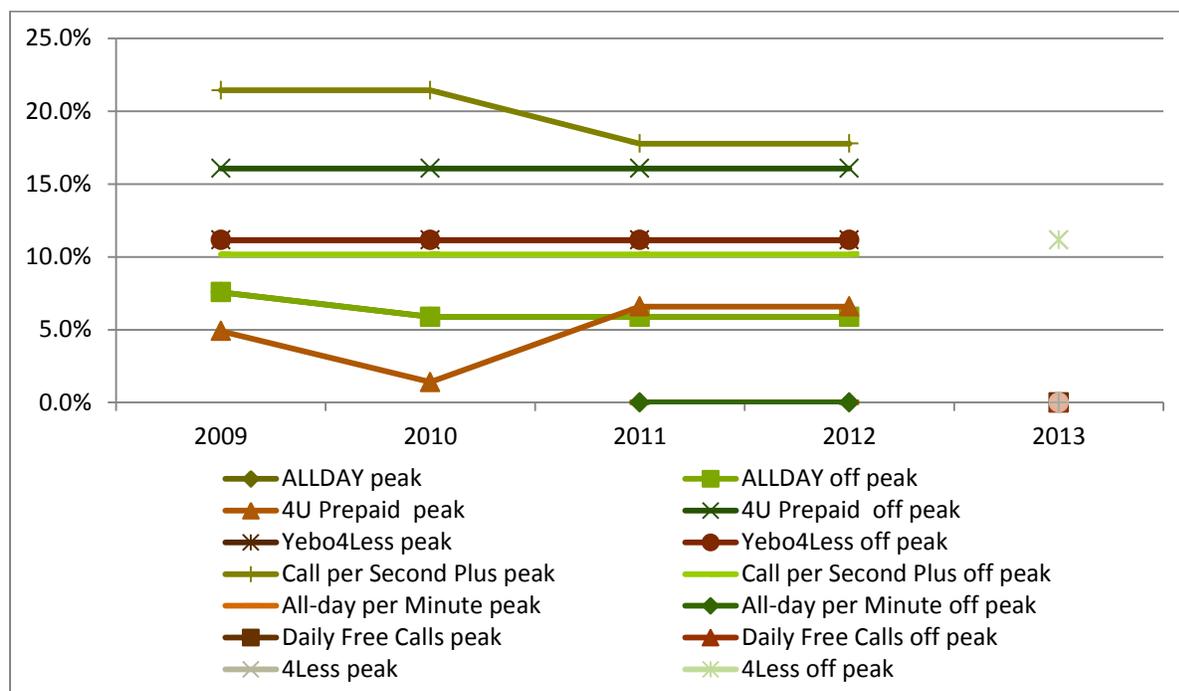
In South Africa the market seems to have moved towards flat rates. This trend is illustrated in Figure 2 for various Vodacom pre-paid packages from 2009 to 2013.<sup>31</sup> Most of the differentials either remained constant or decreased over the period. Figure 3 illustrates the on-net/off-net differentials for various MTN pre-paid packages. There seems to be little differentiation between on-net and off-net tariffs. It is a similar story for the Vodacom post-paid packages. Most of the differentials have decreased or remained roughly constant over the period. MTN does not appear to discriminate between on-net and off-net tariffs for any of their post-paid packages, at least on their published rates. This trend towards flat rates would seem to ameliorate the concern about on-net/off-net differentials widening as a result of asymmetry.

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<sup>30</sup> TMG. 2011. On-net/Off-net Price Differentiation: Review of International Precedent

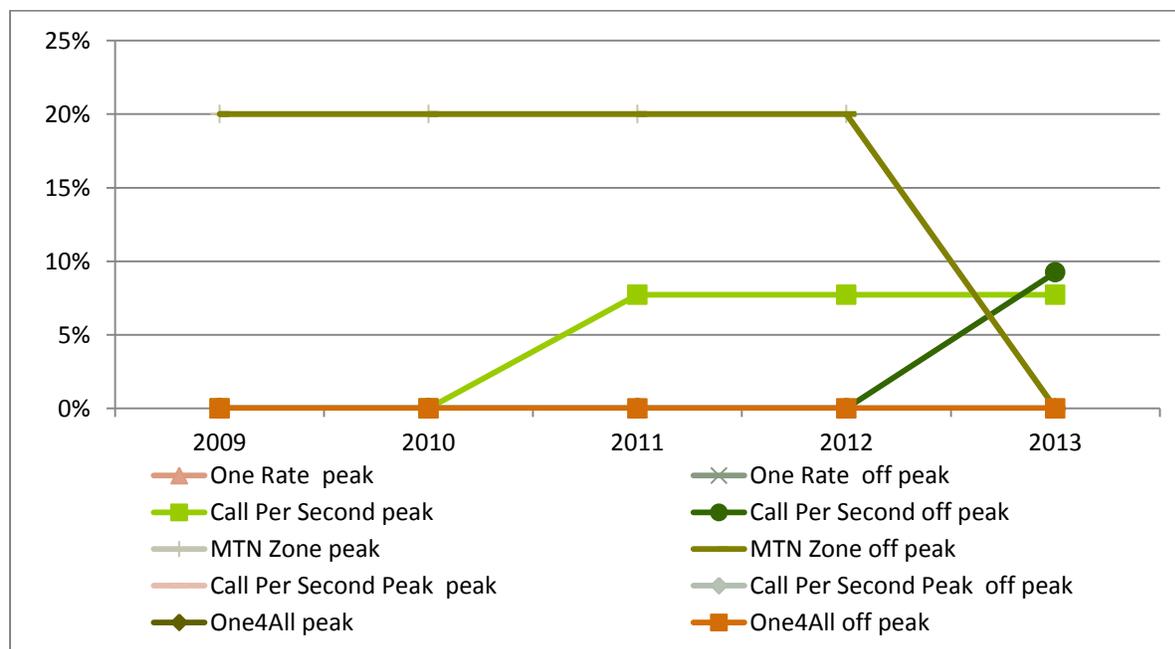
<sup>31</sup> All 2013 data on packages are October 2013. Many of the packages have been discontinued, or at least are not actively marketed anymore. Only one of the new 2013 packages ("4Less") differentiates between on-net and off-net rates.

**Figure 2: On-net/off-net differentials for various Vodacom pre-paid packages**



Source: MNO websites, Econex analysis

**Figure 3: On-net/Off-net differentials for various MTN pre-paid packages (2009-2013)**



Source: MNO websites, Econex analysis

## 7 Conclusions

In this paper it was argued that there should be closer cooperation between the sector and competition regulators in the telecoms sector in South Africa. The regulation of wholesale markets through MTRs seems to be justified by the international literature that lists the rationale for *ex ante* regulation of interconnection. In South Africa however, MTRs have been unregulated up until 2010 (with implementation only in 2011). MTRs have been set at high levels and this has created an incentive for the use of on-net/ off-net tariff differentials by the incumbent operators. It is possible that the introduction of asymmetry in 2011 could have exacerbated this situation and created so-called 'clubs' through network effects. The literature illustrates that tariff mediated network effects can be worse than high MTRs.

The question currently faced by ICASA is whether asymmetry should be maintained and at what levels. In this, ICASA should take cognisance of possible tariff mediated network effects (larger on-net/ off-net tariff differentials, as was the case in Portugal. However in this paper we argue that the current competition complaint against MTN and Vodacom as well as the move towards flat rates, might give ICASA more scope to use asymmetry as a measure to address network, spectrum and market structure disadvantages faced by the smaller MNOs.

One option would therefore be for ICASA to maintain relatively high levels of asymmetry until a more competitive market structure has been reached. Another option for ICASA would be to regulate differentials between on-net/off-net tariffs (e.g. as was done in Namibia and Nigeria<sup>32</sup>). However, price regulation at the retail level is not optimal. Another option would be to move towards pure cost-based rates for all operators, but that could mean that the current market structure becomes a permanent feature and smaller MNOs never achieve scale and remain ineffective competitors or, even worse, exit the market. A last option would be for ICASA to simply make a ruling on asymmetry without considering the spill-over effects and to leave the adjudication of any abuse to the competition authorities. However, this market is too important in the South African context to simply ignore the need for communication and coordination between the sector and competition regulators.

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<sup>32</sup> Mahlanga, C; Ramohlola S.E.; & Ravhugoni, T (2013) "The Interplay between Call Termination Rate Regulation and Exclusionary Abuse Prohibition: A Case of On-Net/Off-Net Call Price Differentials". Paper presented at the Seventh Annual Conference on Competition Law, Economics & Policy, September 2013.