Effective regulation of telecommunications in the island states of the Caribbean

An independent assessment commissioned by Digicel and Cable and Wireless Communications

David Lewin
Grant Forsyth
Sam Wood

October 2017

Plum Consulting, London
T: +44(20) 7047 1919, **www.plumconsulting.co.uk**

Table of Contents

Executive Summary

S1 The challenge facing telecommunications regulators in the Caribbean

How should the island states of the Caribbean regulate their telecommunications sectors so as to serve their best long-term interests? To answer this question policymakers need to take account of the problems raised by the small-scale of the Caribbean islands. Almost all have a population of less than one million, and many have a population of 100,000 or less. As such, we might classify them as microstates[1].

Answering this question is especially urgent for policymakers in the ECTEL contracting states (ECS), which are now in the process of developing a new legislative framework for regulating the five island microstates of Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent & the Grenadines. In this executive summary we have addressed our key findings to these policymakers. However it is important to note that our findings are equally relevant to many other island states of the Caribbean.

S2 Competition policy – microstates versus macrostates

The problems of microstates are clearly recognised by those who develop general competition policy across multiple sectors. For example a review of the academic literature shows that:

- there is a clear need to develop competition policy for microstates (with populations of a few hundred thousand) which is different from that for macrostates (with populations typically measured in the many millions);
- competition policy in microstates needs to deal with problems of minimum efficient scale. In particular there is a need to trade-off higher levels of competition against requirements for low unit costs of production; and
- developing and enforcing regulation in microstates often comes at a high cost and regulatory decisions can be of poor quality.

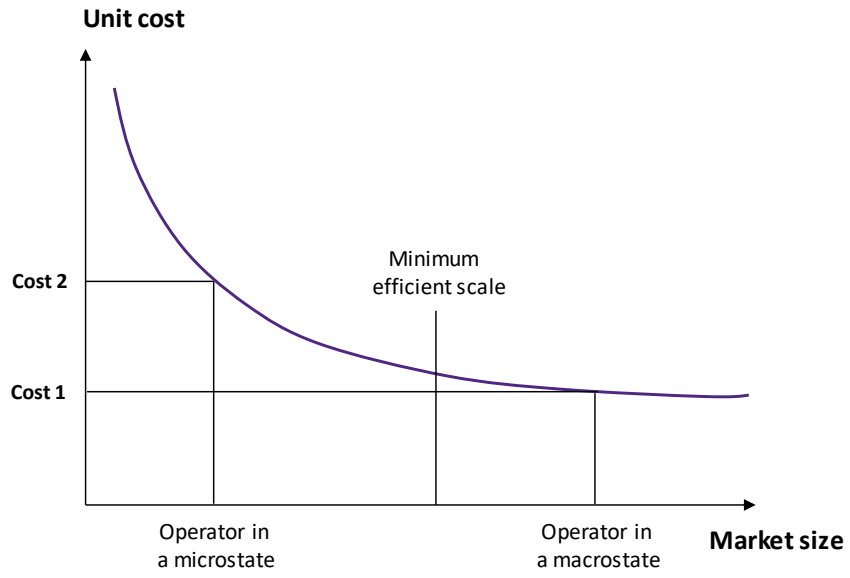
These challenges are highly relevant to regulation of the telecommunications sector in the ECS.

S3 The problem of minimum efficient scale

The telecommunications sector is characterised by substantial fixed costs and significant economies of scale. In a macrostate this usually does not matter because the main operators function at a point well above minimum efficient scale. But in an island state in the Caribbean the main network operators usually operate at a point well below minimum efficient scale as illustrated in Figure 1. We estimate that the minimum efficient scale for a mobile network is above 2 million customers and for a fixed network somewhat lower. But in both cases this is well above the size of the total population of a Caribbean island market. The average ECS for example has a population of around 100,000.

[1] In a 2005 report Ovum defined national states with a population of less than 1 million as microstates.

Figure 1: Economy of scale effects



Minimum efficient scale impacts the telecommunications market of the ECS in two main ways:

- costs and prices (whether retail or wholesale) are likely to be significantly higher than those observed in macrostates; and
- the unit costs of supplying telecommunications infrastructure rise substantially as the number of competing operators increases and the scale at which each supplies services shrinks.

S4 Efficient telecommunications regulation in microstates

The impact of minimum efficient scale on the way a telecommunications market functions in microstates has important implications for how the market should be regulated. Specifically:

- efficient retail prices are higher in microstates. So ECS regulators need to avoid regulation which sets retail prices by benchmarking macrostate prices. This may lead to retail prices below actual cost, few investment incentives, and consequential loss of both dynamic and productive efficiency;
- economically efficient wholesale prices are significantly higher in microstates than in macrostates. So ECS regulators should not rely on wholesale prices based on international benchmarks from macrostates. This might lead to wholesale prices which are too low and encourage inefficient entry;
- competition in microstates, which creates incentives for investment and innovation, also leads to higher unit costs of supply and lower productive efficiency because of lower numbers of subscribers per network operator. If an ECS regulator places too strong an emphasis on competition at the expense of productive and dynamic efficiency this will lead to substantial losses in economic welfare;
- competitive entry in microstates is less likely than in macrostates, given that entrants face unit costs well above those faced by existing operators because of economy of scale effects. ECS

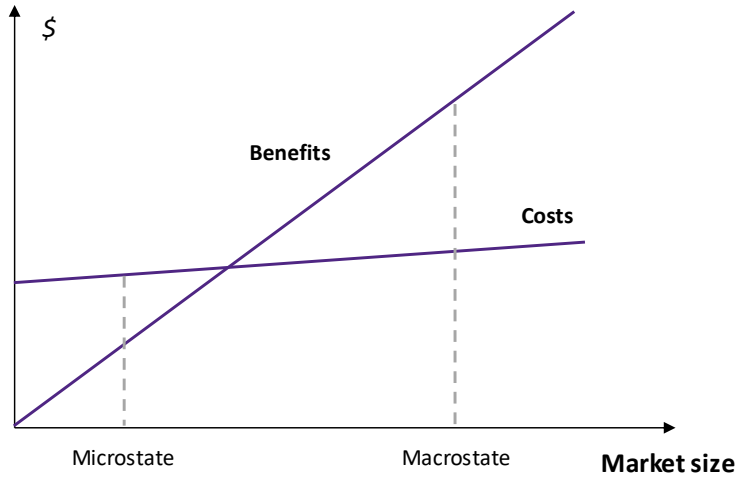
regulators should therefore not expect the same level of market entry and competition in microstates as in macrostates; and

- given that the number of competitors in microstates is likely to be limited, regulation there cannot rely as heavily on competitive forces as regulation in macrostates. Different approaches to regulation are therefore required in an ECS. See Section S7.

S5 Regulatory costs in microstates

The costs of developing, implementing and enforcing regulation varies relatively little with the size of the market being regulated. Similar regulatory frameworks will have similar costs for microstates and macrostates while the benefits of similar regulatory regimes are typically proportionate to the size of the market. Given these differences in the way costs and benefits vary with market size it is possible that regulatory approaches and remedies which are appropriate in macrostates lead to economic losses in microstates. Figure 2 illustrates.

Figure 2: The impact of regulatory measures in micro and macrostates



To prevent such a situation in an ECS, a regulator there needs to:

- carry out regulatory impact assessments on major regulatory decisions to ensure that the incremental benefits exceed the incremental costs; and
- develop simpler (and different) regulation to keep regulatory costs down. It might instead expand its resources to carry out the same level of analysis as a macrostate regulator. But this might increase the total costs of the telecommunications sector in the Caribbean by up to 40% – an increase which would ultimately result in 40% higher end-user prices!

S6 A critique of the draft electronic communications bill in ECTEL contracting states

The ECTEL contracting states (ECS) are currently developing a new electronic communications bill which will determine how the telecommunications sector in the five ECS is regulated in future.

Applying the analysis set out above leads us to conclude that this draft bill would be harmful to the development of the telecommunications sectors and the wider economies of Caribbean countries. Specifically:

- the bill fails to take into account the challenges of regulating the telecommunications sector of an island microstate. It is closely modelled on a regulatory framework designed for application to markets in Europe which serve 20 million people on average, rather than to markets in the Caribbean which often serve only 100,000 people;
- the bill is focused on achieving "a robust competitive environment". But it largely ignores the very important requirement to create incentives for investment in network infrastructure so that end-users can enjoy the benefits of the rapidly improving price performance of new network technologies;
- the bill's goal of robust competition means promoting service-based competition, infrastructure-based competition or some mix of the two. But the scope for increasing the level of competition in the island states of the Caribbean is limited. As a result the bill is based on an unrealistic objective, the promotion of which could lead to undesirable economic consequences;
- the draft bill gives powers to regulators to impose obligations of equivalence of inputs and/or structural separation. If implemented such measures would, almost certainly, lead to significant economic losses;
- there is no provision in the draft bill for taking regulatory action to account for the impact of OTT service providers. This is now a serious problem which has significantly reduced the ability of the infrastructure operators to invest in upgrading their networks;
- application of the bill as it stands is likely to raise the cost of regulation significantly – for example through requirements for regular market reviews across a wide range of markets and for regulatory approval of all access and interconnect agreements. This in turn could mean a very significant overall increase in end-user prices for telecommunications services across the ECS;
- the draft bill does not include measures which constrain the regulators to impose the minimum measures required to deal with the competition problem identified as a result of a market failure;
- the bill does not provide a single overall objective (such as regulating in the long-term interests of end users) which Caribbean regulators can use when determining appropriate regulation;
- the draft bill is likely to lead to extensive retail price controls – a measure which is now in conflict with good international practice;
- the draft bill does not include the principle of technology neutrality. Yet it is clearly important not to regulate in a way which attempts to favour specific technologies; and
- there is no clear mechanism within the draft bill for appeal against decisions by the regulator. Yet it is clearly important that each regulator is accountable in some way for its decisions.

This critique suggests that the draft bill fails to take account of the challenges which arise in regulating microstates and that fundamental changes are required if it is to lead to effective regulation of the telecommunication sector in the ECS.

S7 Recommendations for effective telecommunications regulation in the ECS

How should the ECS regulate so as to take account of their very small telecommunications markets? We propose the following:

- focus on achieving good outcomes for end-users by monitoring key performance indicators. These include the level of investment by operators, the availability and take-up of important new services, the profitability of the main operators, and the level of key retail prices;
- monitor these outcomes and seek voluntary remedies from operators if they become unsatisfactory – with the threat of wholesale regulatory remedies if action is not taken. In other words shift the emphasis from ex-ante to ex-post remedies;
- if this process fails to have the desired effect carry out a review of the relevant market(s) and, if an operator is found to have SMP in that market, impose appropriate remedies;
- in imposing remedies choose the minimum remedy which is required to deal with the competition problem identified during the market review;
- where a market review is required and that review finds an operator has SMP, require the SMP operator to provide access products only if reasonable demand can be demonstrated;
- in monitoring retail (and wholesale) prices take account of the fact that competitive and economically sustainable price levels in microstates will be significantly above those in macrostates and that benchmarking against macrostates is not appropriate;
- move from ex-ante to ex-post interventions to correct competition problems wherever possible;
- before imposing ex-ante remedies carry out a cost benefit analysis which demonstrates that the benefits of any proposed remedy clearly outweigh the costs;
- put the emphasis on negotiations between the operators rather than the imposition of regulation by the regulator;
- do not give NRAs the powers to impose obligations for equivalence of inputs or to require functional or structural separation;
- monitor and publish the annual expenditure of the regulators over time to check that it is not becoming an excessive burden on the sector which might lead to higher end user prices;
- if regulatory costs start to rise to excessive levels cap these costs; and
- in any case cap the contribution of operators to any universal service fund so as to preserve their ability to invest in network upgrades and expansion.

1 Introduction

This report sets out the findings of a study on how best to regulate the telecommunications sector in the small island states of the Caribbean, as listed in Figure 1-1. The findings apply to all of these states. But in the later chapters we illustrate our findings through specific reference to the five contracting states[2] of the Eastern Caribbean Telecommunications Authority (ECTEL). We refer to these five states as the ECTEL Contracting States (ECS) from now on.

Figure 1-1: The island states of the Caribbean[3]

State	Population (000)	State	Population (000)
Guadeloupe	405	Dominica	71
Martinique	383	Cayman Islands	59
Bahamas	379	St Kitts and Nevis	46
Barbados	283	Sint Maarten	39
St Lucia	172	Turks and Caicos Islands	37
Curacao	157	St Martin	36
Aruba	110	British Virgin Islands	31
St Vincent and the Grenadines	110	Caribbean Netherlands[4]	26
US Virgin Islands	105	Anguilla	14
Grenada	104	St Barthelemy	10
Antigua and Barbuda	89	Montserrat	5

Some of the island states of the Caribbean look to the EU for the principles and procedures used to regulate their telecommunications sector. Yet the former have an average population just over 100,000 whilst the average EU member state has a population of 20 million. So the Caribbean islands are microstates – 200 times smaller than the macrostate represented by the average EU member state. This difference prompts a number of questions:

- Does competition policy need to differ in microstates from international best practice in macro states? This is discussed in Chapter 2.
- How do the small-scale markets of microstates impact the way the telecommunications sector functions? See Chapter 3.
- What do these different market circumstances mean for what constitutes effective regulation of the telecommunications sector? And how should regulation in the microstates of the Caribbean differ from the way NRAs regulate in the macrostates of the EU? See Chapter 4.

[2] Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent & the Grenadines.

[3] States with a population of over 1 million are excluded from our definition.

[4] Bonaire, Saba and St Eustatius.

- How can the costs of regulation be kept to reasonable levels in Caribbean microstates? Chapter 5 considers this question with specific reference to the ECTEL contracting states.
- Does the draft Electronic Communications Bill for the ECTEL contracting states properly reflect the market dynamics of a microstate? This is discussed in Chapter 6.
- How should regulators in the Caribbean (and particularly the ECTEL contracting states) regulate to reflect their status as island microstates? See Chapter 7.

To answer these questions we have drawn in our analysis on:

- a report by Ovum and Indepen in 2005[5] which looks at how best to apply the EU regulatory framework in three small EU States, specifically Cyprus, Luxembourg and Malta – the three member states of the EU with populations of less than 1 million. David Lewin, one of the main authors of the current study, played a central role in writing this report;
- a review of other literature on the subject. The references are provided at the relevant points in the text;
- analysis of telecommunications statistics – principally from the ITU Yearbook of Statistics[6], from the ITU's analysis of the information society[7] and from ECTEL[8]; and
- discussions with the main telecommunications operators in the Caribbean.

[5] Ovum and Indepen, June 2005, "*Applying the EU regulatory framework in microstates"* http://www.indepen.uk.com/docs/applying_the_eu_regulatory_framework.pdf (Ovum 2005)

[6] ITU, 2017,"*Telecommunication/ICT Indicators 2006-2015"* http://www.itu.int/pub/D-IND-YB-2016

[7] ITU, 2016, "*Measuring the information Society Report 2015"* http://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2015/MISR2015-w5.pdf (ITU 2016)

[8] ECTEL, 2017, "*Annual electronic communication sector review 2016"*

2 Competition policy in microstates

There is relatively little economic literature on how best to regulate the telecommunications sector in microstates – apart from the 2005 Ovum report. But there is quite extensive literature on how general competition policy should be applied differently in microstates. This literature is of general relevance to most sectors of the economy of a microstate, including the telecommunications sector. In particular the findings of the following authors are relevant:

- Michael Gal, who has spent nearly a decade in studying how to make competition policy effective in small states;
- the OECD, which held a conference in 2003 on competition policy in small economies;
- Evans and Hughes, who reviewed the economic literature to gather lessons on competition policy in small open economies in 2003; and
- Briguglio, a professor at the University of Malta, who wrote a paper on competition law and policy in small states in 2015.

2.1 The key findings from the literature

The findings from the four authors identified above are remarkably consistent. There are three main findings which are of particular relevance to our work.

Finding 1: the size of a market is an important determinant of the competition policy which should be applied to it. This means that there is a clear need to develop competition policy in microstates which is different from that in macrostates for good economic outcomes. For example according to Gal[9]:

> *"the size of a market necessarily affects the optimal competition policy that should be adopted by it".*

while Briguglio recently concluded[10] that:

> *"The thrust of the arguments put forward in this paper is not that competition rules* [which apply in macrostates] *should be discarded in small states or that abuse should be tolerated. The basic contention is that exceptions, normally based on considerations such as improved efficiency, distribution, and overall consumer benefit, are more likely to be relevant in small states".*

Finding 2: competition policy in microstates needs to deal with the problems of minimum efficient scale[11]. More specifically there is a need to trade-off a requirement to maximise the strength of competition in the sector against the need for productive efficiency. There is a dilemma here. The greater the number of firms operating in a sector (which should lead to greater competition), the more likely it is that each firm will operate at significantly below minimum efficient scale. This then raises the

[9] Michael Gal, April 2001, "*Market conditions under the magnifying glass: general prescriptions for optimal competition policy for small market economies",* Southern California Law Review, Vol. 73, 2001. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=267070

[10] Lino Briguglio, 2015, *"Competition law and policy in small states"*, Islands and Small States Institute, University of Malta https://link.springer.com/chapter/10.1007/978-3-319-39366-7_2

[11] These are defined and discussed further in Chapter 3.

average unit cost of production and leads to significant losses of productive efficiency. With this trade-off in mind Evans and Hughes[12] recommend that, in order to maximise economic benefits:

> *"in small economies competition law should focus on efficiency evaluations of mergers and trade practices rather than rules of thumb".*

which might entail:

> *"permission of mergers and practices that increase the sum of consumer and producer surpluses".*

Finding 3: there are significant problems in developing and enforcing competition policy in microstates in an efficient way. In particular the OECD[13] highlights:

- the potential high costs of the enforcement agency – be it a sector specific regulator or a general competition authority. The costs of developing and enforcing competition policy to a high standard vary relatively little with the scale of an economy. So the cost of implementing competition policy as a proportion of GDP is likely to be significantly higher in a microstate than in a macrostate; and
- the scarcity of qualified personnel. While a state of (say) 20 million people can sustain the employment of the specialist staff needed to make the required high-quality analysis and decisions on competition matters, a state with a population of a 100,000 cannot.

2.2 Applying these findings to the telecommunications sector

How might these findings apply to the telecommunications sector in the Caribbean?

- In Chapter 3 we consider how the problem of minimum efficient scale (Finding 2) affects the functioning of the telecommunications sector in microstates.
- Chapter 4 discusses the implications of these findings for how best to regulate the telecommunications sector in microstates (Finding 1). Our focus in this and subsequent chapters is on ex-ante, sector-specific regulation and the extent to which it is appropriate in the microstates of the Caribbean.
- Chapter 5 looks at the practical problems of making high quality regulatory decisions at reasonable cost within the telecommunications sector of the microstates of the Caribbean (Finding 3).
- In Chapter 6, we apply the analysis of the previous chapters to the situation in the ECTEL contracting states of the Eastern Caribbean. Here the governments of the contracting states have produced a draft of a new bill to regulate the telecommunications sector. We consider whether this draft bill is an appropriate basis for regulating the five microstates concerned.
- Finally Chapter 7 puts forward proposals for how the island states of the Caribbean (and particularly the ECTEL contracting states) might best be regulated in the public interest, given their status as microstates.

[12] Lewis Evans and Patrick Hughes, December 2003, *"Competition Policy in Small Distant Open Economies: Some Lessons from the Economics Literature"*, New Zealand Treasury Working Paper 03/31, http://www.treasury.govt.nz/publications/research-policy/wp/2003/03-31 (Evans and Hughes 2003)

[13] OECD, February 2003, *"Small economies and competition policy: a background paper",* OECD Forum on Competition, https://vi.unctad.org/windiesst09/docs/presentations/wednesday13/oecdsmalleconomybackground.pdf (OECD 2003)

3 Minimum efficient scale in the telecommunications sector

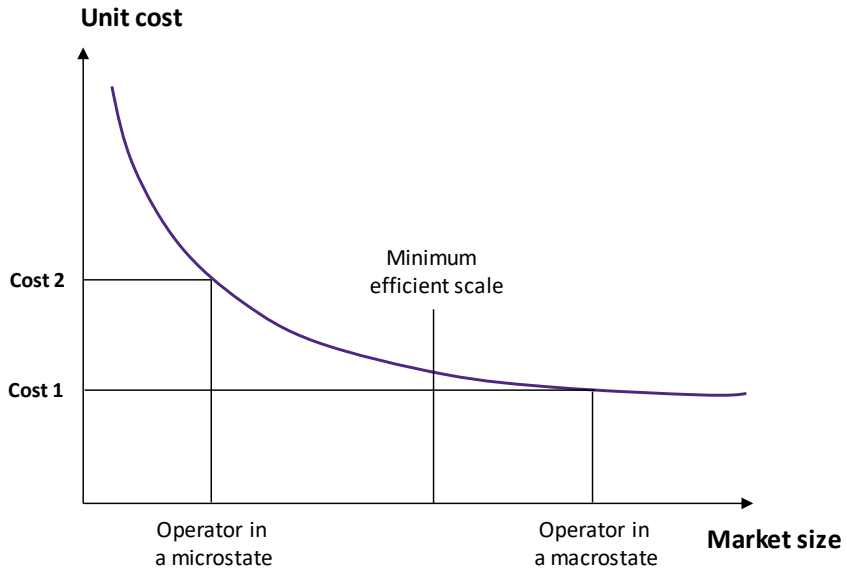
3.1 Economy of scale effects in the telecommunications sector

There is general recognition that the supply of telecommunications services is characterised by economy of scale effects. For example the ERG[14], in considering what constitutes a cost-oriented mobile termination rate[15], concluded as follows:

> *"ERG is well aware of the dynamic gains in terms of promoting more sustainable competition based on alternative infrastructures resulting from temporarily asymmetric termination rates. However there is also no doubt that this must be phased out to give a clear signal to operators to reach efficient scale as soon as possible and to prevent inefficient entry".*
>
> *"Thus, market shares and its evolution over time result from late entry and from the competitive distortions present in the mobile market and translate into higher unitary network costs driven by lower economies of scale."*
>
> *"Asymmetries for smaller mobile operators may be justified in terms of economies of scale and costs associated with late entrance into mature markets."*

Economy of scale effects arise because the creation of a telecommunications network involves substantial fixed costs as well as a variable cost per customer served. This means a unit cost curve like that shown in Figure 3-1.

Figure 3-1: Economy of scale effects



[14] Now BEREC or the Body of European Regulators for Electronic Communications.

[15] ERG, March 2008, *"ERG Report on the Consultation for the ERG Common Position on symmetry of fixed call termination rates and symmetry of mobile call termination rates",* ERG (07) 83b final.

As the number of customers shrinks the cost per customer grows because the fixed costs must be recovered from fewer customers. An operator in a macrostate is likely to be operating at a point on this curve where economies of scale are largely exhausted. But in a microstate an operator with the same market share is likely to be operating at a point on the curve which is well below minimum efficient scale.

3.2 What is the minimum efficient scale?

There are significant economies of scale in the provision of both fixed and mobile network services. These arise from three main sources:

- the fixed costs of a network management centre, operations support system and customer support system. The higher the number of customers the lower these fixed costs are per customer;
- the level of utilisation of a network is higher for larger networks. Network components, such as the civil engineering components of inter-switch transmission links, are supplied at some minimum size. The need for redundancy also lowers utilisation more in micro networks. Finally queuing theory suggests that micro networks must operate at lower utilisation for the same grade of service;
- procurement effects. Small operators have relatively little procurement power when compared with large operators. This has two main effects:
  - small operators get limited discounts from suppliers when compared with large operators and this raises unit capital costs. According to an interview with ECTA, DSLAM prices for macrostate incumbents are often 50% below those charged to small operators; and
  - small operators are a low priority for the large equipment vendors. So, unless they become test beds for new technology equipment, they receive equipment and service later than the large operators.

  In some cases this lack of procurement power is offset by the fact that operators in micro sites operate across multiple countries. We discussed this point further in relation to the Caribbean in Section 3.3

There are however some differences between fixed and mobile **access** networks in terms of economies of scale. The available evidence suggests that:

- access network costs for a ***fixed*** network do not generate substantial economy of scale effects. Based on analysis of the FCC's ARMIS database Ovum concluded in its 2005 report that a 10% increase in the number of customers leads to a near 10% increase in costs. We have no reasons to believe that this conclusion should not continue to apply as fixed services move from narrowband to broadband; and
- in contrast ***mobile*** access networks generate economies of scale because of the fixed cost of minimum population coverage. Mobile operators need to meet coverage requirements and/or offer a level of coverage to potential customers that is competitive. This requirement does not apply to fixed networks so strongly.

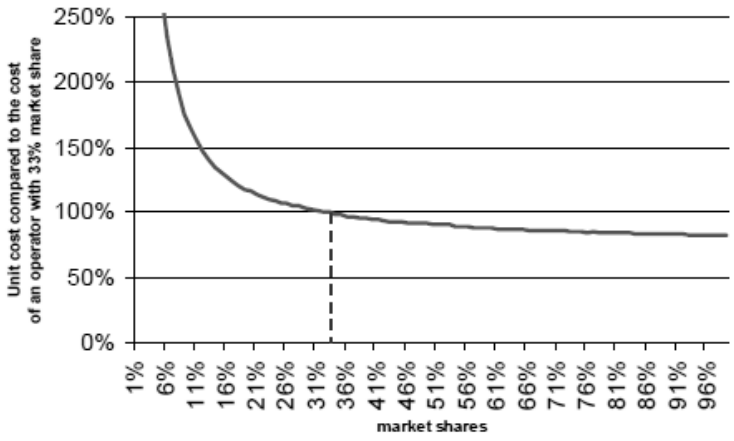
But these differences are relatively modest and only affect the access network component of overall service provision.

It is clearly important to try to establish where economy of scale effects are exhausted and minimum efficient scale is reached. The available evidence suggests that minimum efficient scale is achieved by mobile networks with more than **two million** customers. This finding is based on three sources listed below.

- A 2009 study[16] which indicates that the smallest of the three mobile operators in Korea was at or below minimum efficient scale in 2008. This operator had around **nine million** customers at that time.
- An ERG study[17], which provides an economy of scale curve for the supply of mobile services in Romania in 2005 at a time when there were 16 million mobile customers. The curve is shown in Figure 3-2. We can see that minimum efficient scale is achieved at a market share of just over 30% or **five million** customers.
- ITU data on the price of mobile services[18]. Plotting the price of a basket of mobile services in 2015 for middle income countries shows the economy of scale curve of Figure 3-3. This suggests a minimum efficient scale of around **two million** customers[19].

We would expect the minimum efficient scale for fixed network services to be marginally less, given the lower economy of scale effects in the supply of fixed access networks.

Figure 3-2: An economy of scale curve for mobile operators



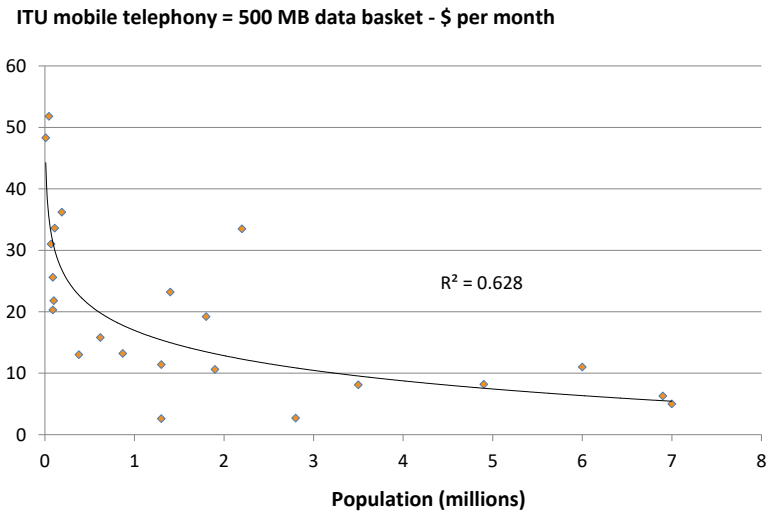
[16] Changi Nam, Youngsun Kwon, Seongcheol Kim,and Hyeongjik Lee, March 2009, *"Estimating scale economies of the wireless telecommunications industry using EVA data",* Telecommunications Policy, Volume 33, Issues 1–2, February–March 2009, Pages 29–40, http://www.sciencedirect.com/science/article/pii/S0308596108000992

[17] ERG, February 2008, *"ERG's Common Position in Symmetry of Fixed Call Termination and Mobile Call Termination Rates"*, ERG(07)83 final 080312.

[18] *Measuring the information Society Report 2015*, ITU 2016.

[19] Assuming two mobile operators per country.

Figure 3-3: A mobile economy of scale curve for middle income countries



We also note arguments which suggest that the minimum efficient scale is growing over time as telecommunications services switch from narrowband to broadband services. Around the world we are currently seeing a large increase in the volume of data carried by networks as they switch from narrowband to broadband services. This switch creates a requirement to provide additional fibre transmission links – for both national and international connectivity. Yet the cost of providing these additional links is largely fixed. From previous (private) studies for consulting clients elsewhere, we estimate that a transmission link which carries the data traffic generated by 20 million people might cost five times that needed to carry the traffic generated by 100,000 people. It does not cost 200 times as much. This trend creates a particular cost burden for the island states of the Caribbean – for which there is a high and growing proportion of data traffic which requires undersea fibre cables.

3.3 Scale effects in the Caribbean

A typical island state in the Caribbean has a customer base of around 100,000 people (Figure 1-1) which is well below minimum efficient scale. But in practice there are some economies of scale in the supply of telecommunications in the Caribbean because of the pan-Caribbean nature of the telecommunications sector in which:

- Flow is present in most island states as both a fixed and mobile operator; and
- Digicel is present in most island states as a mobile operator.

These scale economies are likely to be limited. From our discussion with the main operators in the Caribbean we understand that there are differences in local market conditions, consumer preferences, regulatory and legal frameworks, and financing conditions. As a result:

- a significant number of functions are better organised on a country by country basis with separate local companies running individual network, finance, and sales/promotion operations;
- there is pan-Caribbean procurement (especially on handsets), and shared legal, billing and branding functions, together with some rationalisation of product portfolios; and

- there is limited scope for sharing of network switching and customer care functions.

There are three additional factors which raise the cost of supplying telecommunication services in the Caribbean and which move unit costs away from the level of minimum efficient scale:

- the cost of providing international connectivity to the islands of the Caribbean raises the fixed costs of supply and so increases minimum efficient scale[20];
- shipping and logistics costs are proportionately higher in the island states of the Caribbean than in most other states; and
- hurricane damage raises the costs of telecoms supply in the Caribbean. In 2013 the IMF[21] found that "*The Caribbean is one of the most disaster-prone regions in the world"* and that on average Caribbean microstates face an annual 10% probability of a hurricane.

Based on these findings we conclude that the supply of both fixed and mobile services in the island states of the Caribbean is well below minimum efficient scale.

3.4 Implications for the functioning of the telecommunications sector in the Caribbean

The fact that the telecommunications operators in the island states of the Caribbean are operating at well below minimum efficient scale has two important implications for the way the sector operates.

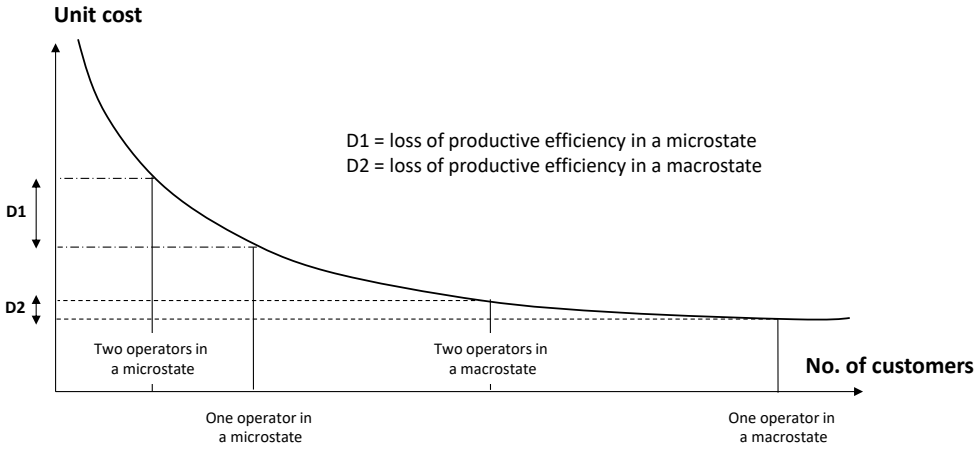
First, cost oriented prices – whether retail or wholesale – are likely to be significantly above those observed in macrostates. Figure 3-1 illustrates. Prices in microstates, where operators supply from a position well below minimum efficient scale, are likely to face costs which are substantially greater than those faced by equally efficient operators in a macrostate.

Secondly, the unit costs of providing telecommunications infrastructure rise substantially in microstates as the number of competing operators increases. Figure 3-4 illustrates. In a macrostate moving from monopoly to a duopoly leads to a relatively small increase in the unit costs of supply and loss of productivity efficiency (D2). In a microstate a similar move leads to a much bigger loss of productive efficiency (D1). This means that, in a microstate, there is a much greater need to balance the desire for productive efficiency (which leads to lower unit costs of supply) against the beneficial effects of strong infrastructure-based competition (which creates greater incentives for cost efficiency, innovation and investment).

[20] As discussed at the end of Section 3.2.

[21] https://www.imf.org/external/np/pp/eng/2013/022013b.pdf

Figure 3-4: The trade-off between competition and productive efficiency

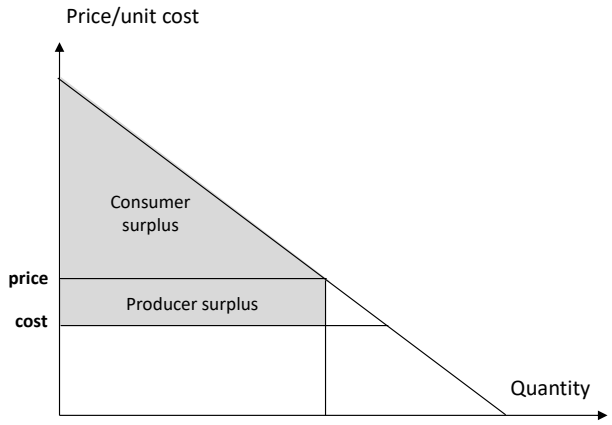


4 Regulating the telecommunications sector in microstates

4.1 Effective economic regulation in a macrostate

An effective regulator in a macrostate attempts to maximise economic welfare when it carries out economic regulation[22]. That is, it tries to maximise the sum of consumer and producer surplus shown in the shaded area of Figure 4-1.

Figure 4-1: The components of economic surplus



There are three main ways it can do this. These are listed below.

- Approach 1: maximise **allocative** efficiency gains by regulating in a way which drives retail prices down to cost. See Figure 4-2. It might do this through retail price regulation or by requiring the dominant operator to set regulated access prices which attract service-based competition.
- Approach 2: maximise **dynamic** efficiency gains by regulating in a way which increases end-user willingness to pay for telecommunications services and so pushes the demand curve upwards and to the right. See Figure 4-3. Approach 2 requires operators to invest in higher functionality, higher value services. Global vendors typically produced telecommunications equipment and services which offer 10-fold increase in price-performance every seven years[23]. But this only leads to better and cheaper end-users services if operators make frequent investment in new technology services.
- Approach 3: maximise **productive** efficiency gains by regulating in a way which leads infrastructure-based operators to lower their costs of production as shown in Figure 4-4. This might be achieved through stronger infrastructure-based competition which leads to improved operational efficiency or by operators investing in network upgrades which offer lower unit cost.

[22] Economic regulation governs entry and investment by market players and competition between them. It contrasts with consumer regulation which constrains behaviour by the telecommunications industry which might damage the interests of end users.

[23] Boston Consulting Group, October 2015, *"Five principles for achieving Europe's Digital Single Market"* https://etno.eu/datas/publications/studies/FINAL_BCG-Five-Priorities-Europes-Digital-Single-Market-Oct-2015.pdf

Figure 4-2: Approach 1 – increase allocative efficiency

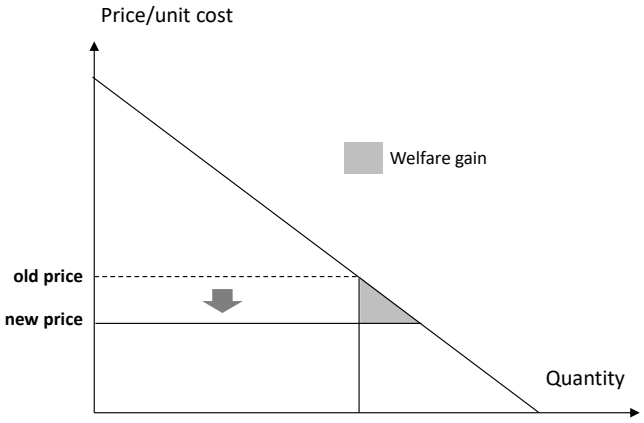


Figure 4-3: Approach 2 – increase dynamic efficiency

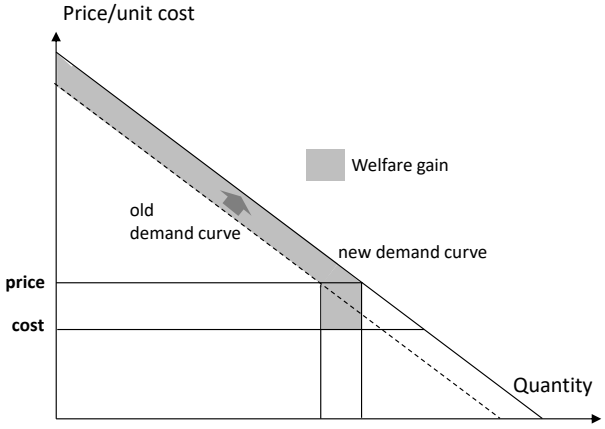
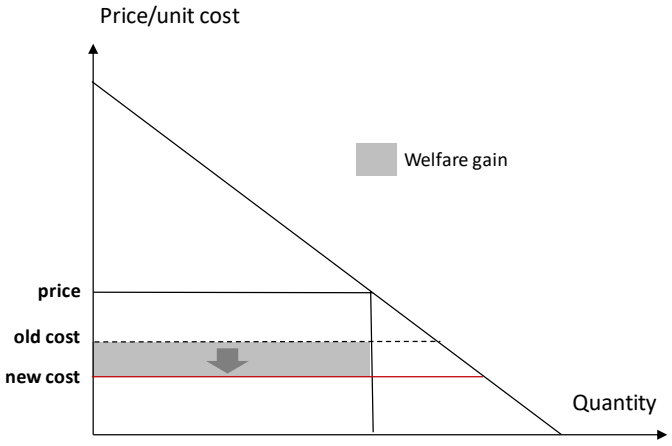


Figure 4-4: Approach 3 – increase productive efficiency



When we compare Figure 4-2, 4-3 and 4-4 we can see that Approaches 2 and 3 offer the biggest potential gains in economic welfare (the shaded portion of the graphs). This finding is consistent with the economic literature. For example Evans and Hughes[24] state that:

> *"Dynamic efficiency is so important to the performance of an economy and characteristics of innovation and production has so changed in the last 50 years that we return to consider it. Modern developed economies markets are characterised by growth in the share of services, rapid evolution of technological change and product quality, lower transactions costs, relatively high fixed to variable costs of new products, and the debated importance of actual and virtual network effects."*

In deciding how to set the wholesale prices of a regulated operator a regulator needs to make trade-offs – especially between maximising allocative efficiency gains and maximising dynamic efficiency gains. If a regulator focuses on the former by driving down prices towards marginal costs then it weakens incentives for the dominant operator to invest in technology upgrades and so reduces dynamic efficiency gains. But if the regulator does not control wholesale prices then it invites the dominant operator to foreclose competition.

4.2 Economic regulation of telecommunications in Caribbean microstates

The regulatory framework in the EU is designed to help NRAs make these trade-offs. But the process is a challenging one and European regulators have not always got the trade-offs right. For example EU regulatory guidance on access prices for high-speed broadband services changed radically from a cost-based approach in 2010[25] to one based on a retail-minus approach in 2013[26] when the European Commission recognised that the cost-based approach was killing infrastructure investment in high-speed broadband.

A regulator in a Caribbean microstate makes the same trade-offs so as to maximise economic welfare. But this task is complicated in five main ways:

- as we discuss in Section 3.5, efficient **retail** prices are higher in microstates. So microstate regulators need to avoid regulation which reduces retail prices to macrostate levels. This would lead to retail prices below cost, lower investment incentives, and consequential loss of both dynamic and productive efficiency;
- economically efficient **wholesale** prices are significantly higher in microstates than macrostates. Again see Section 3.5. So microstate regulators should not rely on wholesale prices based on international benchmarks from macrostates. This would lead to wholesale prices which are too low and encourage inefficient entry;
- competition in microstates, which creates incentives for investment and innovation, also leads to higher unit costs of supply and lower productive efficiency, as we demonstrate in Figure 3-4. A regulator in a microstate needs to pay attention to potential losses in productive efficiency when

[24] Evans and Hughes (2003).

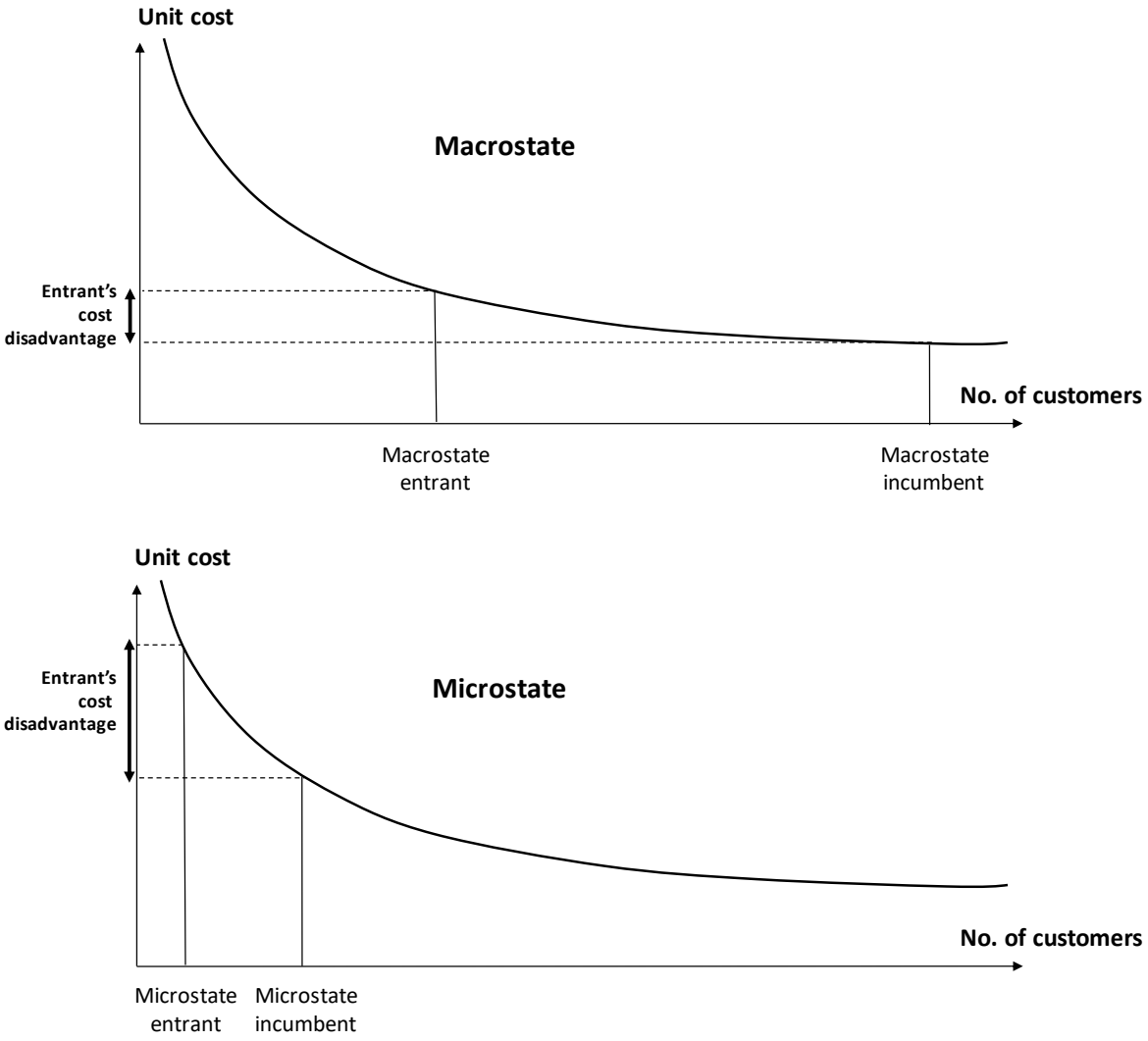
[25] European Commission, *"Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA)",* 2010/572/EU, 2010.

[26] European Commission, September 2013, *"Commission recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment",* C(2013) 5761.

considering the appropriate level of competition in the market. If it places too strong an emphasis on competition at the expense of productive and dynamic efficiency this leads to substantial losses in economic welfare. As Figure 3-4 shows, infrastructure-based competition between operators in a macrostate leads to only modest increases in the unit costs of supply. In a microstate it leads to a substantial rise in unit costs which may well outweigh the benefits of competition;

- infrastructure-based competitive entry in microstates is less likely than in macrostates. Figure 4-5 illustrates. In a macrostate the cost disadvantage suffered by an entrant, once it has built a reasonable market share, is likely to be modest. An entrant with a similar market share in a microstate faces a much higher cost disadvantage and is therefore less likely to enter the market. Microstate regulators should therefore not expect the same level of market entry and competition in microstates as in macrostates;

Figure 4-5: The increased cost disadvantage for an infrastructure-based entrant in a microstate



- service-based competitive entry, in which entrants resell wholesale products provided by the infrastructure-based operators, is also likely to be limited in microstates. There are significant

fixed costs in setting up a service-based competitor[27] which create economy of scale effects and which limit the number of viable service-based competitors. In many countries such organisations are already established retailers which have expanded into resale of telecommunications services;

- experience elsewhere indicates that service-based competitors lobby the regulator to drive the wholesale prices offered by infrastructure-based operators down towards marginal cost. The regulators of the Caribbean microstate's need to resist such attempts and set wholesale prices which:
  - reflect the higher cost of infrastructure supply in microstates; and
  - strike the right balance between maximising allocative efficiency on the one hand and maximising dynamic and productive efficiency on the other – as discussed in Section 4.1; and
- given that the number of competitors in microstates is likely to be limited, regulation there cannot rely as heavily on competitive forces as regulation in macrostates and different approaches to regulation are required. We make proposals on how to do this in Chapter 7.

In summary microstate regulators need to regulate in different ways from macrostate regulators. This point is made with particular clarity by Symeou and Pollitt[28]:

> *"These salient characteristics* [of microstates] *have important policy implications as they require small economies to devise appropriate endogenous policies that offset at least some of the adverse effects of their small size (Gal, 2003b). However, most small economies do not scrutinize their special economic traits in designing and applying their antitrust laws. Rather, they adopt or rely on the statutes and established case law of large economies, mostly of the European Union…..The main pitfall of such an approach is that insufficient weight is given to the unique characteristics of small economies".*

This quote is equally applicable to sector specific regulation of the telecommunications sector.

[27] For example in terms of developing a customer support systems and initial marketing.

[28] Pavlos C. Symeou and Michael G. Pollitt, 2007, *"Telecommunications in small economies: the impact of liberalization and alternative technologies on universal service"* , Cambridge Judge Business School Working Paper Series 19/2007 https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/workingpapers/wp0719.pdf

5 The cost of high quality regulatory decision making in the microstates of the Caribbean

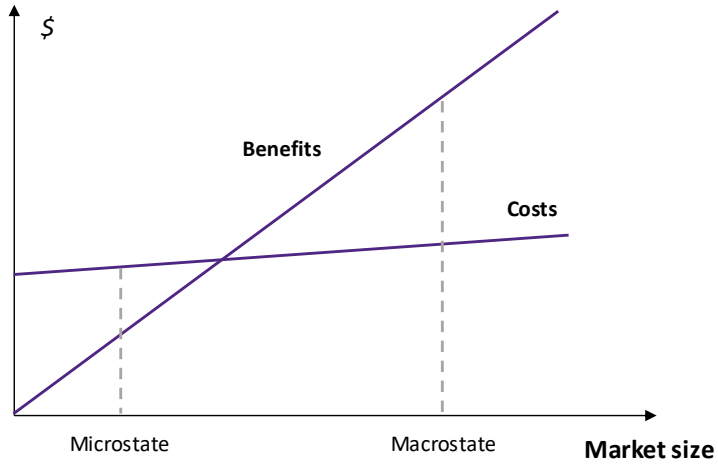
5.1 Introduction

The OECD has identified enforcement of regulation as a major issue in microstates[29]. In this chapter we consider this issue in the context of ex-ante, sector specific regulation of the telecommunications sector. There are two main problems:

- keeping the cost of regulation to a reasonable proportion of telecommunications revenues so as to raise end-user prices to the minimum extent possible; and
- ensuring that regulatory decisions are of a high quality so that regulatory error, which can lead to substantial economic losses, is minimised.

There is a general problem here. The costs of developing, implementing and enforcing regulation are similar in microstates and macrostates and vary relatively little with the size of the market being regulated. On the other hand the benefits of similar regulatory regimes are typically proportionate to the size of the market. Given these differences in the way costs and benefits vary with market size it is possible that regulatory approaches and remedies which are appropriate in macrostates lead to economic losses in microstates. Figure 5-1 illustrates.

Figure 5-1: the impact of regulatory measures in micro and macrostates



5.2 The need for regulatory impact assessments in Caribbean microstates

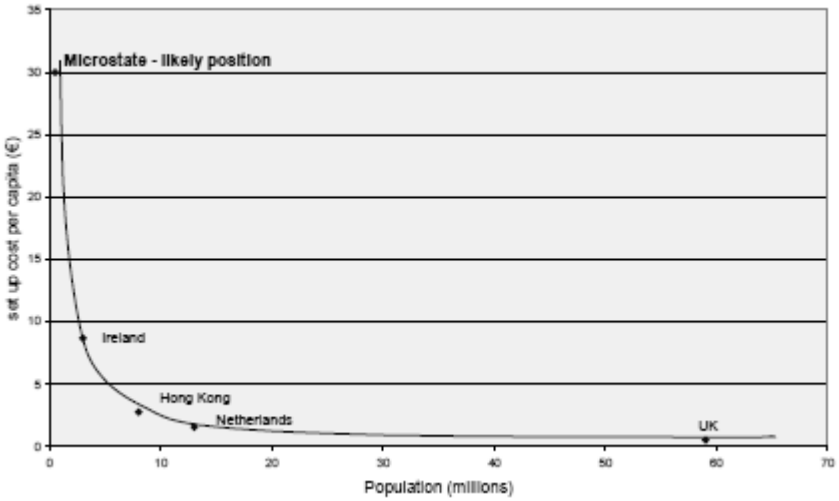
Regulatory measures which are effective in macrostates may lead to economic welfare losses in microstates as Figure 5-1 illustrates. Examples of such measures include:

[29] OECD (2003)

- requirements for fixed and mobile number portability;
- obligations on fixed incumbents to provide wholesale line rental;
- requirements for incumbents to carry out accounting separation and LRIC modelling;
- requirements for equivalence of inputs[30] (EoI) for wholesale products from the dominant operator; and
- requirements on all operators (rather than just the dominant operator) to offer access to bottleneck facilities.

Relatively little evidence is available here to illustrate this problem with quantification. But Figure 5-2, taken from Ovum's 2005 report, offers a helpful, if historic, illustration of this general point. The figure plots the cost per head of population for implementing mobile number portability against the size of the country. We can see that, as the population declines, the cost of MNP per person rises sharply while the benefits remain roughly constant. In Ireland the costs and the benefits were found to be roughly equal[31]. In a microstate it is likely that the costs would outweigh the benefits several times over.

Figure 5-2: the case of mobile number portability



Source: Ovum study for Vodafone in 2004

This analysis suggests that it is especially important for regulators in microstates to carry out regulatory impact assessments to check on whether the benefits of a measure clearly outweigh the costs – even for measures which are commonplace in macrostates. This point is made by the Netherlands Bureau of Economics[32]:

[30] Under EoI the dominant operator is required to provision and support wholesale products for all access seekers, including its own downstream retail arm, using the same systems and processes.

[31] EU NRAs do not have the discretion over whether or not to implement number portability because the EU regulatory framework requires member states to implement it as an end-user right.

[32] CPB Netherlands Bureau for Economic Policy Analysis, December 2000, *"Yardstick competition: Theory, design, and practice"*, Working Paper No. 133, p.44 https://www.cpb.nl/en/publication/yardstick-competition-theory-design-and-practice

"Regulatory success also depends on the level of costs that are associated with the implementation of the regulatory prescriptions. It would be detrimental to the regulatory endeavour if the costs outrun the benefits. In other words, if the costs are higher than the benefits, one should reconsider whether there should be any regulation at all."

5.3 The need for simpler regulation in the microstates of the Caribbean

There is a need for simpler (and different) regulation in the microstates of the Caribbean to keep regulatory costs down. The basic argument, illustrated by comparing the ECTEL contracting states (ECS) with the EU, is as follows:

- Regulatory costs as a percentage of telecommunications revenues are already significantly higher in the microstates of the Eastern Caribbean than in the macrostates of the EU. We estimate that:
  - ECS regulatory costs (excluding operator compliance costs) are estimated at EC$10m pa[33];
  - when operator compliance costs are included this increases to EC$ 20m pa[34]; and
  - telecommunications revenues in the ECS are EC$779m pa[35].

  This means that regulatory costs in the ECS are already at 2.6% of telecommunications revenues there[36]. In contrast we estimate that regulatory costs in the macrostates of the EU are under 0.2% of telecommunications revenues given that:
  - regulatory costs (including compliance) across the EU are at US$ 624m pa[37]; and
  - telecommunications revenues are at just over US$400bn pa.
- The regulatory challenges facing microstates (as set out in Chapter 4) mean that the microstate regulators of the Caribbean cannot simply copy decisions made by better resourced macrostate regulators as a way of keeping regulatory costs to a reasonable level. If they do so they risk imposing inappropriate remedies which lead to substantial economic losses.
- If instead they expand their resources (through additional staff and consulting fees) to carry out the same level of analysis as the macrostate regulators of the EU then they increase regulatory costs substantially. The average EU member state spends $22 million per annum on regulation[38] or 38% of current telecommunications revenues in the average ECS[39]. So end-user prices would have to rise by at least 38% to recover these costs[40]. This is clearly not proportionate.

[33] Estimated annual cost of $5 million for ECTEL and $800,000 for each NTRC based on the figures available from the published annual accounts of ECTEL and the NTRCs of the ECS.

[34] Plum estimate.

[35] ECTEL annual review.

[36] EC$22m/EC$779m.

[37] See Commission staff working document – Impact assessment accompanying proposals for an electronic communications code – 14-9-2016 SWD (2016) 303 final.

[38] US$624m pa/28 EU member states..

[39] US$22m/[ECS$779m/5 ECS x EC$2.7 per US$].

[40] In practice the price increase would need to be significantly more than this after allowing for price elasticity effects.

How can microstate regulators in the Caribbean regulate in a way which keeps costs down to current levels whilst making high-quality decisions which maximise economic welfare? We make proposals on how to do this through a simpler approach to regulation in Chapter 7.

6 The draft electronic communications bill in the ECTEL contracting states

6.1 The aims of the draft bill

The ECTEL contracting states (ECS) are currently developing a new electronic communications bill which will determine how the telecommunications sector in the five ECS is regulated in future. The bill, currently in draft form[41], is designed to:

- replace the existing Telecommunications Acts in the five ECS;
- broaden the scope of legislation to include other forms of electronic communication services; and
- allow the development of an electronic communications sector based on "*a robust competitive environment in which there is fairness, transparency and accountability on the part of the regulators of the sector*" (See the explanatory note at the beginning of the draft bill).

We have reviewed the draft bill in the light of the analysis set out in Chapters 2 to 5 and have the following comments to make. These comments are relevant both to the ECS and more widely across the island states of the Caribbean.

6.2 The main shortcomings of the draft bill

The draft bill for the ECS is closely modelled on the regulatory framework which has been developed in the EU. This framework has worked reasonably well when applied to the member states of the EU and we welcome its requirements for regulators to make systematic, evidence-based, and transparent decisions on when to regulate and what remedies to apply.

But the draft bill is potentially harmful to the development of the telecommunications sectors and the economies of Caribbean countries in that:

- the bill fails to take into account the challenges of regulating the telecommunications sector of an island microstate. It is closely modelled on a regulatory framework designed for application to markets in Europe which serve 20 million people on average, rather than to markets in the Caribbean which typically serve 100,000 people;
- in some important respects the bill fails to follow current international best practice. In particular the draft bill appears to be based more on the 2009 EU regulatory framework than on the Electronic Communications Code which is now replacing it. The new Code is designed to correct problems with the 2009 framework, such as lack of infrastructure investment incentives, as well as taking account of new market developments;
- the bill focuses on promoting competition but largely ignores the need to create incentives for infrastructure investment**;**

[41] Electronic Communications Bill, revised draft 05/12/16.

- application of the bill as it stands is likely to raise the cost of regulation significantly. This in turn would mean a significant overall increase in end-user prices for telecommunications services (as discussed in Section 5.3); and
- the EU framework on which the bill is based is under review to take account of market developments relating to online platforms and OTT services. Notwithstanding the stated objective of the bill as being to broaden the scope of legislation to include other forms of electronic communication services it fails to take account of major market developments on a forward looking basis.

We set out more specific criticisms of the draft bill below.

6.3 Modifications required for effective regulation in the ECS

If it is to lead to effective regulation, the draft bill needs to be modified to deal with the challenges faced by regulators in island microstates – as identified in Chapters 4 and 5 and summarised in Section 7.1. We set out our views on specific shortcomings in this category below.

The lack of focus on investment

The bill is focused on achieving "a robust competitive environment". But it largely ignores the very important requirement to create incentives for investment in network infrastructure so that end-users can enjoy the benefits of the rapidly improving price performance of new network technologies. For example there is no mention in Clause 3, which covers the bills purposes, of a goal to incentivise investment. Yet such goals are vital for the economic development of the ECS. Without regular and substantial investment by the main infrastructure operators, end users in the ECS will not enjoy the improvements in functionality and price/performance which new network technologies provide and the economies of the ECS will suffer.

We discuss ways of dealing with this omission at the beginning of Section 6.4.

The limited scope for additional competition

The draft bill starts from the premise that strong competition will develop in the ECS following implementation of the bill. Clause 2 states:

> *"The Bill is **aimed** at allowing a liberalized and non-discriminatory **entry** into the electronic communications sector and **enabling a robust competitive environment**"* (emphasis added)

But Clause 2 fails to distinguish between **service-based** and **infrastructure-based** competition. This is an important omission. Our analysis suggests that there is only limited scope for further development of infrastructure-based competition in microstates (as set out in Chapter 4). It would be perfectly possible to promote service-based competition by regulating wholesale prices down towards marginal cost. But this, as we point out in Section 4.1, has the effect of weakening incentives for investment in infrastructure by either incumbent operators or potential rivals. Yet there is growing awareness amongst governments and regulators in Europe that regulation needs to create incentives for efficient investment so as to maximise dynamic and productivity efficiency gains. This has been a

central premise in the current review and recasting of the European regulatory framework for electronic communications[42].

Our analysis indicates that the bill is designed to achieve an unrealistic objective of more infrastructure-based competition or to promote service-based competition which would lead to undesirable outcomes. This is not a sound basis on which to develop a major piece of legislation which will have a fundamental influence on the economies of the Caribbean.

The market review process

We recognise that the EU market review process leads to a systematic, evidence-based, regulatory decision. But we question whether regular and systematic market reviews every three years are appropriate in the island microstates of the ECS. As we argue in Section 5.3 such an approach could lead to very high regulatory costs requiring increases in end-user prices for telecommunications services of 40% (or to regulatory decisions of poor quality which lead to economic losses). We therefore propose that the ECS bill should be redrafted so as to require NRAs to undertake market reviews only as a last resort when market outcomes are unsatisfactory and not, as in the EU, for all markets in a specified list every three years. We set out proposals for such revised use of market reviews in Chapter 7.

No provision for regulating over-the-top (OTT) service providers

The current draft of the bill focuses on regulating licenced network operators and service providers and not on dealing with the problems raised by unlicensed OTT service providers. Yet these problems have important implications for the economic development of the ECS.

We have observed that the mobile operators in the ECS saw a 30% decline in their revenues in the two years to December 2016 during a period in which there was strong GDP growth and we would have expected revenue growth of 15%. This effect is quite different from what we observe in the macrostates of the EU and North America. There the change in mobile revenues over the past few years has correlated strongly with GDP growth or decline.

Overall these observations suggest that OTT services may be having a much greater impact on microstate operators than macrostate operators. We cannot be certain that this is the case. But the evidence is sufficient in our view for the policymakers of the Caribbean to take account of it – especially as a 30% decline in revenues rather than a 15% increase:

- reduces the ability of the mobile operators to invest in infrastructure by around 40%[43], leading to economic losses for the ECS; and
- reduces revenues to ECS governments from the telecommunication sector through taxes and licence fees.

In the Eastern Caribbean this problem, which may well be microstate specific, is exacerbated by the inclusion of provisions on net neutrality in the draft bill. As they stand these provisions:

[42] European Commission , September 2016 *Proposal for establishing the European Electronic Communications Code (Recast)*, (EC ECC 2016), http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2016%3A0590%3AFIN

[43] Telecommunications operators around the world usually invest an average of 15% of revenues each year.

- have the potential to restrict the ability of operators to offer products and services which would provide additional revenue to operators and, at the same time, offer additional value to customers. Regulations introducing restrictive net neutrality would reduce the operator's ability to make infrastructure investments
- give ministers broad discretion over how net neutrality rules are implemented and so create investment uncertainty; and
- put in place net neutrality rules on an ex-ante basis which, given the fast changing nature of digital services, may well have damaging unintended consequences. In particular we note that many countries have not yet implemented net neutrality rules whilst the US is in the process of un-winding its net neutrality rules and relying more on competition law to deal with abuses.

We are also not aware of any studies that assess the implications of net neutrality rules for small island states. In the light of this analysis we question whether the net neutrality provisions of the bill should remain or whether net neutrality policy should be developed separately in the light of the emerging evidence. We note in particular that the current wording of the bill curtails any flexibility in developing a policy on net neutrality by the inclusion of restrictive wording on network management in Section 67 and question whether it is useful to include such a concept in the draft bill.

We also note that consumer protection and privacy issues are framed as licence obligations rather than as service provider obligations or end user rights. In the absence of generally applicable horizontal legislation in these areas this leaves the OTT providers outside of the scope of consumer and data protection regulation and leaves consumers without protection or redress. It also skews the competitive environment as it places a regulatory burden on local providers of services while allowing global OTT service providers to continue to operate beyond the regulatory framework.

Imposing retail price controls on operators in the ECS

In Clause 10 the draft bill sets out a series of conditions under which the NTRCs[44] would impose retail price controls on the operators. This means that there are strong prospects of retail price controls in the ECTEL contracting states if the draft bill is implemented as it stands. We are particularly concerned by Clause 10 (3) which suggests that NRAs may be given the powers under the draft bill to regulate the retail prices of subscription TV services on a cost oriented basis.

Such controls are inconsistent with good international practice. For example in Europe the European Commission dropped all retail services from its list of markets susceptible to ex-ante regulation when it reviewed its regulatory guidance in 2014[45]. At the same time the European Commission emphasised to regulators the principle that regulation of markets which are not effectively competitive should be dealt with through wholesale rather than retail remedies wherever possible:

> *"By intervening only at the wholesale level, NRAs can ensure that as much of the value chain is subject to competition process as possible, thereby delivering best outcomes for end-users"[46].*

[44] The National Telecommunications Regulatory Commissions in each of the five ECS.

[45] European Commission, October 2014, "Recommendation relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC", https://ec.europa.eu/digital-single-market/en/news/commission-recommendation-relevant-product-and-service-markets-within-electronic-communications

[46] *Ibid*, p19

We therefore suggest that the regulator should monitor outcomes (especially prices) and impose regulatory measures only at the wholesale level when outcomes are unsatisfactory. Chapter 7 provides more detailed proposals here.

Authorisation of access agreements

Clause 50 of the draft bill specifies that a licensee shall not enter into an interconnection or access agreement unless the agreement has been approved by the Commission. We think this requirement is unnecessary:

- if an access seeker and an access provider can reach a commercially negotiated agreement, it is most unlikely that the regulator would need to intervene or be able to set more efficient supply conditions. So, in the interests of controlling the overall costs of regulation in microstates, we recommend that the regulator only review access agreements upon request; and
- a similar argument applies to interconnect agreements. Here regulators might be concerned that two operators which exchange equal volumes of traffic might set high termination rates which would then form a floor on end-user prices. But this concern is, in our view, now misplaced. The substantial growth in use of OTT voice services means that operators now face strong competitive pressure to lower retail prices for voice services. At the same time the complex negotiations which take place between fixed and mobile operators to establish termination rates (and access agreements) mean that termination rates are likely to be set at efficient levels. So again in the interests of minimising the overall costs of regulation, we recommend that the regulator only review interconnect agreements on request or when end-user outcomes are clearly unsatisfactory.

Leaving the details of access agreements to commercial negotiation, and regulating them only as a last resort, is also likely to produce more efficient outcomes, given the information asymmetries which exist. The negotiating operators have a much better understanding of the relevant markets than their NRA.

Type approval for equipment

In a number of places the draft bill puts in place measures which would, if implemented, increase the costs of regulating in the ECS unnecessarily. For example there is a requirement for each NTRC to grant a certificate of type approval before equipment can be used (Clause 48). Rather than the individual ECTEL member states taking on the technical and administrative burden of determining and granting of type approvals, it would be more cost-effective if they were to 'outsource' this function or move towards the self-certification system used in the EU. At the same time the ECS might simply accept type approvals issued by trustworthy institutions of other countries such as the USA.

Implementing equivalence of inputs and structural separation

The draft bill would give the NRAs of the ECS powers to:

- require SMP operators "*provide facilities, services and information to others under the same conditions and of the same quality as it provides for its own internal purposes*" – in other words to

require all wholesale services to be provided on an *Equivalence of Inputs* basis. See Clause 74(1)(f) of the draft bill; and

- impose structural separation of an operator's wholesale supply business (Clause 74(3)(a)).

These proposals mimic EU regulation to a considerable degree – although we note that the EU gives NRAs powers to impose **functional** rather than **structural** separation.

We believe that it would be against the public interest for the ECS to give these powers to its NRAs. Our arguments are as follows:

- The costs of implementing equivalence of inputs are very substantial[47] and a large proportion of these costs are fixed. So in any of the ECS these costs are likely to be many times their annual telecommunications revenues. The costs of structural separation would be even higher.
- The benefits of implementing equivalence of inputs or structural separation lie in offering greater non-discrimination in the supply of wholesale products to access seekers. Yet, as we point out earlier in this report, the scope for strong competition in the microstates of Caribbean is limited.
- The combined effect of implementing equivalence of inputs or structural separation in microstates is reduced benefits and substantially higher costs than in macrostates. As a result the imposition of these measures would lead to net costs rather than net benefits.

Some might argue that the bill should give the NRAs in the ECS these powers "just in case" they are needed. But this argument ignores the fact that granting these powers to the NRAs now introduces substantial regulatory uncertainty for the main operators and weakens their incentives for future investments.

6.4 Modifications required to follow international best practice more closely

The draft bill also needs to be modified to follow international best practice in regulation, where it is applicable in the microstates of the ECS. We set out our views on specific shortcomings of the draft bill below.

The objectives of the draft bill

Clause 3 sets out 15 objectives which the draft bill is designed to achieve. These objectives will inevitably conflict in some instances and the draft bill does not offer any guidance as to how policymakers and regulators might trade-off these objectives. This gives them very wide discretion and leads to the possibility of economically inefficient decisions and to regulatory uncertainty. This problem has arisen and been addressed in other jurisdictions:

- Australia and New Zealand give their telecommunications regulators a single overall objective – of promoting the long-term interests of end users[48] [49].

[47] In the UK BT reported to the UK Parliament that the costs of functional separation, which were dominated by the costs of implementing equivalence of inputs, were over £1 billion.

[48] Australia, Competition and Consumer Act 2010, (and amendments), Part XIC Section 152AB http://www.austlii.edu.au/au/legis/cth/consol_act/ta1997214/s3.html

- in the EU the regulator has three objectives[50] – to promote competition; to contribute to the completion of the single market; and to promote the interests of end users. This approach has been criticised on the grounds that it leads to regulators in different member states making different trade-offs between the three objectives in a way which is both economically inefficient and leads to fragmentation of the single market.

We therefore suggest that the draft bill should adopt the overall objective of regulating in the long-term interest of end-users. When it comes to economic regulation this would mean taking decisions which maximise economic welfare (as discussed in Chapter 4).

Such an amendment would make it easier for ECS regulators to deal with some of the new problems which the telecommunications sector in the Eastern Caribbean now faces – such as the impact of OTT service providers highlighted in Section 6.3. Our proposal for an overall regulatory objective would give the ECS regulators both the obligation and the freedom to deal with this problem in innovative and effective ways.

The process for imposing remedies on SMP operators

We suggest in Section 6.3 that it is more appropriate in the ECS microstates (and more generally in the microstates of the Caribbean) to conduct market reviews and implement remedies on SMP operators on an exceptional, rather than a routine, basis. But there is another problem with the draft bill. It does not include measures which constrain the regulators to impose the minimum measures required to deal with the competition problem identified as a result of a market failure. For example Clause 74 of the bill provides a long list of possible remedies. But there is no guidance on which to impose in what circumstances. This is an important omission.

Under the EU Framework Directive Article 8.1 requires regulators to "*take all **reasonable** measures which are aimed at achieving the objectives [noted above]…Such measures shall be **proportionate** to those objectives*" (emphasis added)[51]. The requirement for *proportionate* application of regulation is reinforced under Article 8.4 of the EU Access Directive[52].

In the UK Ofcom, as well being required to follow the EU Directives, has developed its own guidelines for the application of regulation. In its *Better Policy Making* guidelines[53], it details the benefits and approach to undertaking an impact assessment for all of Ofcom's significant decisions. The guidelines open with a clear statement of the challenge Ofcom has set itself in undertaking its work:

> *"The decisions which Ofcom makes can impose significant costs on our stakeholders and it is important for us to think very carefully before adding to the burden of regulation. One of our key regulatory principles is that **we have a bias against intervention**. This means that a high hurdle must be overcome before we regulate. If intervention is justified, we aim to **choose the least***

[49] New Zealand Telecommunications Act 2001 (and amendments), Part 2 Clause 18, http://www.legislation.govt.nz/act/public/2001/0103/latest/DLM125775.html

[50] EU, March 2001, Directive 2002/21 Common regulatory framework for electronic communications networks and services (Framework Directive), Article 8 http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0021&from=EN

[51] EU Framework Directive, Article 8.1.

[52] EU, March 2001, Directive 2002/19 Access to and interconnection of communications networks and associated facilities (Access Directive), Article 8.4 http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0019&from=en

[53] Ofcom, July 2005, Better Policy Making guidelines, https://www.ofcom.org.uk/__data/assets/pdf_file/0026/57194/better_policy_making.pdf

***intrusive means of achieving our objectives**, recognising the potential for regulation to reduce competition."* (emphasis added*)*

Similar guidelines are required for NRAs in the ECS. Otherwise there is a danger of overregulation. This is especially likely to be the case in the island states of the Caribbean, where the small size of the markets means that the level of regulatory expertise is inevitably limited[54] and there is a greater danger of regulatory error than in macrostates.

Even in macrostates such regulatory error is not unknown. For example in 2010 the European Commission recommended that NRAs should require SMP operators to offer fibre loop unbundling to access seekers at cost oriented prices. Such regulation led to very little investment in fibre access networks. As a result the European Commission revised its guidance at the end of 2013. It no longer required fibre loop unbundling and allowed SMP operators to set wholesale prices for high-speed broadband access products on a retail minus basis. This led to a significant increase in investment in high-speed broadband. But in the period 2010 to 2013, the EU suffered from lack of investment in fibre networks, unlike (say) the USA.

Technology neutrality

The draft bill does not include the principle of regulating in a technology neutral way – a key principle in the EU regulatory framework[55]. It is important not to regulate in a way which attempts to favour specific technologies. For example regulators should not shape rules so as to favour operators which invest in fibre-to-the-premise rather than fibre-to-the-node. Such decisions should be left to market players who are better placed to make efficient investment decisions[56] than regulators or governments. They have more information on both the incremental costs of deploying new technologies and the incremental revenues which might flow from investing. They also have stronger incentives to evaluate all technical options.

Appeals against decisions by the regulators

There is a limited and poorly defined mechanism within the draft bill for appeal against decisions by the regulator. Yet it is clearly important that the regulators are accountable in some way for their decisions. Under the EU Framework Directive any party affected by a regulatory decision has the right to appeal that decision[57]. Use of the general courts to appeal regulatory decisions is, based on experience elsewhere, likely to be both slow and costly.

Making sector specific and competition law regulation consistent

There is a need for the draft bill to set out the principles which determine the relationship between ex-ante sector specific regulation (the main focus of the bill) and ex-post competition law rulings. Such principles are required to ensure consistent regulation across the two domains. The EU regulatory

[54] See Chapter 2 for a discussion on this point.

[55] EU Framework Directive, paragraph 31.

[56] Which maximise economic welfare gains.

[57] EU Framework Directive, Article 4.

framework is careful to do this and such a distinction is particularly important in microstates – where there are strong arguments for shifting the emphasis from ex-ante to ex-post regulation as discussed in Chapter 7.

7 Future regulation in the microstates of the Caribbean

7.1 The challenges facing Caribbean regulators

Analysis of the previous chapter suggests that regulators in the microstates of the Caribbean face a need to regulate the telecommunications sector in a different way from macrostate regulators if they are to achieve good end-user outcomes. They need to:

- trade-off productive efficiency against the dynamic efficiency effects of competition in the sector. This is not a significant issue in macrostates;
- deal with the fact that retail and wholesale prices for telecommunications services are likely to be significantly higher in microstates than macrostates;
- allow for the additional cost of international connectivity faced by the island microstates of the Caribbean – as discussed at the end of Section 3.3;
- deal with the fact that the prospects of market entrants challenging the existing players – typically Flow in the fixed market and Flow plus Digicel in the mobile market – are limited relative to macrostates; and
- regulate in a way which keeps the costs of developing, implementing and complying with regulation to a reasonable level.

The critique of Chapter 6 also suggests that the draft bill fails to take account of these challenges and needs a fundamental rewrite if it is to lead to effective regulation of the telecommunication sector in the ECS.

Based on experience of advising regulators across the developed and developing world, we set out below proposals for how the draft bill might be changed to deal with this problem. At the same time these proposals are highly relevant to other island microstates in the Caribbean.

7.2 Recommendations which shift the emphasis towards ex-post regulation

Recommendation 1: focus on achieving good outcomes for end-users – the overall objective of effective economic regulation. We would suggest the following measures are important:

- the level of investment by operators. High levels of investment are important as a way of capturing dynamic and productivity efficiency gains. Figure 7-1 suggests that the island states of the Caribbean, at least as represented by the ECTEL contracting states, are currently delivering well on this measure;
- the availability and take-up of new services which contribute to economic development in the Caribbean such as fixed and mobile broadband. Again Figure 7-1 suggests a satisfactory performance here by the Caribbean telecommunications industry;
- some agreed financial measure of the profitability of the infrastructure operators. It is important that regulators monitor the financial health of these operators to ensure that they have both the incentive and the capacity to invest in network upgrades so as to maximise end user benefits; and

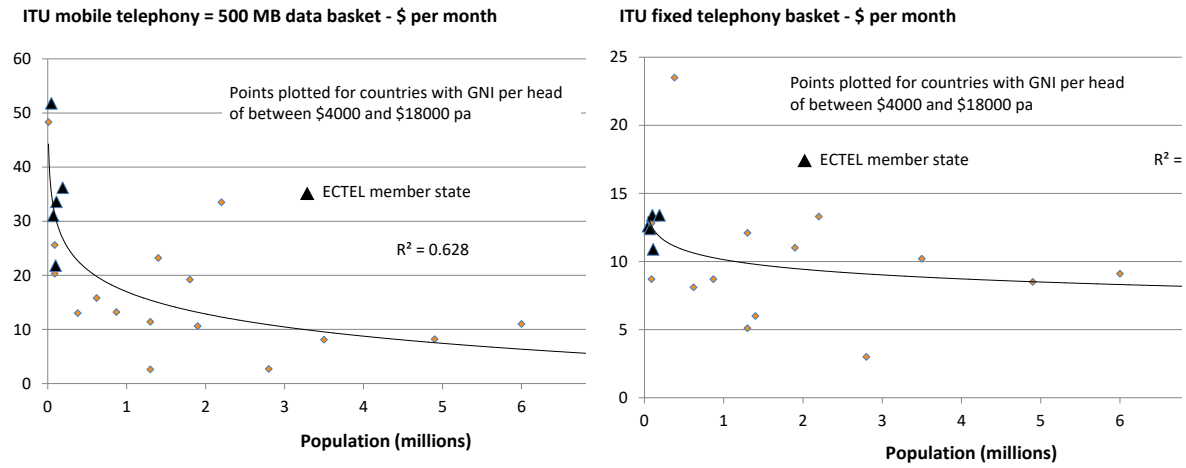
- retail prices. Figure 7-2 indicates that current Caribbean prices for mass-market fixed and mobile services are currently in line with other countries after allowing for economy of scale effects.

Figure 7-1: the Caribbean vs other world regions

Measure	ECTEL MS[58]	ASEAN 10[59]	EU5[60]	USA
Population per country (m)	0.1	63	64	325
GDP per head pa (US$)	7912	3900	38034	52308
Investment as % GDP per head	1.4%	0.6%	0.3%	0.4%
MBB SIMs per 00 pop	41	49	79	115
FBB per 00 HH	47	14	63	62

Source: ITU Yearbook 2016 and ECTEL statistics

Figure 7-2: fixed telephony and mobile prices in the Caribbean



Recommendation 2: monitor these outcomes and seek voluntary remedies from operators if they become unsatisfactory – with the threat of regulatory remedies at the wholesale level if action is not taken. In other words we propose a shift in emphasis in the microstates of the Caribbean from ex-ante to ex-post remedies. This shift both helps to reduce the costs of regulation and takes account of the more limited prospects for competition in microstates.

Recommendation 3: in monitoring retail and wholesale prices take account of the fact that competitive price levels in microstates are significantly above those in macrostates. Failure to take this effect into account leads to:

- inefficient entry if **wholesale** prices are too low; and

[58] Dominica, Grenada, St Kitts Nevis, St Lucia and St Vincent.

[59] Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

[60] France, Germany, Italy, Spain and the UK.

- reduced incentives for efficient investment by operators if **retail** prices are below cost.

Recommendation 4: if Recommendation 2 fails to have the desired effect then carry out a review of the relevant market(s) and, if an operator is found to have SMP in that market, impose appropriate remedies. In imposing remedies it will be important that an NRA chooses the minimum remedy which is required to deal with the competition problem identified during the market review (as we discuss in Section 6.4).

7.3 Recommendations which maximise cost effective regulation of the ECS telecommunications sectors

Recommendation 5: impose simple remedies with low regulatory costs. A good example here is termination services. The regulatory costs involved in setting fixed and mobile termination rates based on cost modelling have been substantial in the past. One way to control these cost is to allow the operators to negotiate termination rates on a commercial basis and only to determine rates on request. See also the discussion in Section 6.3 on authorisation of agreements.

Recommendation 6: where a market review (Recommendation 4) finds that an operator has SMP, require that operator to provide access products only if reasonable demand can be demonstrated. This would mean that the SMP operator did not have to develop products in advance at a potentially substantial cost when there may be no requirement from entrants. Ofcom has used this approach in the UK when regulating Kingston Communications. Ofcom regulates BT, the fixed incumbent in almost all of United Kingdom and Kingston Communications, the incumbent in the town of Kingston-upon-Hull, in very different ways. This reflects the fact that Kingston Communications is one hundred times smaller than BT.

Recommendation 7: move from ex-ante to ex-post interventions to correct competition problems wherever possible. In doing so:

- Focus on market behaviour rather than market shares. There are plenty of examples where just two competing operators have similar market shares but compete vigorously in terms of innovative new products and pricing offers. Malta is a good example. There the incumbent telecommunications operator, GO, and the cable operator, Melita, compete strongly to offer some of the lowest prices and generate one of the highest take-ups of fixed broadband in the EU.
- Regulate any behaviour suggesting joint dominance on an ex-post rather than an ex-ante basis. Joint dominance occurs when two (or more) operators tacitly collude so as to generate supra-normal profits. A key test of joint dominance is the behaviour of the parties concerned. As such, joint dominance is more obviously a candidate for *ex-post* than *ex-ante* regulation. It is harder to judge whether tacit conclusion will occur in future than to judge whether it has occurred in the past. In Europe there have been several attempts by NRAs to establish findings of joint dominance on an *ex-ante* basis. All have failed.

Recommendation 8: before imposing ex-ante remedies carry out a cost benefit analysis which demonstrates that the benefits of any proposed remedy clearly outweigh the costs. Such an approach is especially important in the microstates of the Caribbean for the reasons set out in Chapter 5.

Recommendation 9: put the emphasis on negotiation rather than regulation. Caribbean regulators might keep their costs under control by:

- relying more on negotiated wholesale agreements between operators;
- raising the threshold for dealing with complaints by operators and service providers. For example Ofcom "*will not accept a dispute without evidence of the failure of meaningful commercial negotiations. Ofcom will not accept a complaint without evidence to back up the allegation. Ofcom will require an officer, preferably the Chief Executive Officer, of the company making the submission to verify that the company has taken due care in checking that the evidence submitted is correct and complete and (in the case of a dispute) that best endeavours have been used to resolve the dispute through commercial negotiation*"[61]; and
- using novel and relatively low-cost techniques to arbitrate where there is a dispute. Final offer arbitration is a good example. Also known as pendulum arbitration, final offer arbitration limits parties' posturing incentives since the arbitrator must choose only between the two final offers, and the chosen offer then becomes binding on both parties.

Recommendation 10: do not give NRAs the powers to impose obligations for equivalence of inputs or to require functional or structural separation. As we argue in Chapter 6 such a requirement would, almost certainly, generate significant economic losses in the island microstate of the Caribbean. At the same time giving NRAs these powers **now** would introduce regulatory uncertainty and weaken investment incentives.

Recommendation 11: monitor and publish the annual expenditure of the regulators over time to check that it is not becoming an excessive burden on the sector which might lead to higher end user prices. Given the problems identified in Chapter 5 this is a simple measure to keep the costs of regulation in check. If the annual expenditure monitored in this way rises to unreasonable levels then it would be appropriate to cap expenditure so as to limit end-user price rises.

Recommendation 12: cap contributions of the operators to any universal service fund. A major component of the fees paid by the operators of the Caribbean to the regulators is a contribution to a universal service fund. There is a danger here that:

- governments will want to improve levels of universal service for political and social reasons and will seek to fund the cost of doing so from market players;
- the funds required, normally a proportion of gross revenues, will depress operator profits significantly; and
- investment in new network technologies will then suffer, and so damage economic development.

Recognising this danger the European Commission imposed strong limits on universal service funding in 2002 through its universal service directive[62]. It is now proposing, through its draft Electronic Communications Code, to require universal service funding to be provided by member state

[61] Ofcom, July 2004, "*Guidelines for the handling of competition complaints, and complaints and disputes about breaches of conditions imposed under the EU Directives*" https://www.ofcom.org.uk/__data/assets/pdf_file/0029/37946/guidelines.pdf

[62] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).

governments rather than by market players. In other countries NRAs have imposed a cap on the proportion of operator revenues which contribute to a universal service fund.