

# *Telecommunications regulation*

## Strategy and policy

September 2015



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# ***Contents***

1.	Introduction.....	3
2.	Regulatory strategy and case building .....	4
3.	Sector policy .....	5
4.	Cost modelling .....	6
5.	Fixed/Mobile Termination Rates (FTR/MTR) .....	8
6.	Cost of capital .....	9
7.	Interconnection and access .....	10
8.	Competition and regulation policy .....	11
9.	Retail price regulation .....	17
10.	Separation support .....	20
11.	Regulatory accounting .....	22
12.	Universal access and universal access fund management.....	23
13.	National broadband strategy .....	25
14.	Spectrum policy .....	26
15.	Spectrum licencing .....	27
16.	Contacts.....	28

# 1

## Introduction

PwC's network comprises of firms in 157 countries with more than 195,000 people committed to delivering quality in assurance, tax, and advisory services. Tell us what matters to you and find out more by visiting us at [strategyand.pwc.com](http://strategyand.pwc.com).

### ***PwC's Strategy& in the communications industry***

Within PwC's network, Strategy& is a global team of practical strategists committed to helping you seize essential advantage. We do that by working alongside you to solve your toughest problems and helping you capture your greatest opportunities. These are complex and high-stakes undertakings-often game-changing transformations. We bring 100 years of strategy consulting experience and the unrivaled industry and functional capabilities of the PwC network to the task.

Whether you're charting your corporate or regulatory strategy, transforming a function or business unit, or building critical capabilities, we'll help you create the value you're looking for with speed, confidence, and impact.

In the communications sector, the main drivers for change were the development of new technologies including fixed and mobile access technologies delivering very high speed broadband services, the proliferation of NGN networks.

These technological changes have driven sector convergence as well as the development of new applications, giving rise to an increasingly powerful segment of OTT ('over the top') players. In addition, and partly as a result of these trends, there have been changes in regulatory frameworks while, at the same time the trend towards full market liberalisation has continued. As technologies continue to evolve and market liberalisation continues to progress, the pace of change is still accelerating and decision makers continue to be faced with long lists of complex issues to resolve.

We are one of the world's leading advisors to the telecommunications industry, including fixed and mobile operators as well as governments and regulators. We have a large dedicated telecommunications industry group of business advisers. It is ideally placed in terms of resources, experience and reputation due to its size, global presence and range of skills including dedicated telecoms sector specialists with regulatory, commercial, economic and engineering expertise.

The communications industry has been characterised by rapid change.



# 2

## *Regulatory strategy and case building*

Given our expertise in regulatory policy and strategy, we are ideally placed to advise operators and regulators in this context.

- We assist regulatory authorities in designing and defining their regulatory policy.
- We assist operators in shaping regulatory policy, in case making and in regulatory negotiations and submissions.

### ***This work typically involves a combination of:***

- Support in industry consultations and regulatory negotiations
- Regulatory case building
- Regulatory Impact Analysis
- Writing of regulatory submissions
- Representation at meetings
- Preparation of Regulatory Roadmaps
- Outlining regulatory issues likely to be raised by the regulator and other operators
- Outlining regulatory issues the client would like to see tackled
- Developing strategy/position on each of the regulatory issues.

### ***Our assistance in the area of regulatory strategy and case building covers a wide range of regulatory issues, including:***

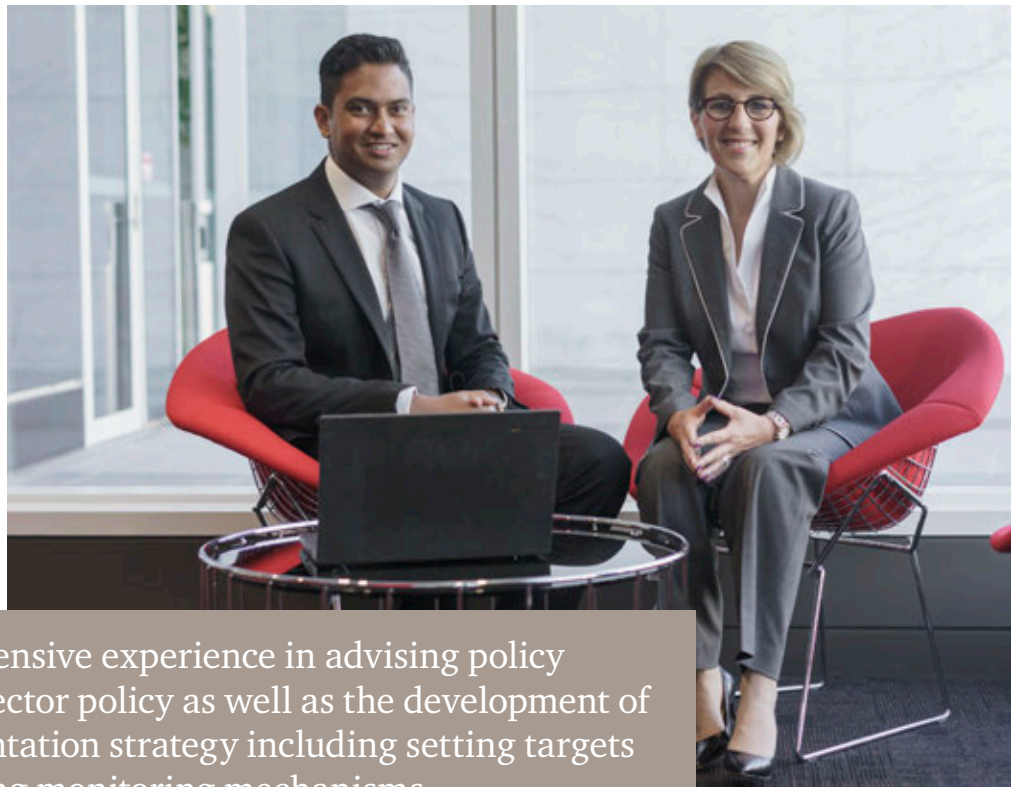
- National broadband strategy
- Spectrum policy, valuation, auction strategy and licencing
- Regulated interconnection and access: Definition, terms, pricing, Local Loop Unbundling (LLU), Bitstream Access, Passive Infrastructure Access (PIA), etc.
- Mobile and Fixed Termination Rates
- NGN/NGA regulation
- Universal Service and Universal Access (USO): Strategy, Scope and definition, Net cost of provision, Funding mechanisms
- Access Deficit Contributions (ADCs)
- Numbering and Number Portability
- Regulatory Accounting: Asset Valuation, Accounting Separation, etc.
- Comparative efficiency studies (e.g. Stochastic Frontier Analysis)
- Cost of Capital.

# 3

## *Sector policy*

***We have advised Governments and Telecoms Regulators on many aspects of sector policy including:***

- Liberalisation
- Privatisation
- Licensing
- Broadband policy
- Spectrum allocation and valuation
- Regulatory Frameworks
- Regulatory Impact Analysis
- Interconnection regulations, retail regulations, etc.
- Universal Service Policy
- Numbering
- Deployment of next generation access networks



We have extensive experience in advising policy makers on sector policy as well as the development of an implementation strategy including setting targets and proposing monitoring mechanisms.

Implementation of the proposed policy may involve the formulation of suitable regulations to govern the relevant areas of the telecoms sector such as access regulations, regulated pricing, spectrum allocation, rollout/provision requirements, etc.

# 4

## Cost modelling

Cost modelling is central to large parts of regulatory scrutiny in the telecoms sector. Due to the high proportion of fixed costs and the large extent to which network elements are shared between different services, the calculation of service costs in telecoms requires sophisticated cost models.

In recent years the arrival and use of Next Generation Access (NGA) networks and Next Generation Networks (NGN) as well as the increase of data traffic over wireless networks has meant that existing costing methodologies and models have to be reassessed. No longer are networks carrying switched voice signals but conveying a variety of voice and data services using Internet Protocols (IP), with many operators sharing the same core infrastructure for their fixed and mobile offerings. Furthermore, mobile operators convey their services using different technologies simultaneously (e.g. GSM, 3G and LTE).

### **Cost concepts and methodologies:**

Depending on the precise purpose of the analysis, a range of different cost concepts may be applied, e.g.:

- Fully Allocated Costs (FAC)
- Long Run Incremental Costs (LRIC)
- Pure Long Run Incremental Costing (Pure LRIC)
- Stand Alone Costs (SAC)
- Marginal Costs (MC)

Whereas FAC models calculate average service costs by distributing costs over services based on cost allocation keys, the LRIC concept focuses on the additional costs caused by a given service (or set of services), thereby acting as a proxy for marginal cost.

In recent years many regulators have started to follow the guidelines set by the European Commission (EC) by mandating pure LRIC for some wholesale services such as termination. Under Pure LRIC, common costs are not to be recovered through the service being costed.

The SAC concept looks at the costs of producing a given service in isolation from others (i.e. without the economies of scope (or synergies) arising from the provision of several telecoms services).

Finally, MC focus on the cost of producing an extra unit (e.g. minutes) of a given service.

Different cost concepts are used for different purposes:

- Statutory accounts are based on FAC.
- Incremental costs (LRIC) are used for regulatory and commercial purposes as well as in the context of competition policy issues.
- Marginal Costs (MC) are particularly relevant in the context of short term pricing strategy and competition analysis.
- SAC represent an upper boundary in the context of price regulation.



## ***Cost models***

Two major types of cost models may be used in the calculation of telecoms service costs:

1. Top Down models which are typically based on historical accounting data from the general ledger.
2. Bottom Up engineering models based on a simulation of the network that an efficient operator would build.

A third potential model can be used, i.e. a hybrid model, where a bottom-up approach is used and a top-down cross-check is then carried out to verify that the modelled network is realistic.

## ***Applications***

Cost models are essential tools used in a variety of commercial and regulatory contexts including:

- Regulatory tariff setting (e.g. termination, wholesale access, etc.)
- Accounting Separation
- Competition Policy
- Pricing Strategy
- Product Profitability Analysis



# 5

## *Fixed/Mobile Termination Rates (FTR/MTR)*

Fixed and Mobile Termination Rates tend to be regulated because of the bottleneck nature of this service: a call to a mobile subscriber can only be terminated by this subscriber's operator.

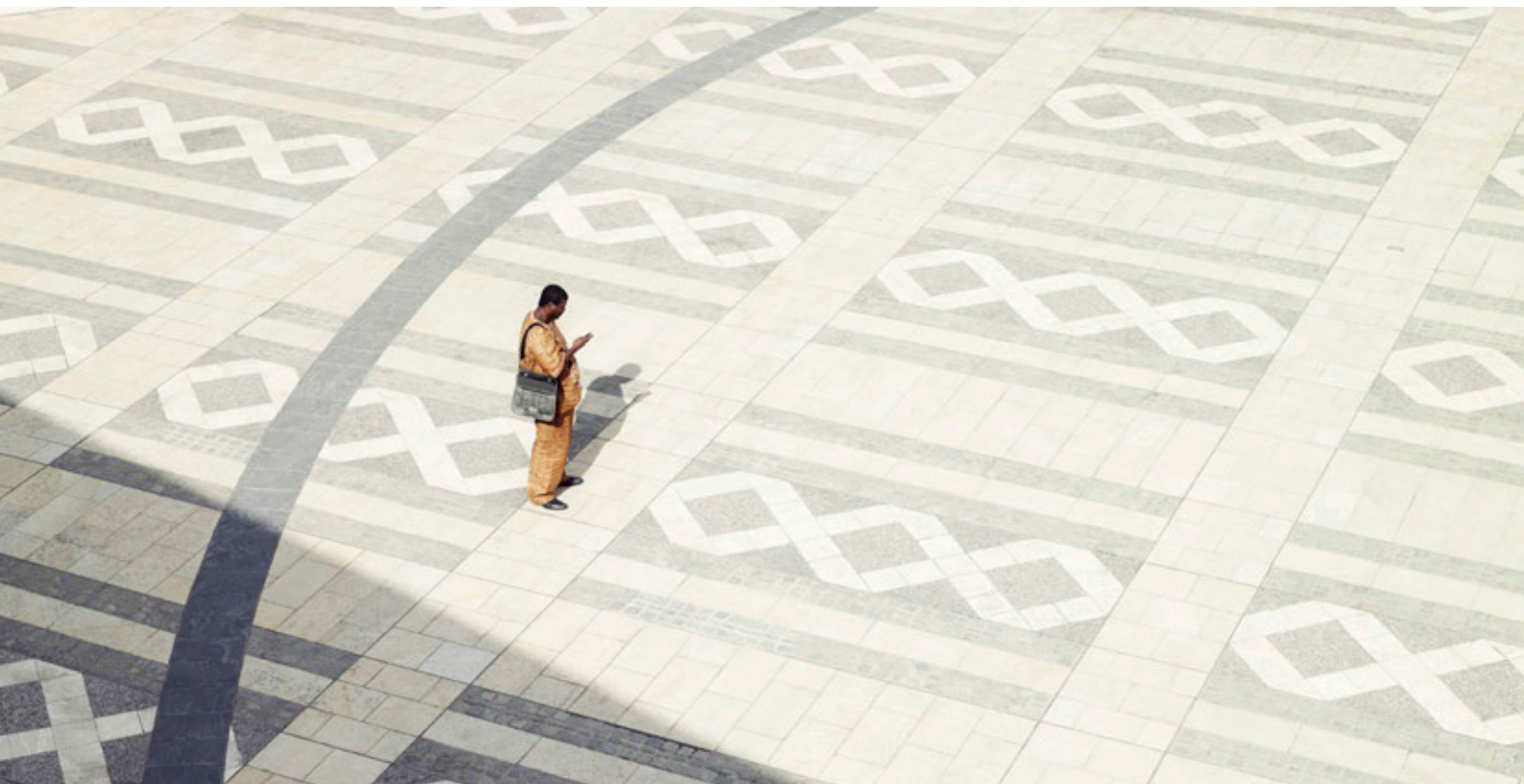
Given the clear market failure in the termination market, regulators have almost unanimously concluded that it is a service that needs to be regulated at levels that reflect the provision of the service.

Estimating termination rates required the development of complex cost models (see section 4). Specifically, in establishing the costs of mobile termination it is essential to adopt an appropriate approach in relation to a number of modelling issues, including:

- Spectrum
- Technology (GSM, CDMA, TDMA, UMTS)
- Depreciation
- Efficiency
- WACC
- Service volumes
- Size of operator

There has been much debate as to what cost-based prices mean, and no clear trend has been established in the regulatory community as to what best practice cost modelling is. As such, operators face enormous risks and uncertainty when a regulator embarks on a process to set cost-based fixed or mobile termination rates. Regulators, on the other hand, face the challenge of identifying and implementing welfare maximising approaches to FTR and MTR regulation.

We have advised operators and regulators in many countries on the conceptual design and the development of suitable costing systems for the calculation of the costs of fixed mobile termination.





# 6

## Cost of capital

Cost of capital plays a key role in regulation by setting the permissible expected return on investment for:

- Estimating and implementing regulated access prices (e.g. infrastructure access, termination, etc.)
- Competition analysis
- Discounted Cash Flow Models (DCF)
- Licence valuations
- Business valuations

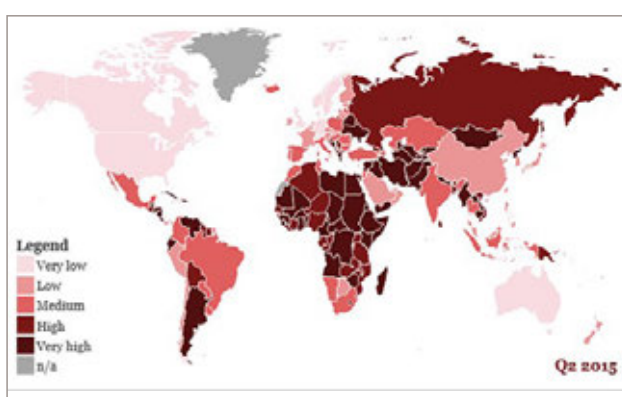
Deriving the Cost of Capital is a complex exercise, which requires a detailed understanding of equity and debt markets as well as how these variables change from country to country. Some of the issues that arise when setting the cost of capital include:

- Determination of Risk-free rates: Reference to use (e.g. US T-Bonds, UK Gilts, etc.), maturity, observation period, etc.

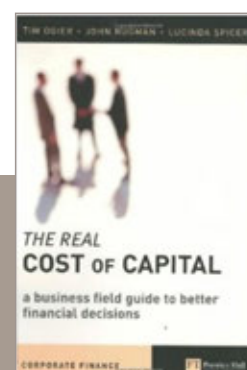
- Equity risk premium determination: Market reference (e.g. S&P 500 or local market), length of observations (e.g. 1928-present), use of geometrical or arithmetic averages, etc.
- Systematic risk (Beta) and Debt/Equity ratio: Suitability of using market observations for the asset (if available) or building of a basket of comparable assets to determine a suitable beta and D/E ratio.
- Country Risk: Determination of the additional premium expected for operating in an Emerging Economy.

We have significant experience advising both operators and regulators on Cost of Capital issues in both developed and developing countries.

PwC, for example, has developed a proprietary econometrics-based model to estimate Country Risk premiums. We use the output for these models to produce our 'Country risk premia quarterly update', which can be consulted at <http://www.pwc.co.uk/the-economy/issues/country-risk-premia-quarterly-update.jhtml>



PwC has developed a proven methodology for calculating the weighted average cost of capital (WACC) based on the cost of debt, the cost of equity and the funding structure in question (see 'The Real Cost of Capital' by PwC Partner Tim Ogier and PwC Director John Rugman).



# 7

## *Interconnection and access*

We advise operators and regulators on a wide range of technical and commercial aspects of interconnection and access, including the preparation and negotiation of Reference Interconnect Offers (RIOs) and Reference Access Offers (RAOs) as well as Model Access/Interconnection offers (MIO/MAO), which allow the regulator to describe what it considers as acceptable in an agreement.

The RIO, which details the terms and prices of access to interconnect services, is one of the cornerstones of the liberalisation process, enshrining competitors' access to essential facilities and comprising the following elements:

- Service definitions: outline the permitted interconnection services, charging mechanism, form of access, and network layers at which interconnection can occur.
- Technical manuals: specify principles and standards for interoperability including physical and functional interfaces.
- Operations and Maintenance manual: covers procedures to be followed in the provision of points of interconnection and the handover of interconnection traffic.
- Tariff schedules: specifies the prices to be charged for interconnection services.

A key issue for operators to manage is the initial and future definition of essential facilities and the price at which access to those facilities is determined. The initial focus of regulators and competitors is on access to core public switched telephone network (PSTN) services in order to support Carrier Pre-Select-based competition. The next step tends to encompass Local Loop Unbundling (LLU) (through the Reference Unbundling Offer (RUO)), leased lines and data services, with some jurisdictions debating whether to impose the obligation to provide data services such as gigabit Ethernet.

### ***Our assistance to regulators and operators in the context of interconnection includes:***

- Scenario analysis;
- Regulatory/competition analysis and determination for the need of access regulator which necessitates RIO/RAOs or MIO/MAOs;
- Drafting of RIO/RAOs or MIO/MAOs;
- Regulatory submissions;
- Support in negotiations with incumbent operators, entrants and regulators;
- Facilitation of industry groups;
- Communications strategy;
- Production of consultation documents;
- Responses to consultation documents; and
- Position papers.

We also provide advice on interconnection and access in Next Generation Network (NGN) and Next Generation Access (NGA).

We provide advice to mobile operators and regulators in the context of mobile termination rates and the role of network effects in the context of calculating Mobile Termination Rates (see section 5).

# 8

## *Competition and regulation policy*

PwC's Global Telecoms Group cooperates closely with PwC's Competition Economics Group in advising operators, regulators and completion authorities on a wide range of regulatory and competition policy issues, including ex-ante market assessments and ex-post competition investigations:



# 8.1 Regulatory intervention – ex-ante market assessments

Competition authorities and regulators intervene to prevent firms from abusing market power and to make markets work more effectively for consumers.

For regulators, an adequate market assessment allows them to develop adequate regulatory remedies which address prevalent market failures, improving the national telecommunications market and helping achieve policy goals.

For operators, an assessment based on good quantitative evidence allows firms to better comply with competition law and regulations, develop more profitable pricing and acquisition strategies, build a case for amending or removing regulation, challenge the strategies of competitors and help shape the development of the market.

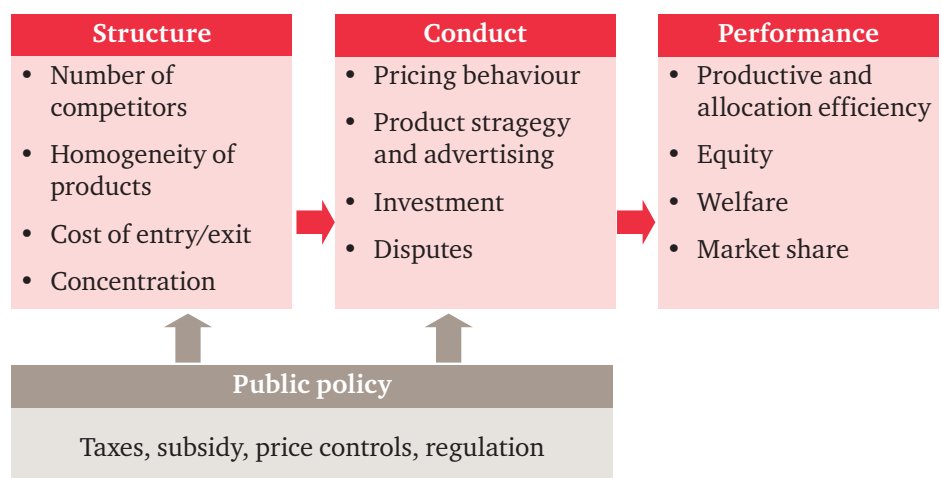
A market assessment is a three-step process:

**1. Market definition:** It allows for the identification of competitive constraints and therefore define

the set of products, services and/or geographical areas where a position of Significant Market Power (SMP) may develop.

**2. Competition assessment:** An operator with SMP would be able to act independently from its competitors, ultimately to the detriment of consumers. Determining the existence of dominance in the relevant market is a prerequisite to formulating remedies.

The existence of dominance, however, is not simply determined by observing market shares in the relevant market. We apply the Structure-Conduct-Performance (SCP) Model as a framework to assess the level of competition in the relevant market:





- 3. Remedy design:** If the competition assessment finds agents with Significant Market Power (SMP), regulatory remedies might be warranted. These must be
- **Appropriate:** designed to address identified competition problems.
  - **Proportionate:** no more interventionist than necessary to achieve regulatory objectives, taking account of potential regulatory failure.

We work with clients to consider what obligations should be imposed on dominant operators (e.g. price regulation, accounting separation, access obligations, detailed regulatory cost reporting, etc.)

through considering the following key issues:

- Understanding first the nature of the competition problem to be remedied.
- Identifying the range of possible wholesale remedies which address identified problems.
- Developing understanding of link to policy objectives.
- Evaluating the costs, benefits and unintended consequences of wholesale remedies.

We also assist operators in ensuring compliance with the relevant regulations and policies. In this process we set out the relevant issues, restrictions and obligations imposed by the regulation and develop the necessary compliance tools such as cost models, separated accounts, Reference Interconnection or Access Offers, etc.

## 8.2 Compliance

We understand the regulatory landscape and work with the business to help them identify and manage their regulatory compliance risks, including the risk of falling foul of remedies imposed as a result of an SMP assessment (such as margin squeeze tests, pricing remedies, functional separation remedies, etc.).

We assess business processes in the light of compliance obligations and assist businesses in implementing safeguards to ensure that staff are

trained and business processes designed in such a way that the risk of non-compliance is minimised.

We provide independent and objective oversight and challenge, and promote a compliance-orientated culture, supporting the business in delivering fair outcomes for customers and achieving HSBC's strategic objectives.



## 8.3 Competition policy – ex-post investigations

***PwC's Global Telecoms Group advises clients on aspects to do with anticompetitive behaviour such as:***

- Predatory pricing
- Price squeeze and margin squeeze
- Bundling
- Horizontal and vertical leveraging of market power
- Refusal to deal/supply

Economic analysis is becoming increasingly important to the assessment of abuse of dominance cases. The European Commission's Guidance on Article 102 confirms the shift of focus towards an effects-based analysis.

A variety of practices such as loyalty rebates and discounts, bundling, or refusal to supply might be dictated by efficiency reasons and not necessarily result in harm to consumers. Furthermore, for example, margin-squeeze monitoring limits the retail and wholesale pricing strategies of vertically integrated operators. This has driven the need for sophisticated quantitative techniques to distinguish between pro-competitive and anti-competitive behaviour, and to establish the likely effect, if any, on final consumers.

We help to:

- Define the relevant markets, determine market concentration levels and consider all relevant additional arguments and analysis in order to determine whether an operator could be found to have market power and, thereby, hold a dominant position;
- Explain the pricing structure in cases such as excess, predatory or discriminatory pricing. This can include demonstrating that prices are objectively justified as cost-reflective through detailed cost modelling;
- Determine the (actual or expected) effects of specific conduct on competition in potential foreclosure cases; and
- Provide expert testimony on the effects of the alleged anti-competitive conduct.

We also advise operators on how to ensure that their pricing strategies (and other aspects of conduct) stay clear of anticompetitive activities. In this context we provide operators with check lists and spreadsheet models that facilitate compliance checks.

## 8.4 Competition policy – merger assessments

### ***PwC's Global Telecoms Group has advised many clients of the assessment of mergers:***

Innovative and compelling economic evidence can make the difference between a merger or joint venture being approved, remedied or blocked. Our specialists have acted on a number of merger cases in the telecoms sector in UK and Europe.

We respond to a number of client triggers relating to merger control:

- How likely is it that I would be permitted to acquire a competitor?
- How can I best make my case to the competition authorities?
- What remedies do I need to offer to get my deal through?
- Does the cost of these remedies outweigh the commercial value of the deal?
- How can I best challenge a merger of my suppliers or competitors?

We help to:

- Assess, at an early stage, the likely competition risks and efficiencies stemming from a merger. This informs the transaction strategy e.g. what commitments may need to be offered as remedies to secure approval;
- Undertake detailed market definition, including using sophisticated econometric and survey techniques to identify the full set of substitutable products and geographies;
- Demonstrate the impact of the transaction on competition e.g. by modelling upward pressure on prices or undertaking merger simulations;
- Quantify the efficiencies from the merger in order to build a benefits case to counterbalance any competition concerns;
- Prepare economic evidence for, and give oral evidence in front of, competition authorities; and
- Strengthen the case through insight from PwC's wide range of industry specialists.



# 9

## *Retail price regulation*

Historically, regulators often applied retail price regulation as a means of controlling dominant firms pre and post market liberalisation. Over time, most regulators in developed markets have steered away from retail price regulation and, instead, have focused on seeking to ensure a level playing field in the wholesale markets – leaving retail markets to competitive forces.

In some countries where the communications markets have been liberalised more recently or only partially some regulators still consider the use of retail price related remedies, usually for consumer protection issues.

One particular concern that has arisen in a number of countries is the question whether there is a need to limit the price differential between mobile on-net and off-net charges (i.e. charges for calls to subscribers of the same or another operator).

### ***Tariff rebalancing***

Historically, state owned telecoms operators have used revenues from profitable services such as international calls to subsidise unprofitable services such as line rental and local calls.

Apart from the absence of service costing information, this was due to the fact that governments used to set prices based on social desirability criteria.

With the advent of competition, cross subsidies are being eroded. As a result, the tariffs of incumbent operators need to be rebalanced with a view to reflecting service costs accurately. In this context, we advise on the extent and speed of recommended tariff rebalancing depending on an impact analysis by customer group and depending on overall regulatory objectives.

### ***Price cap regulation***

In the absence of effective competition, National Regulatory Authorities (NRAs) take direct action to regulate both end-user and network prices to prevent exploitation of dominance.

In the majority of cases, this has been performed through the establishment of a price control regime which limits the price changes permitted on baskets of services using a pricing formula such as 'RPI – X', where prices are permitted to increase by the rate of inflation less an 'X-Factor' calculated to ensure that perceived inefficiencies are removed over time.

Price cap regimes limit the increase of the average price of a given set of services (or, in fact, prescribe a decrease). This method has the advantage of combining two desirable features, namely:

- A certain extent of pricing flexibility that enables the regulated entity to compete effectively; and
- Incentives to operate as efficiently as possible (when price increases are limited, extra profit can be generated from cost reductions).

Often set in a multiyear period, this has the advantage of removing the requirement to review prices on an annual basis, but increases the risk of applying an inappropriate cap. This issue has historically been one faced by fixed operators, but the current mobile call termination rate debate has brought it to the centre of MNOs' board agendas.

It is imperative for operators and regulators to fully engage in this process and to undertake their own modelling in order to contribute to the debate on the basis of an informed position.

### ***Safeguard caps***

Safeguard caps (e.g. a price limit on a particular service) tend to be used in situations where a retail market is considered as competitive on a forward looking basis but where there is a perceived risk that an operator may enjoy or abuse market power at some point in time (e.g. due to the prospect of a privatisation or sale to a strategic partner – which

may significantly affect an operator's market position). Typically, safeguard caps are set at levels that are currently non-binding.

Safeguard caps can also be formulated with the help of a formula (e.g. falling over time, or placing a limit on the ratio of two prices (e.g. on-net and off-net prices), etc.).

### ***Retail pricing strategy and competition policy***

PwC have advised fixed and mobile operators across the globe on retail pricing strategy. Successful retail (and wholesale) pricing strategies need to be checked against regulatory constraints including provisions against anticompetitive behaviour.

We assist operators in maximising their commercial and strategic potential under the constraint of retail price regulation.



***Key topic areas include:***

- Impact of unbalanced tariffs and low fixed line penetration: the relationship between price controls and tariff rebalancing is a central conflict facing many NRAs especially where unbalanced tariffs and relatively low fixed line penetration prevail.
- Determining levels of X, duration of controls, number and definition of baskets: it is imperative that operators fully understand the implications of possible regulatory outcomes and fully engage in the regulatory process, in order to influence decisions.
- High levels of fixed cost: the telecoms industry is characterised by high levels of fixed cost and capital expenditure – increasing the sensitivity of financial performance to price cap levels.

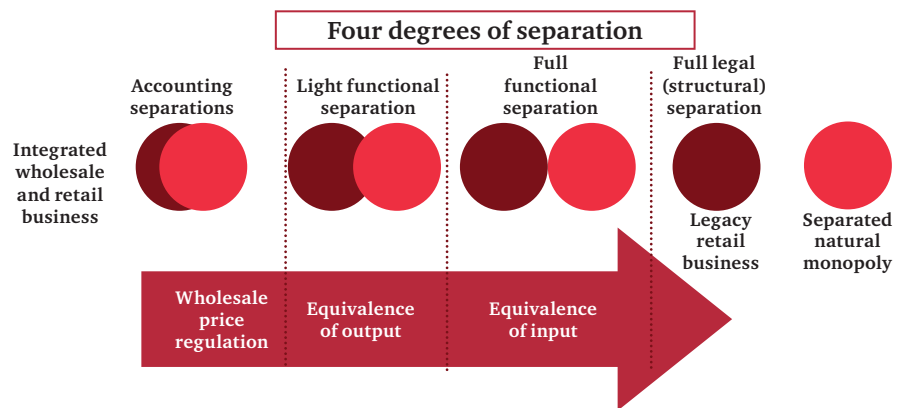


# 10

## Separation support

### *Separation of integrated businesses is a regulatory tool aimed at:*

- Increasing transparency.
- Identifying cross subsidies.
- Facilitating scrutiny from a competition policy perspective.
- Ensuring non-discrimination (e.g. between a downstream business unit and its competitors).



We advise clients on the various forms of separation and their respective regulatory, commercial and strategic implications.

- Accounting Separation separate financial reporting for each of the operator's lines of business in its regulatory accounts (see section 11).
- Operational Separation creation of a separate business unit and operational rules to establish Chinese walls between this new business unit and the incumbent operator's other operations.
- Structural Separation making the new business unit into a separate subsidiary.
- Ownership Separation divestment by the operator of its newly created subsidiary (resale to different shareholders).

The most common remedies focus on increasing transparency:

- These typically consist of imposing obligations to publish service prices and provisioning conditions.
- Regulators may also require the reporting of a range of KPIs.





**Accounting separation** is the most common remedy imposed by regulators when the existing regulatory remedies do not provide the necessary transparency.

The main benefit for our clients of developing separated accounts is effective regulatory compliance. However, clients are increasingly taking advantage of these accounts for commercial benefits including:

- Use of costing information to determine product, customer and channel profitability.
- Defend market position and as leverage during regulatory negotiation.
- Revision of the transfer charging arrangements between business units.

The costs of implementing separation tend to be very significant but depend on the form of separation and on the boundaries chosen. We advise operators and regulators on the form of separation most suitable to the situation at hand, and on the implementation of the recommended form of separation.

PwC brings together unrivalled levels of expertise in telecoms sector, particularly in wholesale functions, operations, organisation design, transactions, costing models, demand forecasting and technical network assessment.

# 11

## Regulatory accounting

***PwC provides expert advice to operators and regulators on regulatory accounting. The main areas include:***

- Service Costing (FAC, LRIC, etc.)
- Production of regulatory accounts
- Regulatory Reporting and Accounting Separation
- Asset valuations
  - Historical Cost Accounting (HCA)
  - Current Cost Accounting (CCA)
  - Index based valuation
  - Market price based valuation
  - Modern Equivalent Asset (MEA) valuation

We have the breadth and depth of expertise to advise on both the design of regulatory accounting frameworks and the implementation of regulatory accounting systems in a range of suitable software options. This includes the design and negotiation of valuation methodologies as well as the implementation of asset valuations.

In many cases an asset revaluation has to be preceded by a review or reconstruction of the Fixed Asset Register (FAR).

In a world of falling technology prices and rising costs of labour and land, valuations often have a significant impact on regulated companies' allowed profits, service costs, interconnection rates and therefore the bottom line of company results (hence market prices).

We also advise on different accounting conventions, in particular Operating Capital Maintenance (OCM) and Financial Capital Maintenance (FCM). The latter differs from OCM in that it includes the effect of holding gains (or losses) in the Profit and Loss (P&L) account.

# 12

## *Universal access and universal access fund management*

Universal service policy aims to ensure that a sufficient level of communications services are provided in areas and to customers that are unprofitable (due to low usage and/or high cost locations such as remote or mountainous areas).

Regulators use various tools in order to implement their universal service policy objectives. These range from Universal Service Obligations (USO) on the incumbent (or another) operator to tender processes under which operators compete for subsidies that are offered for the provision of a given set of services to areas that are not commercially viable.

Traditionally, incumbent fixed line operators with a Universal Service Obligation are required to install and operate lines across the country at uniform prices to the consumer. This ignores the fact that some customers, particularly in rural areas, may be very expensive to connect.

The imposition of USO generally entails the creation of a compensation mechanism and the estimation of the costs of this obligation. These models have to take into account the costs of having the USO but also any indirect benefits that may stem from it (e.g. brand value, ubiquity, etc.).

For mobile operators, uncertainty over the cost of incremental fixed access leads to the fundamental question of whether it is more cost effective to contribute to a Universal Service Fund (USF) or to participate in the delivery of Universal Service Targets (UST).

The accurate estimation of the cost of universal service by an independent party is critical to incumbent and competitor alike: the incumbent's perception that excessive cost disadvantages the providing operator is balanced by competitors' perceptions of any Universal Service Fund as a stealth tax.

### ***Key drivers of the cost of universal service costs include:***

- Population density
- Existing fixed and mobile penetration levels
- Specification and scope of universal services to be provided
- Subscriber traffic consumption patterns by area
- Relative prices for fixed and mobile line rental

### ***Key drivers of the appropriate funding mechanisms include:***

- Level of independence of the regulator/Universal Service Agency from the Government and the incumbent
- Level of executive powers granted to the regulator/ Universal Service Agency
- Number and size of competitors
- Wider political environment

***We advise regulators and operators on many aspects of universal service including:***

- Review of international precedent including our own breadth of experience in respect to USO costing and negotiation.
- Design of Universal Service Policy.
- Specification of robust methodologies for determining the net USO cost.
- Identification of the level of uneconomic exchange lines and quantification of the average loss incurred per line.
- Calculation of the impact of mobile substitution on net cost going forward.
- Assessment and quantification of the other potential benefits of USO provision.
- Calculation of the total funding requirement and identification and specification of all potential funding mechanisms.
- Assessment of the appropriateness of existing universal service obligations in light of state-funded initiatives to deploy and widen take-up of Next Generation Access services.
- Design and implementation of Funding Mechanisms for universal service.
- Implementation Strategy for Universal Service Policy.
- Design of Pilot Projects and Tenders.





# 13

## *National broadband strategy*

One of the key current policy challenges is extending the availability of broadband services, especially as high quality broadband increasingly becomes an essential utility.

Whilst the market tends to deliver high speed and high quality services to a large proportion of the population remote areas tend to be left behind – especially where population density and income are low and the terrain makes it difficult to provide broadband services.

Most governments around the world have developed a National Broadband Strategy setting out how they intend to address this issue. Typically, a broadband strategy would need to cover, for example, the following issues:

- Definition of the service to be provided
- The proportion of the population to receive the service (e.g. 100% or lower?)
- The definition and mapping of the current access gap – taking into account operator plans

- Quantifying the costs of closing the access gap depending on different technologies
- The scope of the intervention (wholesale and/or retail, backbone and/or access, etc.)
- The regulatory conditions to apply to the operation of the new infrastructure
- Financing
- Procurement

In EU countries the national broadband strategy needs to be compliant with State Aid Rules as set out by the European Commission.

We support Governments, regulators and operators in the process of designing, consulting on, and agreeing their national broadband strategy, and in implementing these strategies.



# 14

## *Spectrum policy*

Spectrum constitutes a scarce resource. Many communications regulators are under an obligation to implement a spectrum allocation framework designed to ensure optimal use of spectrum.

As markets are liberalised and new technologies evolve, the historical use of available spectrum tends to require updates. In many cases part of the spectrum that was initially allocated to government can be reallocated. Frequently, benefits can be achieved by reallocating spectrum in such a way that frequencies are freed up for new technologies and for usages that result in maximum benefit and welfare generation.

Over the last few years, increasing use has been made of market based mechanisms in the allocation of scarce spectrum. Market based allocation mechanism include various types of auctions and spectrum trading.

An efficient spectrum policy also requires a streamlined and effective spectrum allocation mechanism in line with international best practice.

***We provide advice on a wide range of spectrum allocation policy including the following areas:***

- Spectrum usage
- Spectrum re-farming
- Spectrum allocation process
- Spectrum reallocation (e.g. from government to commercial usage)
- Spectrum trading
- International trends and best practice in relation to spectrum policy and allocation

# 15

## *Spectrum licencing*

Communications regulators have to consider a range of objectives when it comes to the process for awarding spectrum. These may include:

- Protecting or promoting future competition
- Facilitating market entry
- Encouraging widespread availability of services
- Retail prices
- Promoting innovation going forward
- Consumer choice

Our expertise in regulation and competition analysis means we have the capability to assist policy-makers in setting up and running their spectrum award processes.

***We also provide wide range of advisory services to regulators and operators to support spectrum awards including:***

- Spectrum licence valuation
- Assistance in writing and responding to regulatory consultations
- Support on bidding strategies, including running auction simulations
- Bid support during auction process

***To assist in formulating ideal bidding strategies, we are able to help operators with a number of areas of analysis:***

- Identifying current and likely future demands for and shortages of spectrum
- Assessing the trade-offs between using different spectrum nds
- Identifying alternatives to spectrum acquisition

# 16

## Contacts

In this section we provide contact details for some of our regulatory specialists below.



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Alastair has worked in the telecommunications industry for over 25 years working for operators, regulators and governments in over 45 countries. Alastair is the Partner leading PwC's Centre of Excellence in telecoms regulation. He specialises in the provision of regulatory, policy, economic and strategic advice to the telecoms sector. A major part of Alastair's work has focused around

the debate defining what is the appropriate form of regulatory intervention in the case of market failure and assisting operators with all aspects of their regulatory obligations including separation remedies, interconnection and access pricing and costing, retail price controls, universal service and regulatory reporting.



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Michael is a Director in PwC's Global Telecommunications Group in the UK. An economist by training – he holds a PhD in Economics – Michael specialises in regulatory strategy and policy in telecommunications. Since joining PwC (Coopers & Lybrand) in 1997, he has advised telecoms regulators and operators in over 35 different countries, as a team member, project manager, and specialist advisor.

Michael is a recognised expert in telecoms regulation and strategy. His projects have included advice on a wide range of regulatory issues including sector policy, national broadband strategy, regulatory strategy, design of regulatory frameworks, spectrum issues, competition economics and policy, market analysis, interconnection, Universal Access, Universal Service Obligations (USO), service costing, mobile termination rate regulation, international access, price regulation, comparative efficiency analysis, and corporate strategy.



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Rob is a Director in PwC's telecommunications practice with over 20 years of experience in the industry and experience of assisting clients such as Romtelecom, Jersey Telecom, C&W Guernsey, Telecom New Zealand and Eircom in producing Separated Accounts, as well as, developing CCA for Qatar Telecommunications, Mobifon, Batelco, Eircom, OTE, Omintel and Concert.

Rob spent the first five years of his career in audit where he was primarily responsible for the BT's regulatory audits, including Accounting Separation, Current Cost Accounting and LRIC which provided him with this specific and deep industry subject matter knowledge.



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***Daniel Jacobson***

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Daniel is a Senior Manager in the Economics & Policy team and specialises in the areas of telecoms regulation and competition economics. Daniel has over ten years experience working as an Economist, with deep sector experience and skills gained through work both as an external consultant and as regulatory manager for T-Mobile (UK).

Daniel has worked on many regulatory assessments in the context of both ex-ante regulation and ex-post competition enforcement.





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Carlos is a Manager within the Economics and Policy team in London. He is an economist and Engineer specialising in Telecommunications Regulation with over nine years of experience in projects dealing with regulatory issues. Carlos has worked on regulatory projects for clients in the Middle East, Africa, Europe

and Latin America. He has advised regulators, governments and private companies on topics such as regulatory development, regulatory consultations and case making, market assessment, costing and tariff setting, financial valuations, feasibility analysis and general regulatory support.



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Carson is a Manager within the Economics and Policy team in London. He is an economist specialising in Telecommunications Regulation. He spent four years as an Economic Advisor at Ofcom, the UK communications regulator. He has

worked on various regulatory projects in the telecoms sector. Carson also worked in the Chief Economist's Team, where he led projects developing Ofcom's long term regulatory strategy and conducted research on specialist economic topics for the Chief Economist.



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