



Pricing of Broadband Services

Cotonou, Benin 8-9 May 2012



Agenda

- ❖ Broadband pricing, affordability and market development
- ❖ Impact on regulation
- ❖ How to regulate in this new environment
- ❖ Designing a pricing policy



Broadband pricing, affordability and market development

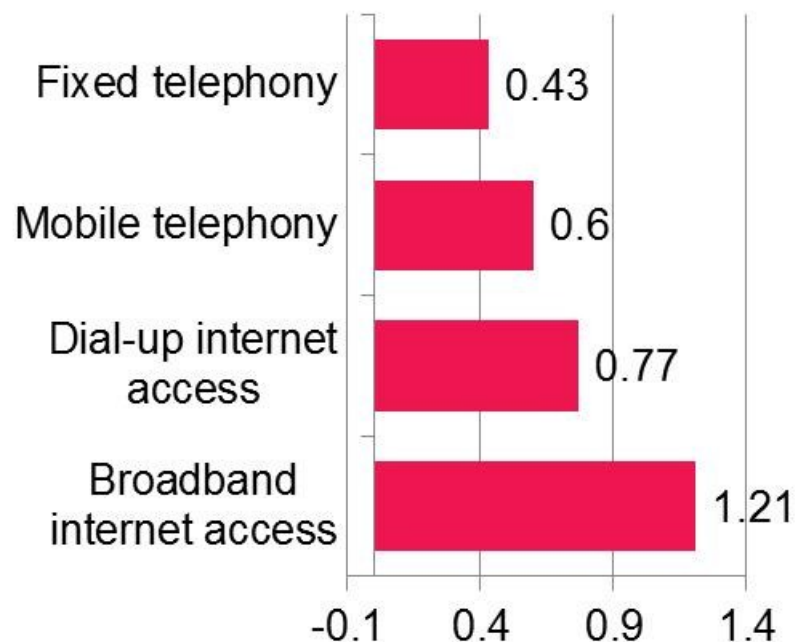


Broadband – link to economic growth

“Productivity gains like ICT and broadband capabilities are the engine of economic recovery”.

EU Commission, 2009

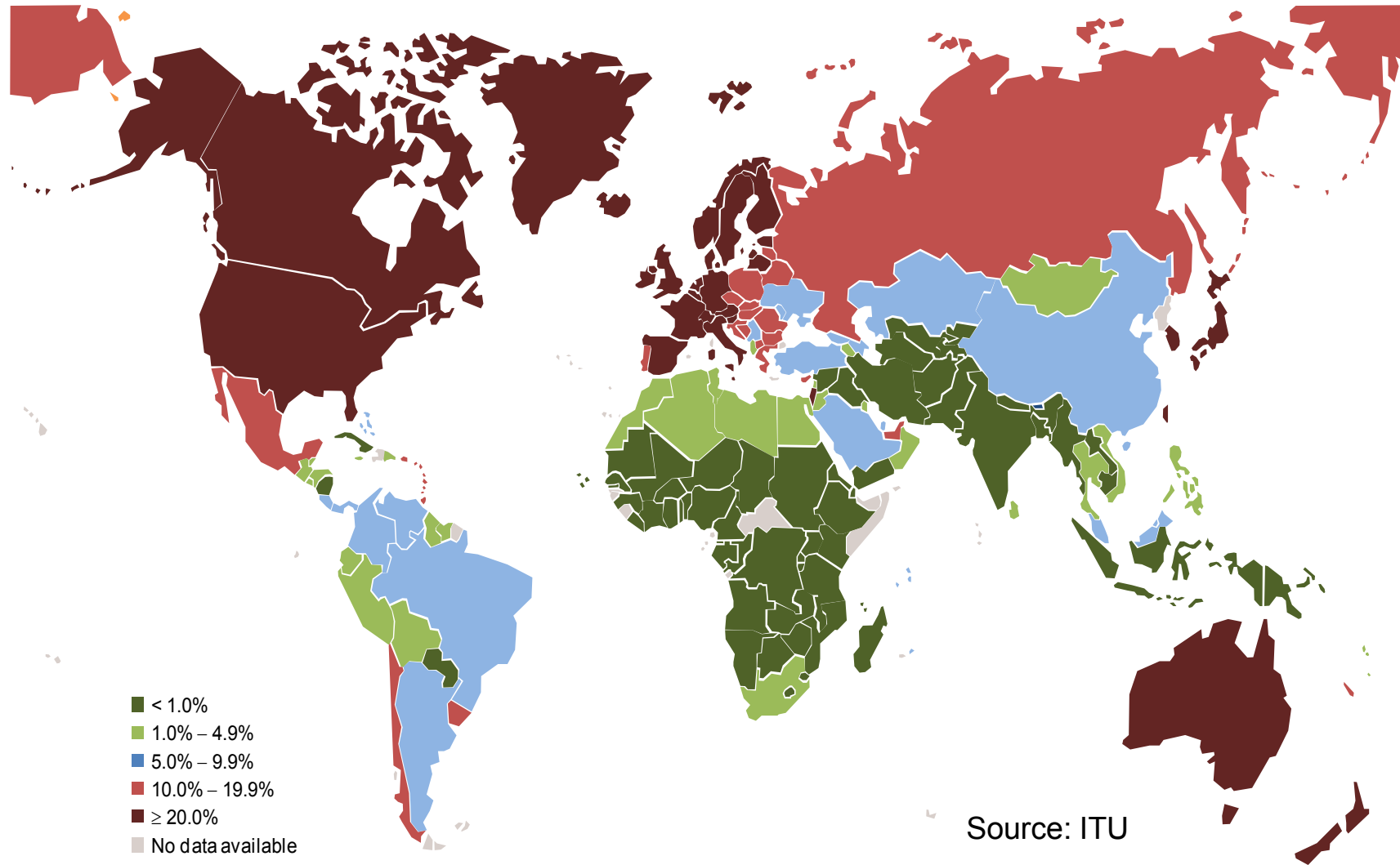
GDP growth per 10% penetration



Source: World Bank

For every 10 percentage points of penetration, broadband increases GDP by an additional 1.21 percentage points. That is twice the economic development achieved from the introduction of mobile telephones.

Penetration of fixed broadband services



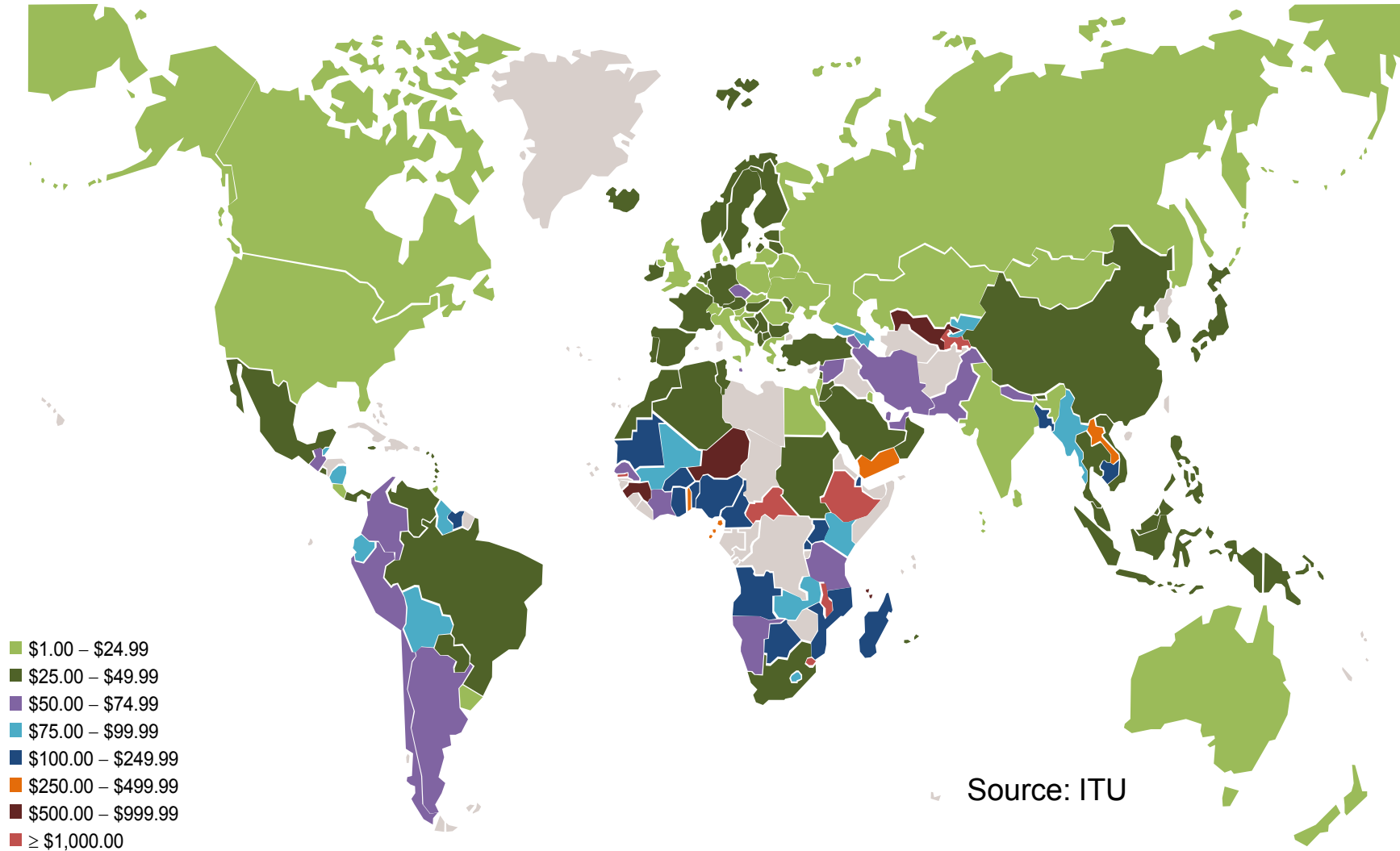
Given the accelerating effect of broadband on GDP, the above picture is worrying for policy makers concerned with reducing the Digital Divide.

Penetration of fixed broadband services

- ❖ National governments everywhere are embracing the potential of broadband as a key enabler of national productivity, economic growth and development, social inclusion and cultural enrichment.
- ❖ Broadband numbers are generally increasing but penetration is still below 5% across much of the world.
- ❖ Also, countries where the adoption of mobile broadband is greatest tend to be those countries where the penetration of fixed wired broadband is highest.

A significant digital divide is emerging with countries where the stimulus of broadband is most needed lagging behind in take-up and availability.

Pricing of broadband services (in \$ PPP)



In many countries the monthly tariff a broadband service of about 256kbps still exceeds \$50 (PPP). Countries that have most to gain from adoption of broadband are often those where affordability is lowest.

Pricing of broadband services - examples

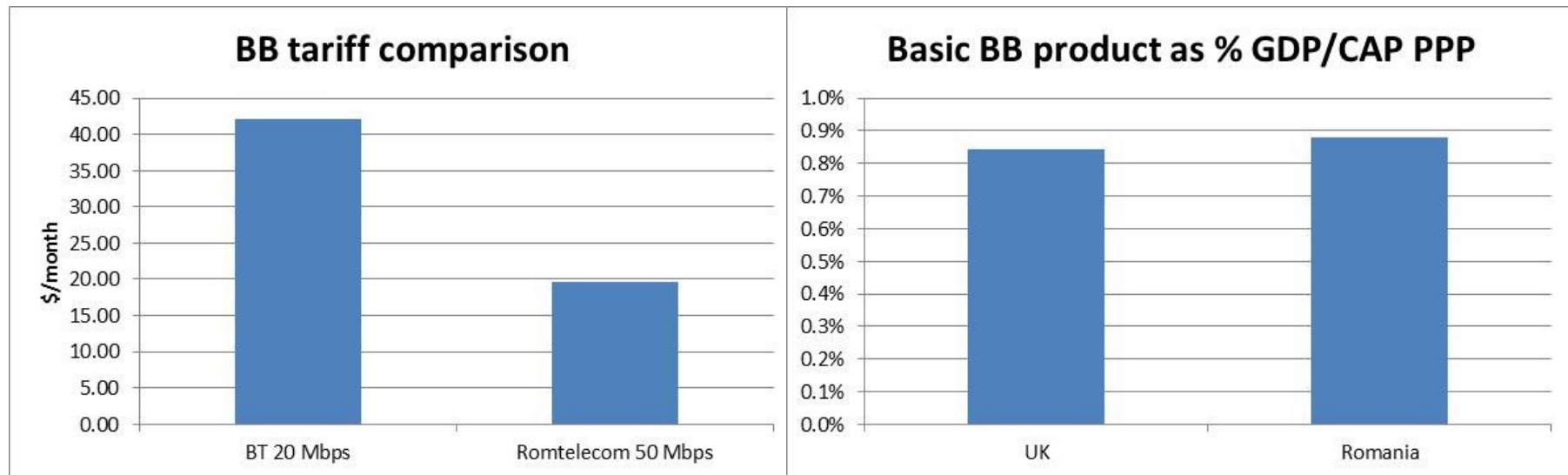
	Speeds	Price (incl. VAT)	Price (incl. VAT)	Speeds	
BT Winter deal <ul style="list-style-type: none"> •10 GB usage •Free BT Home Hub •Basic security •Free Wifi minutes •Line rental 	20 Mbps download	\$42.10	\$19.55	50 Mbps download 16 Mbps upload	ClickNet Play <ul style="list-style-type: none"> •Wifi Router •Dect Phone •Line rental

Source: Incyte

- ❖ The above table shows pricing for broadband services in Romania (a low/medium GDP country) and the UK (a high GDP country).
- ❖ In which of these countries is broadband more affordable?

An example – the broadband service offered by BT is significantly more expensive than a similar service offered in Romania.

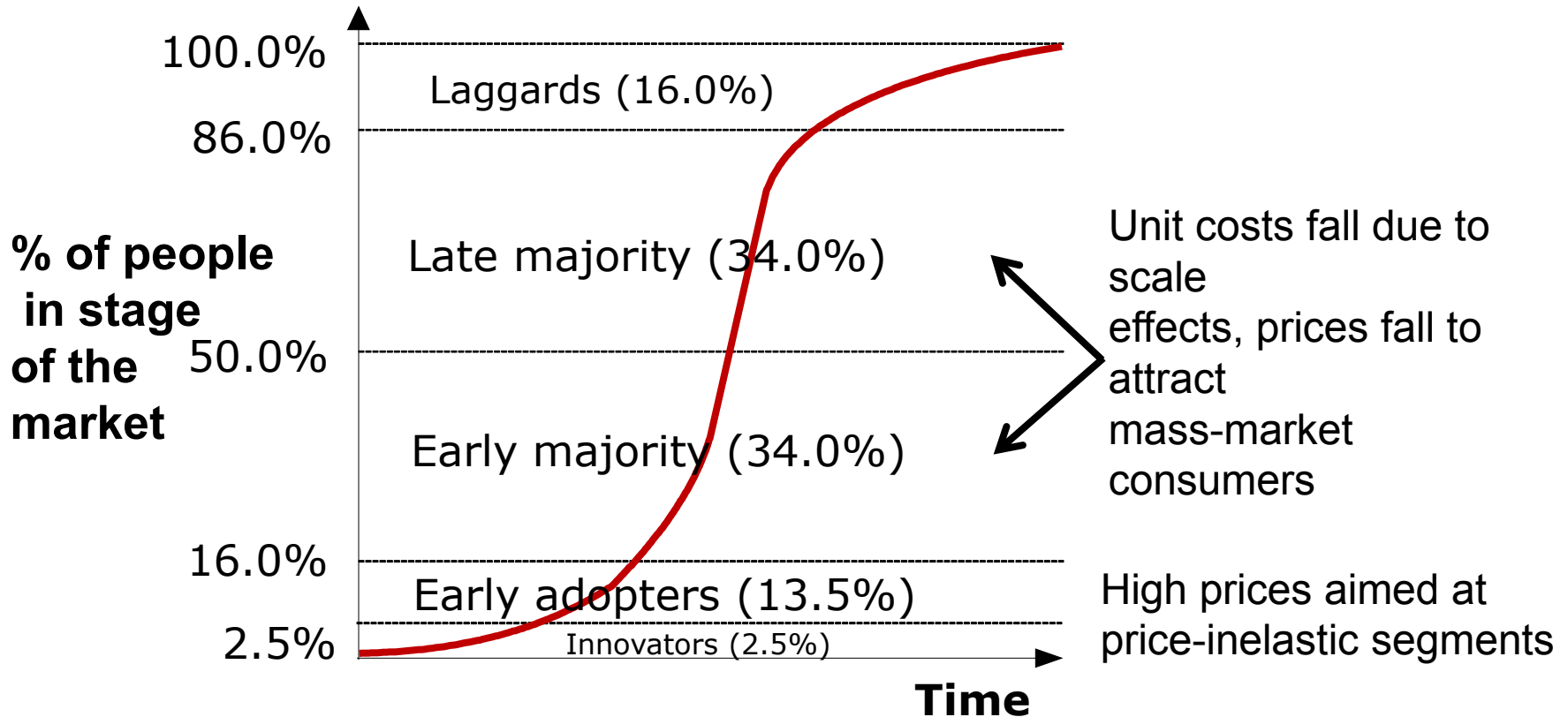
Pricing of broadband services (in \$ PPP)



- ❖ The graph on the left drives ARPU and thus the ability of operators to invest in infrastructure.
- ❖ The graph on the right drives demand for broadband services and thus penetration levels.
- ❖ Taken together these factors are a major driver behind the emergence of the global digital divide.
- ❖ A similar effect accounts for broadband penetration differences between urban and rural areas.

The tariff for broadband services is a major driver of service affordability and a major driver of the business case for investments in new infrastructure.

The broadband diffusion curve



Source: Adapted from Rogers, E.M. (2003) - Diffusion of innovations

Different stages of development require different commercial pricing approaches.

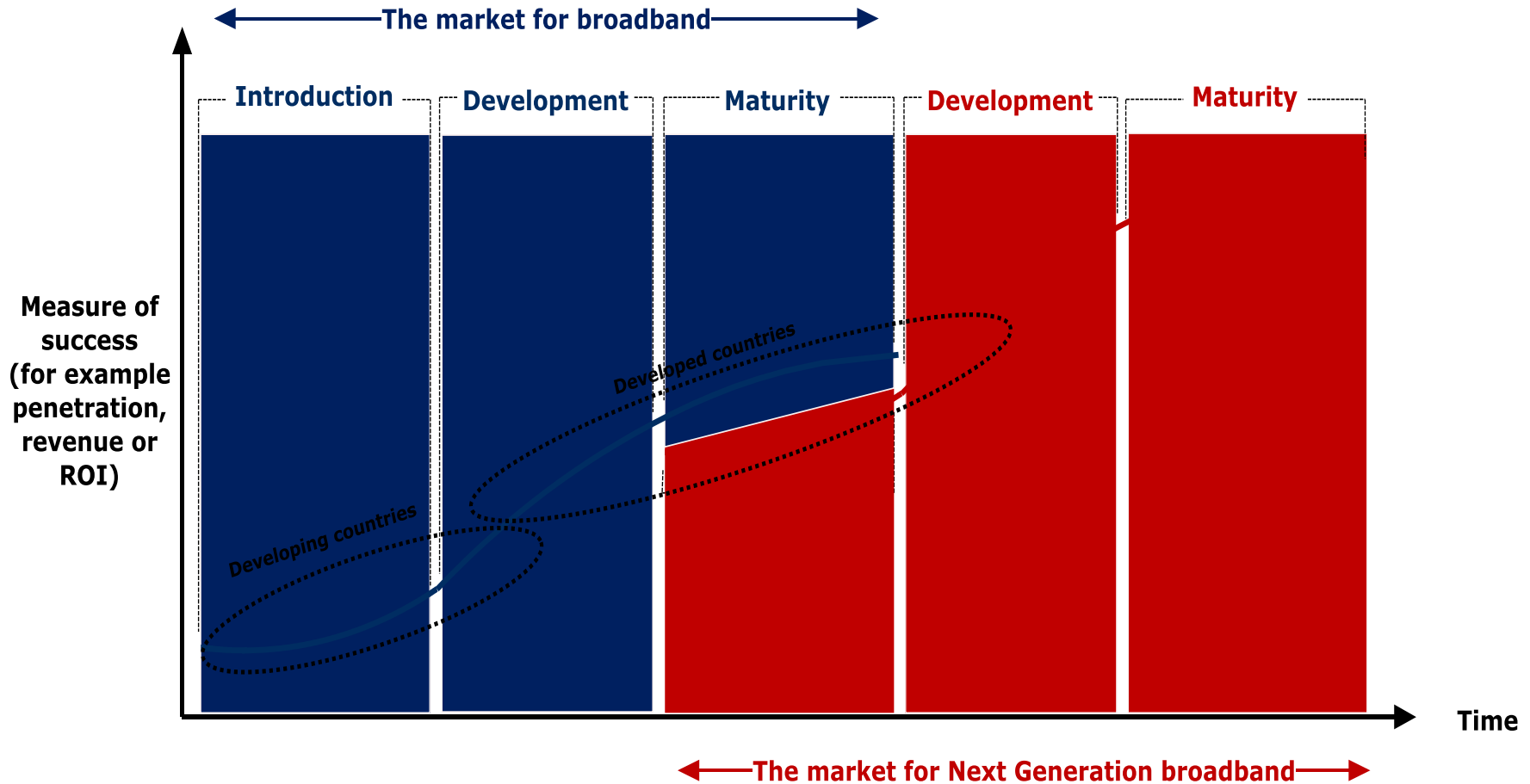
The broadband diffusion curve

Three main stages can be observed:

- ❖ **Stage I: Introduction stage** - suppliers are focused on investment and network builds. Customers acquired during this stage are regarded as innovators and early adopters.
- ❖ **Stage II: Development stage** - adoption accelerates as the service becomes a mass market product and suppliers determine how to achieve sustainable profits. A critical mass of customers is achieved during this stage, which is the point after which further diffusion becomes self-sustaining.
- ❖ **Stage III: Maturity stage** - the rate of adoption slows and eventually starts to decline. An access gap may remain or become apparent and require incentives or subsidies from government.

In which stage is the broadband market in your country?

The broadband diffusion curve



Adapted from Rogers, E.M. (2003) *Diffusion of innovations*

Narrowband access may be reaching maturity in some countries, Next Generation broadband is still in the initial stages of development across the globe.

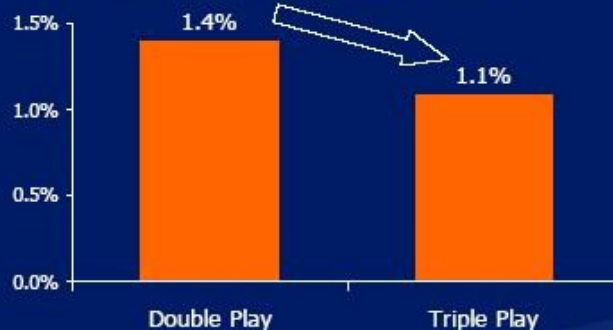
Bundling increases customer loyalty

Bundling Lowers Churn⁽¹⁾

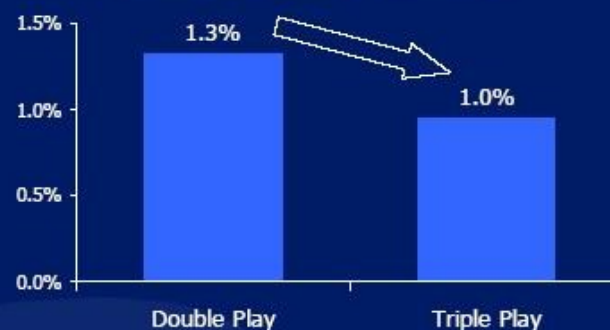


Netherlands

Telephone Churn by Package

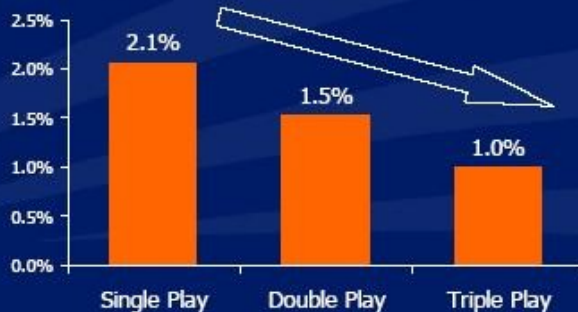


Internet Churn by Package

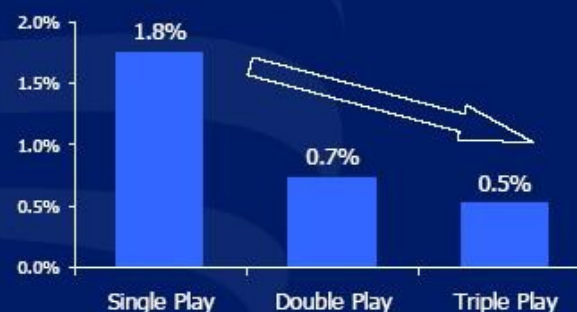


Austria

Telephone Churn by Package



Internet Churn by Package



(1) Churn calculations include reconnects.

Broadband uptake does not just drive broadband revenues, it also drives revenues for bundled services.

Bundling increases customer loyalty (BT example)



And broadband therefore becomes a major driver of all ICT revenues ...

Implications for policy-makers

- ❖ For policy makers there are therefore a number of considerations to be made:
 - ❖ Broadband pricing drives affordability so there is a major temptation to intervene in retail price levels.
 - ❖ But
 - ❖ Broadband take-up is also driven by demand-side factors, particularly disposable income.
 - ❖ Broadband tariffs drive the business case for new infrastructure investments – regulatory intervention that affects the ability of operators to invest could prove counterproductive.
 - ❖ In many countries broadband is still an emerging service, raising the risk of regulatory intervention.
 - ❖ Network convergence drives service convergence – this implies that traditional voice-centric regulation may affect the ability of regulated firms to invest in infrastructure for services that are bundled with voice like broadband.

The above dynamic is particularly relevant for investments in NGA and NGN.

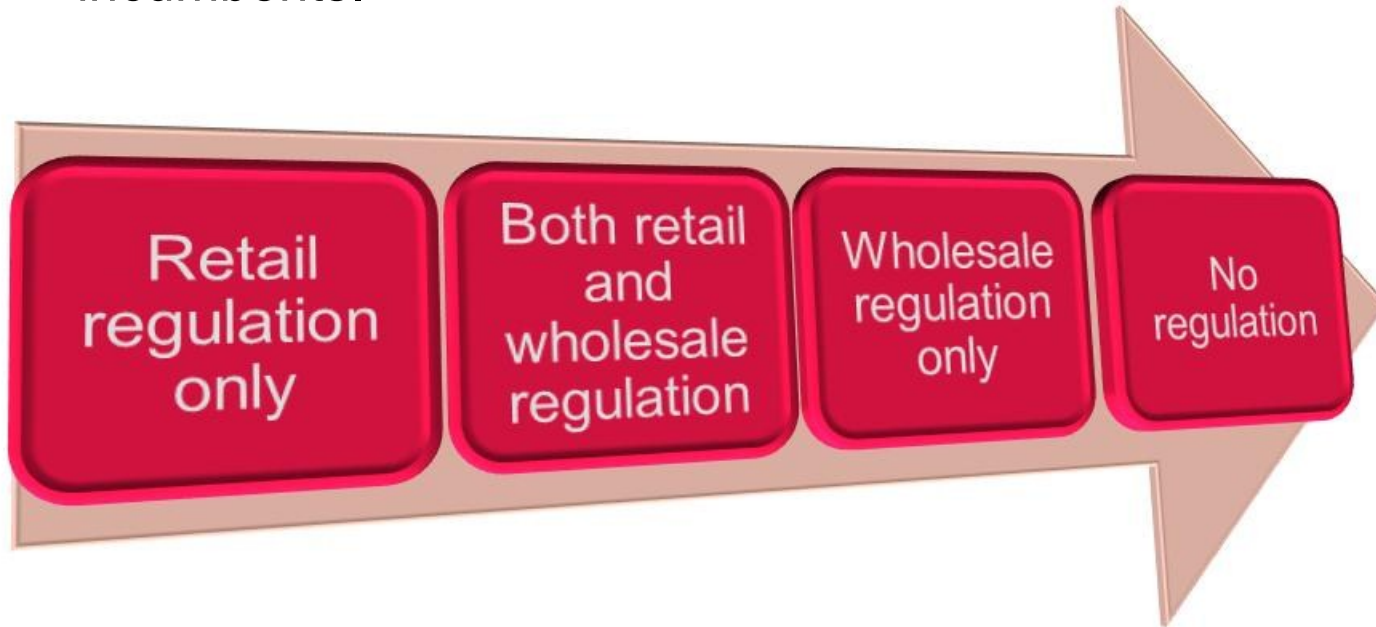


Impact on regulation



The 'classic' regulatory cycle

- ❖ For classic telecommunication services like voice over legacy PSTN networks, regulators broadly followed the below steps on tariff regulation.
- ❖ This cycle coincided with market liberalisation and privatisation of incumbents.



This is not the approach to take on broadband price regulation which is 1) much more complex in nature and 2) requires significant investments.

So evolving market circumstances

	Narrowband markets	Narrowband Broadband	NGN Broadband (>25 MB)
Demand	Predictable and in decline	Predictable and growing	Nascent and unpredictable
Service innovation	Limited (Mature)	Medium	High
Diffusion	Mature	<ul style="list-style-type: none">❖ Mature – advanced markets❖ Emerging – emerging markets	Emerging
Investment	Largely sunk	'Sweating the assets'	Significant – new networks required

This development changes the way price regulation works, a new paradigm needs to be developed.

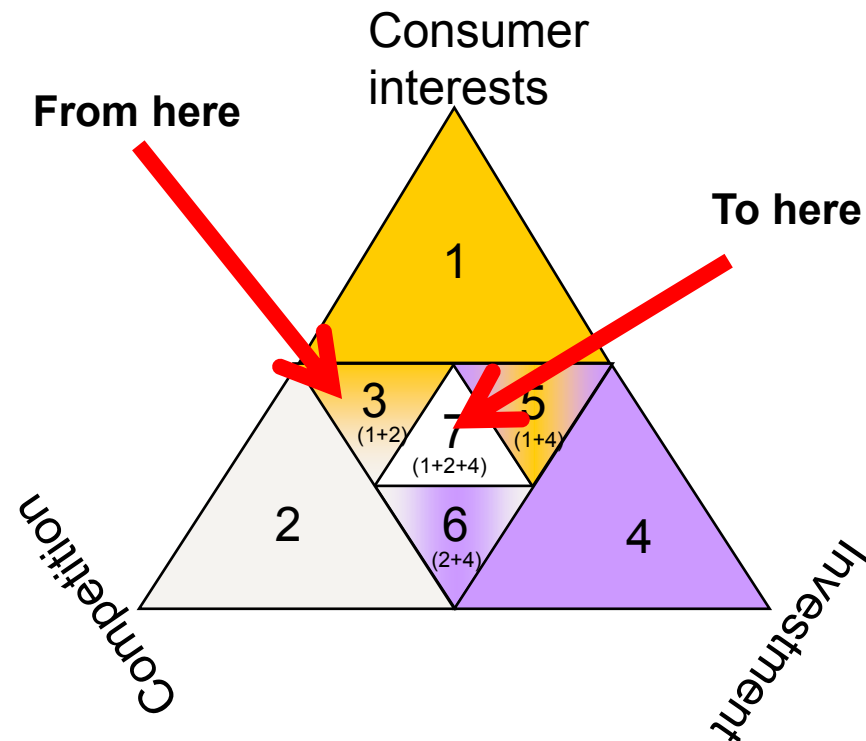
... means evolving price regulation.

	Narrowband markets	Narrowband Broadband	NGN Broadband
Regulatory Pricing Imperative	<ol style="list-style-type: none">1. Maximise competitive market pricing2. Monitor migration3. Lifeline pricing4. Affordability pricing5. Price caps6. Ex post regulation for anti-competitive practices	<ol style="list-style-type: none">1. Maximise competitive market pricing2. Entry level pricing with price caps3. Regulate for access to wholesale level services4. Monitor market5. Ex post regulation for anti-competitive practices	<ol style="list-style-type: none">1. Maximise competitive market pricing2. Monitoring and forbearance3. Promote commercial access to wholesale services4. Ex post regulation for anti-competitive practices

This development changes the way price regulation works, a new paradigm needs to be developed.

Shifting policy objectives can be observed

- ❖ Price regulation of legacy services was aimed at protecting consumer interests (3) and developing competition.
- ❖ Price regulation of new broadband services will require a more balanced approach to ensure sufficient investments are attracted to meet other policy goals, for example on universal access.
- ❖ These often conflicting policy targets will need to be redefined and re-aligned.



Source: Incyte

The balance of regulatory intervention is shifting in favour of developing incentives to invest.

Newly emerging markets should not be subject to inappropriate obligations, even if there is a first mover advantage ... Newly emerging markets are considered to comprise products or services, where, due to their novelty, it is very difficult to predict demand conditions or market entry and supply conditions, and consequently difficult to [assess whether the market warrants ex ante regulation]. The purpose of not subjecting newly emerging markets to inappropriate obligations is to promote innovation...

Source: EU Recommendation on markets susceptible to ex ante regulation

Are broadband markets mature?

- ❖ In many countries broadband has now reached reasonably high levels of penetration.
- ❖ In some countries significant investments have been made into NGA (Next Generation Access) networks characterised by very high access speeds to end-users.
- ❖ However it is important to distinguish between access networks and the services and applications provided over these networks.
- ❖ The latter is showing significant future growth potential with new business models emerging.
- ❖ It is of great importance that these new business models are free to develop without regulatory forces.
- ❖ While broadband is nascent a light-touch regulatory environment is likely to ensure consumer interests are protected in the long run.

Regulatory forbearance should be the starting point when dealing with broadband markets.



How to regulate in this new environment



Regulatory principles

- ❖ **Principle 1:** Retail and wholesale prices are best determined by market forces provided that those markets are effectively competitive.
- ❖ **Principle 2:** Regulation of wholesale markets to facilitate retail regulation should take precedence over retail tariff regulation
- ❖ **Principle 3:** Where retail regulation is justified it should be limited to entry-level service pricing and access.
- ❖ **Principle 4:** The only broadband application that regulation should be concerned with in a broadband environment is voice and that should be for a limited period of migration to broadband platforms on a transitional basis.
- ❖ **Principle 5:** Regulatory price-setting methodologies for wholesale access to broadband facilities should take into account :
 - ❖ Policy objectives
 - ❖ If the supplier of wholesale facilities access is vertically integrated

It is important to ensure predictability and transparency on price regulation through the articulation of clear and consistent principles.

Regulatory principles

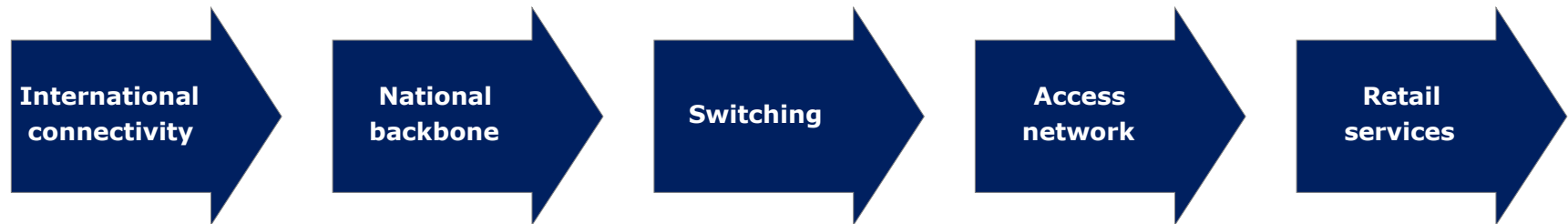
- ❖ **Principle 6:** Regulatory price-setting methodologies for wholesale access to broadband applications (including bitstream access) should take into account the following factors:
 - ❖ The difficulties in establishing reliable and useful costs for such services, either through cost modelling or benchmarking;
 - ❖ The difficulties in establishing suitable discount factors or estimates of avoidable costs when applying techniques based on avoidable retail costs to determine wholesale price levels; and
 - ❖ Whether the outcome should be subject to sunset provisions and be permitted only to ensure the early traction of new competitive entrants in the retail broadband market.
- ❖ **Principle 7:** Regulators should avoid regulating the terms and conditions, including prices, of higher speed broadband access and application services. If regulation is necessary, it is best applied as ex post competition regulation directed at anti-competitive behaviour.

These principles are presented in the ITU Report on broadband pricing, available at www.itu.int/ITU-D/treg/broadband/index.html.

The broadband supply chain

- ❖ **International connectivity** - At the top of the chain is the international connectivity that provides the link to the rest of the world.
- ❖ **National backbone** - The second link in the supply chain is the national backbone networks that carry traffic between the landing points for the international connectivity and other points within the country. These backbone networks will typically consist of fibre-optic cables, microwave links and satellite links.
- ❖ **Switching** - The third link is the “intelligence” contained in the networks that ensures data is routed correctly.

Generic broadband supply chain

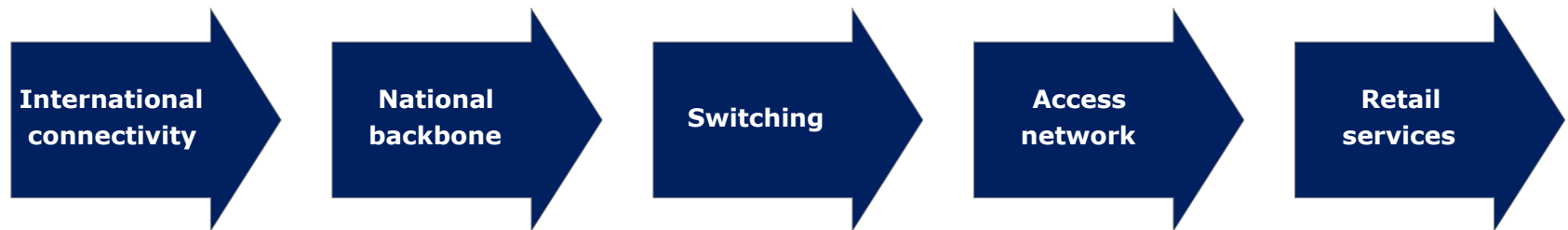


Different competitive circumstances will exist in the various links of this supply chain.

The broadband supply chain

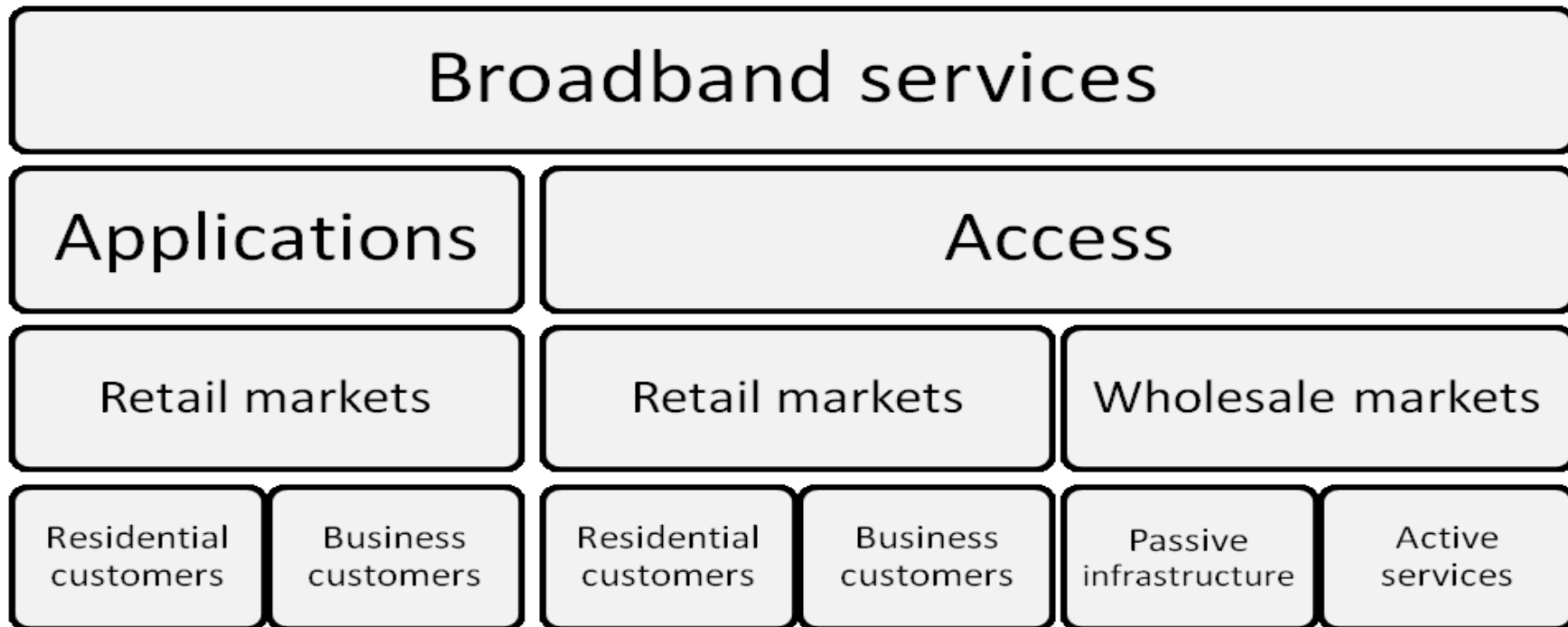
- ❖ **Access network** - The fourth link is the access network, which may be xDSL over a copper local loop, some form of cable or various types of wireless (including mobile) technologies.
- ❖ **Retail services** - The final link in the supply chain is the various retail activities—such as sales and marketing, tariffing and billing and customer care—through which service providers serve customers.

Generic broadband supply chain



Different competitive circumstances will exist in the various links of this supply chain.

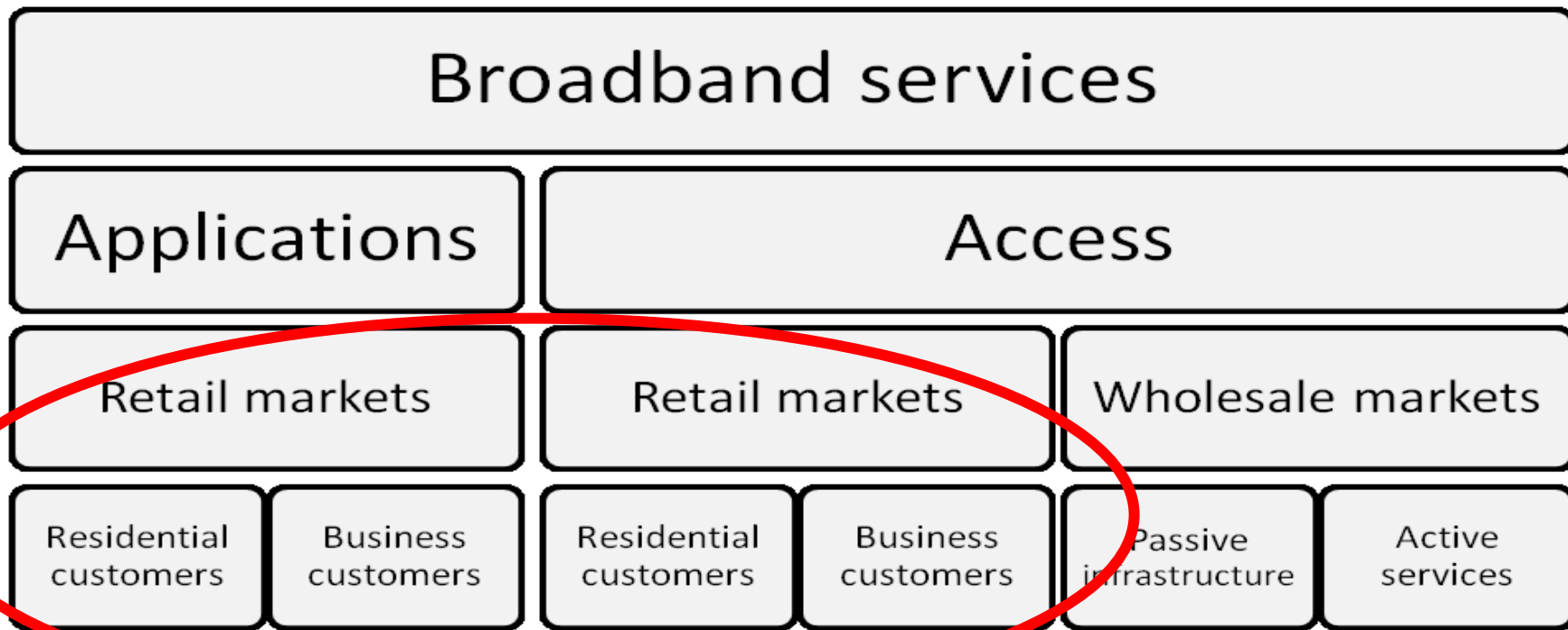
The broadband supply chain



Source: Incyte

Broadband markets have two main dimensions – 1) application and access and 2) retail and wholesale.

Where to regulate



We would argue that the vast majority of retail services do not qualify for regulatory intervention

Retail price regulation for broadband services should not be considered in most circumstances.

The problem with retail regulation

- Firms enter markets where profit opportunities can be identified.
- New competitors will therefore be dissuaded from entering the market if they perceive their potential retail profits being diminished by the regulator.
- The regulator may easily under-estimate the risks borne by the pioneering broadband infrastructure provider.
- The regulator is sharing economic welfare gains with service and applications providers and with end-users before those gains have materialised.
- The regulator's intervention will thus dampen competition, the absence of which was the reason for the regulator's intervention in the first place. The continuing lack of competition thus reinforces the perceived need for the regulator to interfere with retail prices, thereby perpetuating the problem.

Regulatory intervention on the retail side may be counter-productive and produce the opposite of what is intended.

The problem with retail regulation

- We advocate minimising broadband retail price regulation where possible.
- Possible exceptions may be made for entry-level broadband products aimed at ensuring universal access to broadband services.
- The emergence of broadband as a platform to provide voice services also increasingly requires the removal of legacy retail price regulation of narrowband voice services.

A continuation of retail price regulation of narrowband voice, in a converging environment would risk stifling investments in new broadband infrastructure.

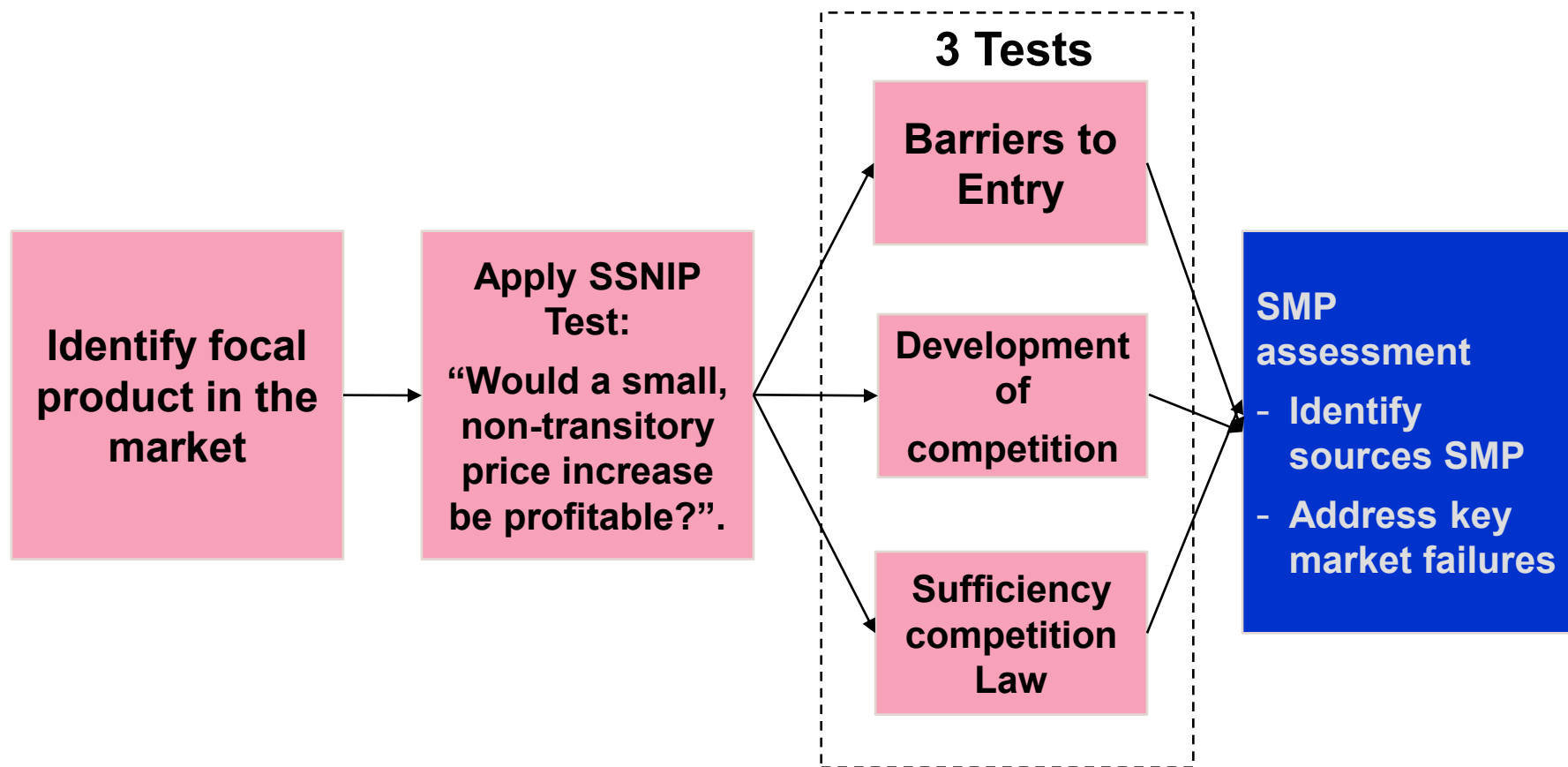
Regulate as far up the supply chain as possible

“In a competitive market, the pricing of services on the basis of the commercial judgements of individual companies could be expected to deliver cost-reflective pricing. However, where competition cannot be expected to provide effective pricing constraints, ex ante regulation is desirable to prevent excessive pricing. Such intervention should also have as its objective the aim of moving the market towards a position where effective competition is realised. Where the competition problem arises at an upstream stage in the production chain, it is likely to be appropriate to regulate the pricing of wholesale inputs, in order to allow effective competition to develop in downstream markets, rather than control downstream prices themselves.”

Source: Ofcom, *Review of the wholesale local access market*, paragraphs 5.59–5.60

Regulatory intervention at wholesale level, if effective, is likely to lead to less disruption than intervention at retail level.

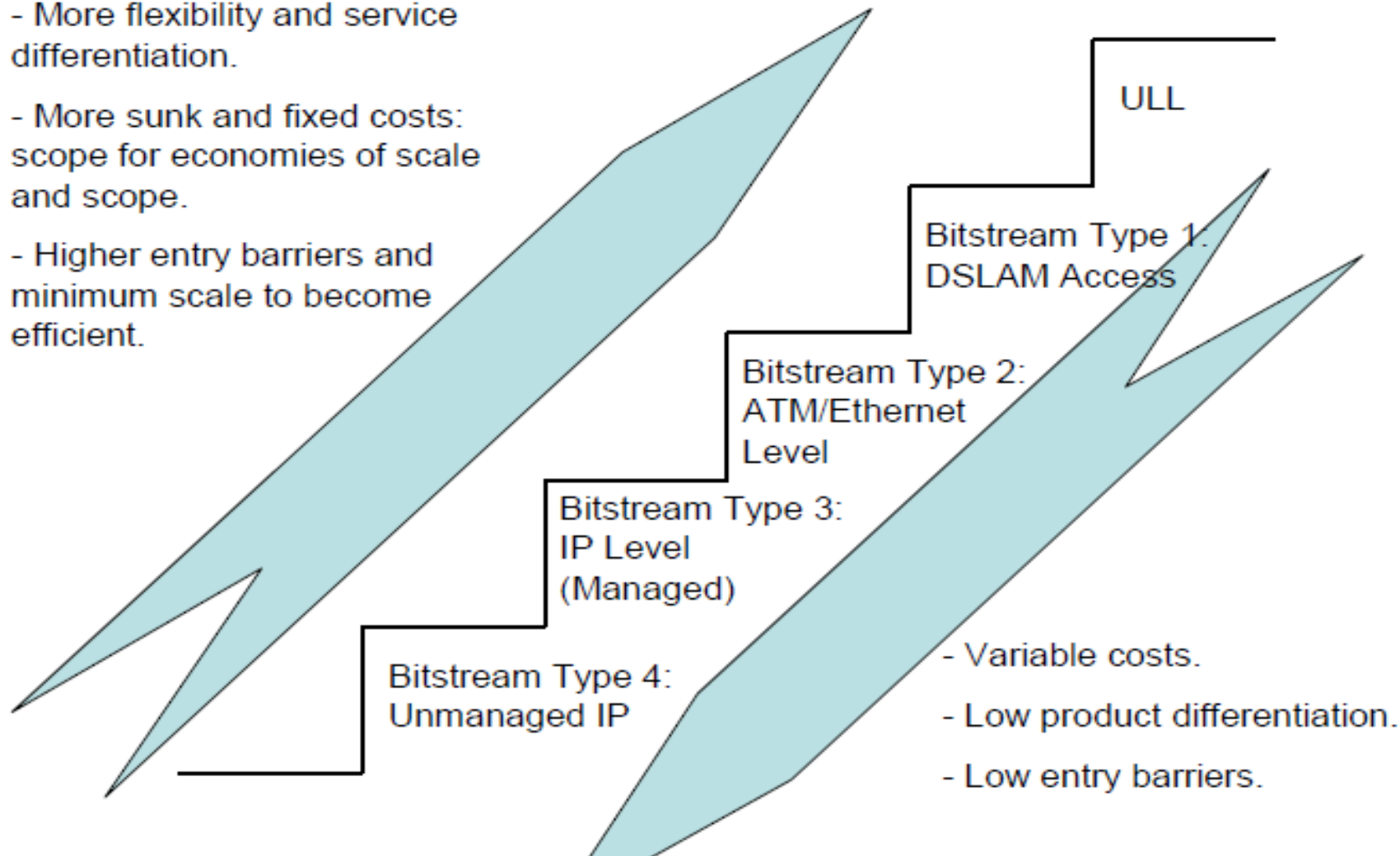
The focus is on wholesale price regulation



The EC framework provides a solid foundation for the assessment of markets that may require ex ante regulation to protect the interest of consumers.

Applying the framework: The ladder of investment

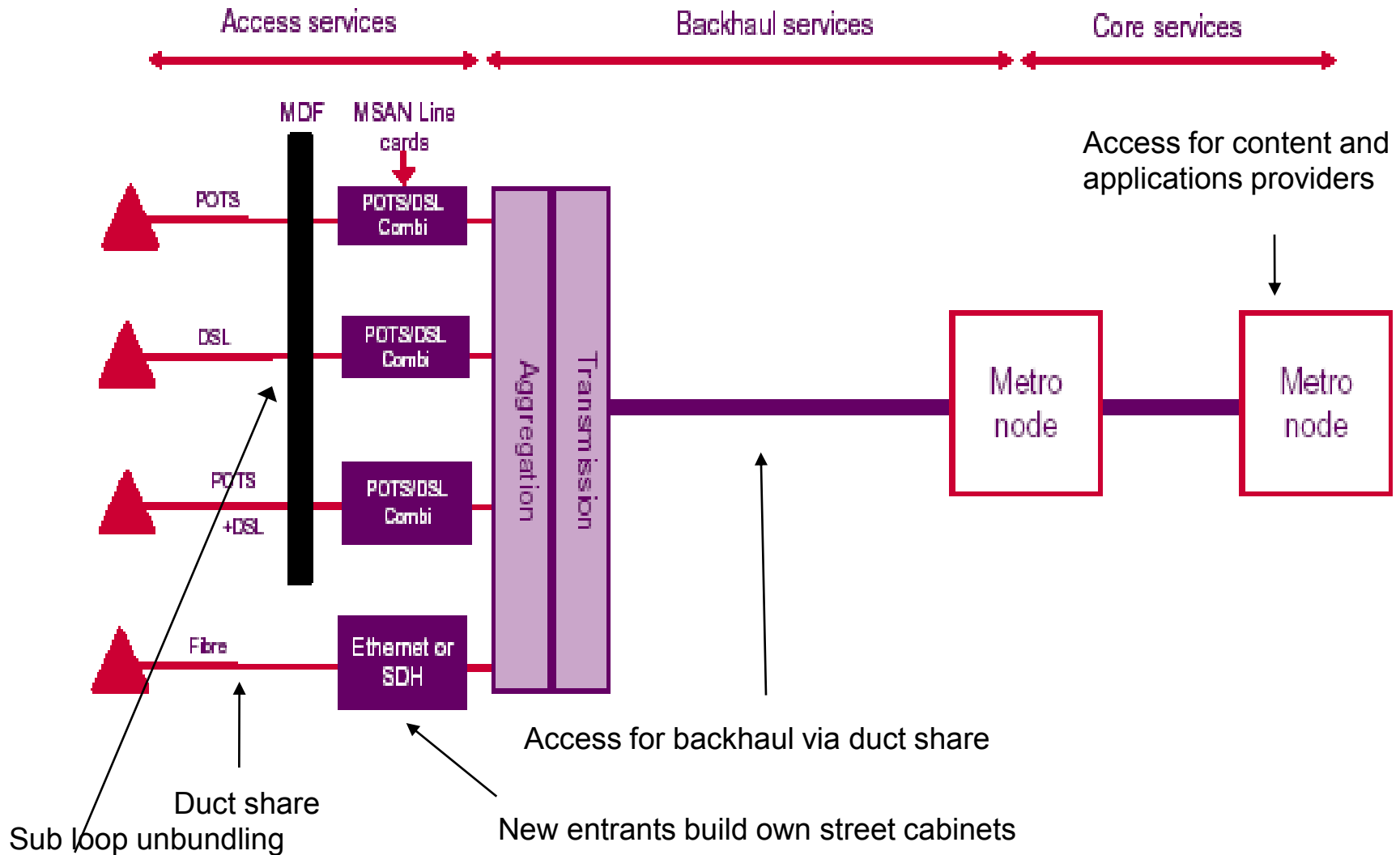
- More flexibility and service differentiation.
- More sunk and fixed costs: scope for economies of scale and scope.
- Higher entry barriers and minimum scale to become efficient.



- Variable costs.
- Low product differentiation.
- Low entry barriers.

The key challenge is to set the prices for the various wholesale services in such a way that 1) efficient competition is stimulated, 2) operators move up the ladder over time

NGN wholesale products – what are the options?



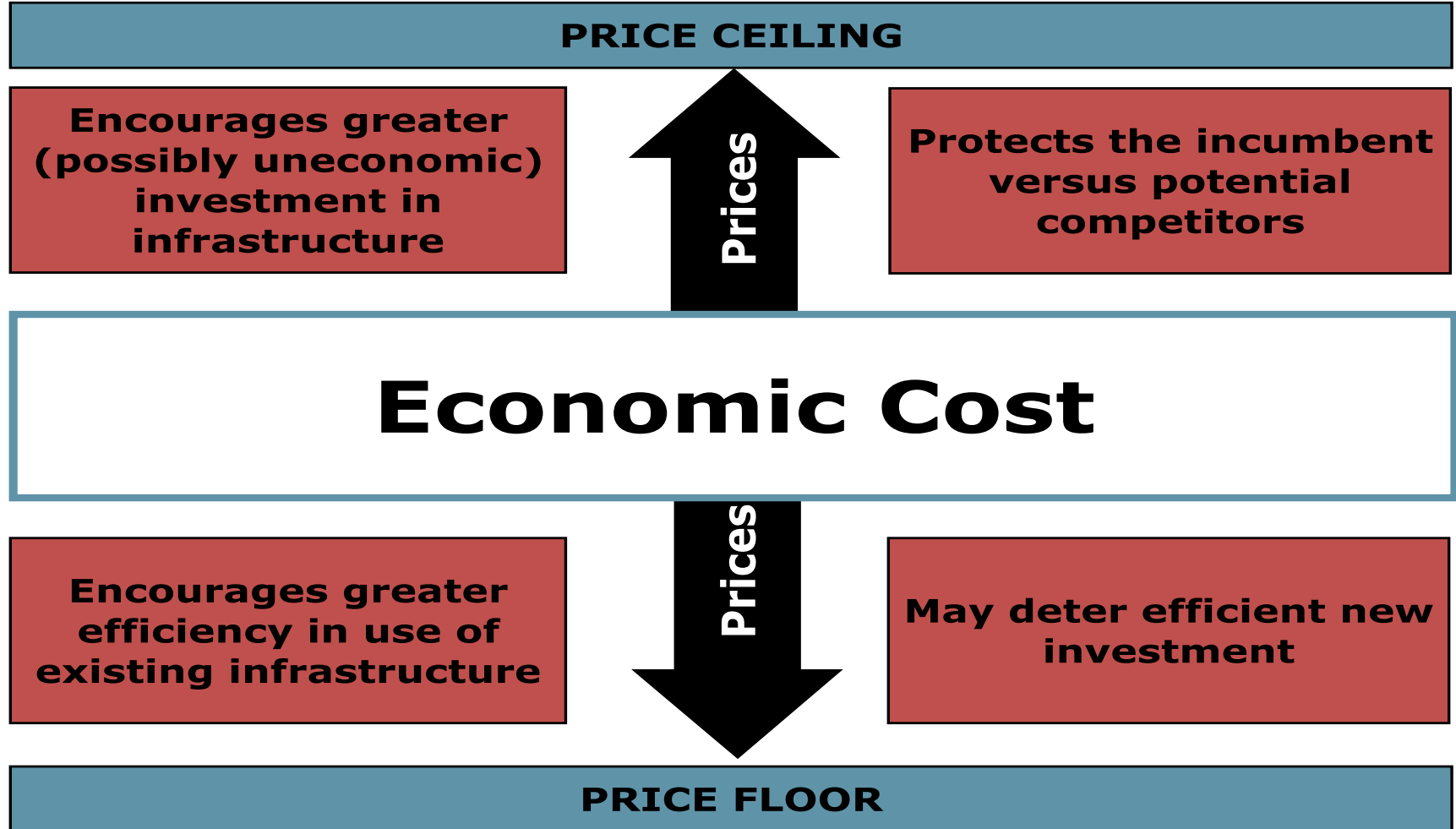
In an NGN environment most lasting economic bottlenecks relate to the access network.

Pricing issues facing policy makers

- ❖ In order for competition to develop freely, it is important to address long-term economic bottlenecks.
- ❖ Abuses by owners of such bottlenecks may include:
 - ❖ Price discrimination – providing access at different terms and conditions to access seekers in similar circumstances
 - ❖ Excessive pricing – deterring access by setting tariffs significantly above costs (effectively a ‘refusal to deal’)
 - ❖ Margin squeezes – vertically integrated companies may set prices for wholesale services in a way that allows insufficient margin to compete.

In ex ante regulation the aim is to prevent such abuses from occurring altogether. This is where price regulation comes in.

Price ceilings and floors



The level of wholesale broadband prices can influence infrastructure investment and competitive entry.

Tariff setting in different parts of the supply chain

- ❖ Key questions to ask:
 - ❖ Does the service relate to access to passive or active infrastructure?
 - ❖ Is access to this infrastructure prospectively competitive?
 - ❖ What are the lasting bottlenecks to the development of sustainable competition?

- ❖ Different pricing approaches may result in different parts of the supply chain:
 - ❖ Lasting non-replicable bottlenecks may be priced based on cost-plus with suitable compensation for return on capital employed – for example by using LRIC.
 - ❖ Services in prospectively competitive markets may be priced based on retail minus or more generous cost-plus approaches.
 - ❖ Sun-set clauses may be introduced to ensure access seekers to not 'game' the system by relying on access at low tariffs without taking investment risk of their own.

We will discuss cost-plus approaches in the second session.

Alternatives to cost-plus: retail minus

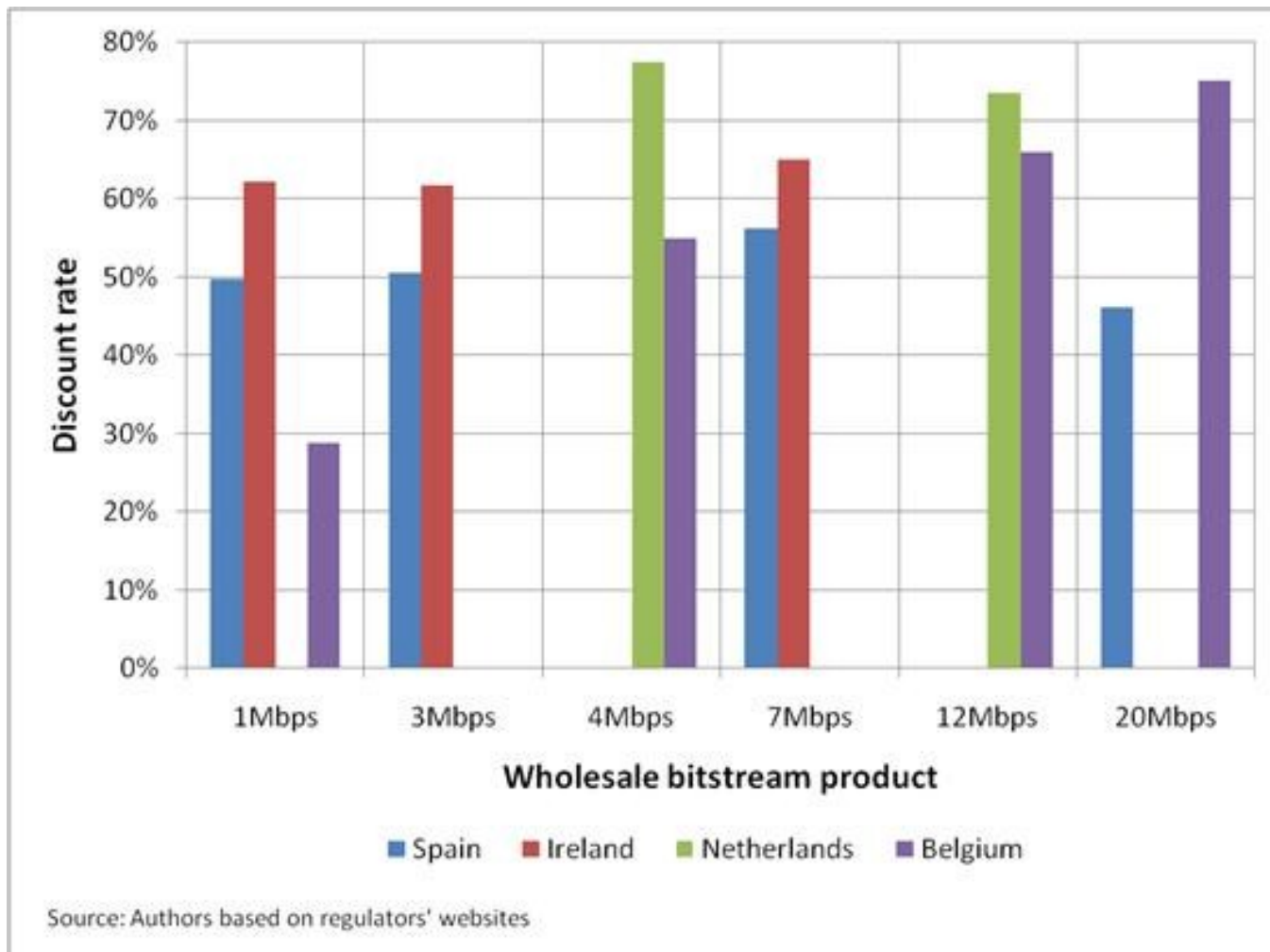


Source: BEREC

- ❖ Retail-minus provides a good alternative to cost-plus for services that are prospectively competitive.
- ❖ This approach is typically taken to avoid margin squeeze in markets that have not yet reached maturity
- ❖ Retail-minus on, for example, bitstream services, would allow the provider of the service more flexibility on retail pricing.

The key challenge is to set the prices for the various wholesale services in such a way that 1) efficient competition is stimulated, 2) operators move up the ladder over time

Alternatives to cost-plus: retail minus



Setting the discount of a retail-minus is more straightforward than developing a cost model, though results may vary significantly between countries.

Non-tariff considerations

- ❖ Wholesale services need to be:
 - ❖ Fit-for-purpose
 - ❖ Provided on non-discriminatory terms, certainly where provided by vertically integrated operators.
 - ❖ In many countries government are considering making available tax-funding to ensure the roll-out of and universal access to NGN/NGA network
 - ❖ The combination of these two factors (and sometimes only one) has fuelled interest in separation of network and retail activities to ensure non-discrimination in the provision of wholesale services.

Wholesale tariff regulation is only successful when implemented with other measures to ensure a level playing field between operators.

Ensuring non-discrimination

Limited complexity/low cost

Impact/Change required

**Accounting
Separation**

Reference Offers – setting out terms and conditions for access to regulated wholesale services.

Separated financial accounts - to demonstrate non-discrimination and compliance with pricing obligations (for example no margin squeeze).

**Functional
separation**

Identical underlying processes for service assurance and service delivery to the retail business and alternative operators.

Remuneration of management linked to non-discrimination performance levels.

Governance/legal structure aligned with equivalence.

**Structural
separation**

Ownership structure aligned with equivalence principles.

High complexity/high cost

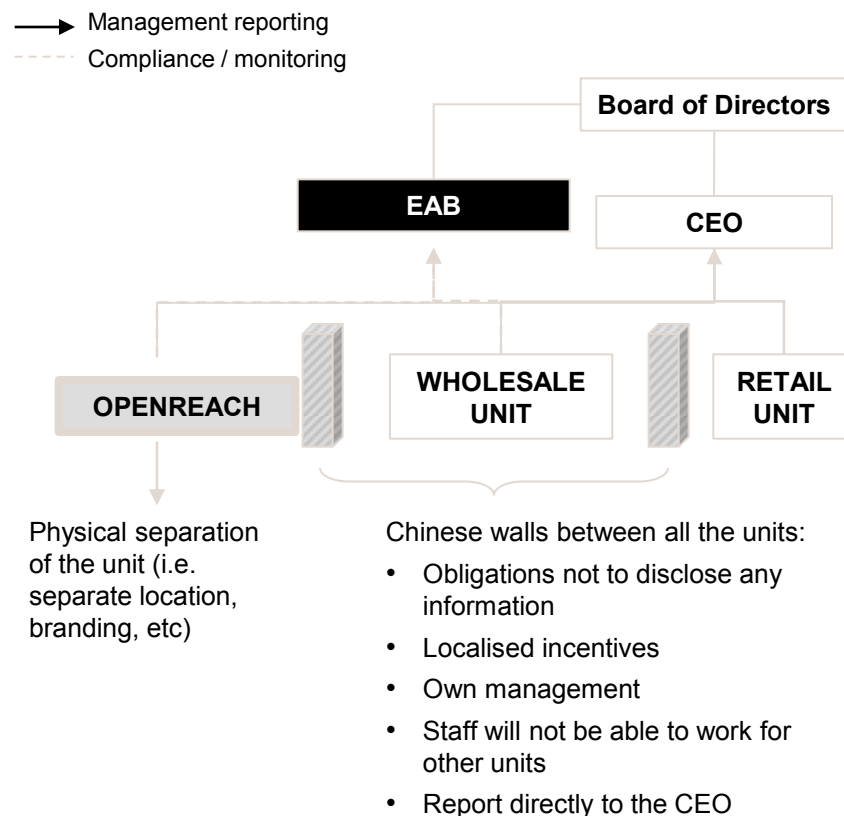
Wholesale tariff regulation is only successful when implemented with other measures to ensure a level playing field between operators.

Ensuring non-discrimination

BT's undertakings:

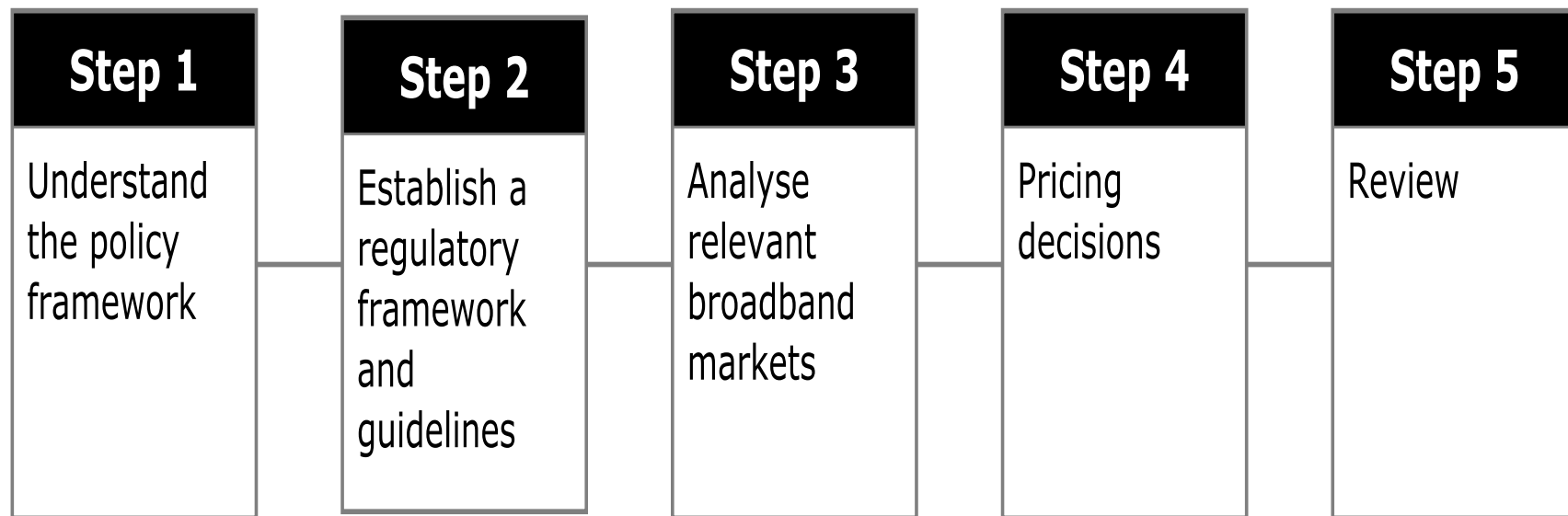
- ❖ To establish an operationally separated access services divisions (Openreach), located on separate premises;
- ❖ To ensure full equivalence for key access products.
- ❖ To establish an equality of access board (EAB) with a majority of independent members
- ❖ Extensive consultation on the development of its next generation networks.

BT's form of separation



And so retail price regulation happens in the context of a wider and comprehensive review of approach to wholesale regulation.

Designing a pricing policy



- ❖ The above steps provide a transparent and structured approach to the development of regulatory policy
- ❖ This is a dynamic process which needs frequent updating in an environment characterised by technology change and service innovation.

Read more about the design of a solid pricing policy on:
www.itu.int/ITU-D/treg/broadband/index.html.



Designing a pricing policy



Designing a pricing policy

- ❖ **Step 1: Understanding the policy framework** - It is essential that the regulator fully understands the policy framework outlined in enabling legislation to ensure that its actions are consistent with the government's overarching policy objectives.
- ❖ **Step 2: Establish a regulatory framework and guidelines** - Based on the overall policy framework, the regulator needs to prepare the rules that will apply should it be required to intervene on broadband pricing issues. The purpose here is to establish the regulatory goals (consistent with the overarching policy objectives); the circumstances under which the regulator will intervene; and the principles that will be applied if it intervenes with the aim of providing predictability on regulatory intervention.

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Designing a pricing policy

- ❖ **Step 3: Analyse relevant broadband markets** - The market analysis will have four parts, namely:
 - ❖ Defining telecommunications network services markets
 - ❖ Determining which markets might be susceptible to ex ante regulation for dominance (a filtering process)
 - ❖ Determining which operators are dominant in which relevant markets
 - ❖ Determining what remedies to apply, bearing in mind the need for remedies to be reasonable and proportionate, and to be the least intrusive possible while still being adequate and effective.
- ❖ **Step 4: Pricing Decisions** - If as a result of a market analysis process the regulator proposes ex ante remedies that involve the setting or approving of prices for broadband access and application services, the regulator should ensure that the prices are cost-related and are determined in a manner consistent with the methodologies set out in the regulatory framework and guidelines.

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Designing a pricing policy

- ❖ **Step 5: Review.** The ICT sector is now in a period of major change driven by the changes in the underlying technologies that are being commercially deployed – most particularly cellular mobile and IP packet switching technologies – resulting in massive and rapid changes in investment, service deployment, convergence at all levels, cost and cost relationships, market structures, market relationships and consumer demands and expectations. With technology and services evolving rapidly, frequent reviews of tariff policies are needed.

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