

EXPERT LEVEL TRAINING ON TELECOM NETWORK COST MODELLING FOR THE HIPSSA REGIONS

Banjul

19-23 August, 2013

David Rogerson, ITU Expert



Session 5 – Cost standards and their application



Agenda

Aims and objectives for this session



Identifying types of cost



How much does a pint of milk cost?

List as many types of cost as you can think of that might affect the cost (or cost-based price) of milk



Examples of cost categories

Production costs:

- Land, cows, feed, fertilisers, labour

Distribution costs:

- Transport, packaging, refrigeration, logistics

Processing costs:

- Equipment and labour for milking, pasteurising, skimming

Retail costs:

- Shops, staffing, marketing, branding, billing



Four key types of cost

Fixed costs

- Cost which must be incurred if any non-zero quantity is supplied

Variable costs

- Cost whose magnitude changes when output changes

Capital costs

- Assets purchased for use in more than one year

Operating expenditure

- Costs consumed entirely within the current year

Categorisation of costs

Fill in examples of each cost type relevant to the cost of milk

	Fixed capital costs	Variable capital costs	Fixed operating expenditure	Variable operating expenditure
Production				
Processing				
Distribution				
Retail				



Categorisation of costs

Possible categorisation of the costs of milk supply

	Fixed capital costs	Variable capital costs	Fixed operating expenditure	Variable operating expenditure
Production	Land	Cows	Fertilisers	Labour
Processing	Buildings	Equipment	Rates	Labour
Distribution	Logistics	Vehicles	Insurance	Staff and fuel
Retail	Shop	Display shelving	Billing	Marketing

The extent to which costs are fixed or variable depends on the time horizon. Economists define the long run as the shortest period of time necessary for all the fixed costs to become variable.



How each cost type is treated in cost models

Fixed costs

- Excluded from marginal and incremental cost calculations

Variable costs

- Part of all cost standards, but may be treated differently

Capital costs

- Need to be annualised for pricing: different approaches apply

Operating expenditure

- May be direct or joint/common. The latter may be excluded depending on the mark-up regime.



Understanding cost standards



Four key cost standards

Fully Allocated Costs (FAC)

- An accounting method to distribute all costs among a firm's various products and services

Long Run Incremental Costs (LRIC)

- An accounting method to calculate the cost caused by the provisioning additional units (the “increment”) or by an extension of the service portfolio

Stand Alone Costs

- The costs of supply assuming a firm only provides one service

Marginal Costs

- Cost caused by the provisioning of one additional unit of service



Fully Allocated Costs (FAC)

- All costs have to be taken into account and allocated to the products and services of a company
- The concept is neutral with regard to valuation principles, depreciation and cost of capital calculation methods
- The art of fully allocated costs is to identify direct cost, joint (service family) cost and common cost and to find ways to properly allocate the latter two categories to services.
- Can be used with either **historic costs** (actual costs incurred) or **current costs** (revalue assets at their replacement costs)

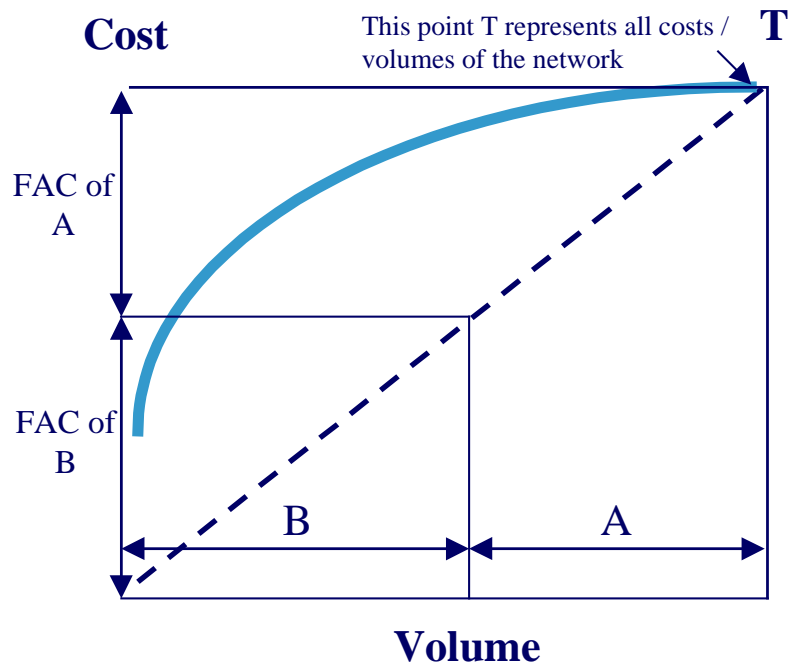


Long Run Incremental Costs (LRIC)

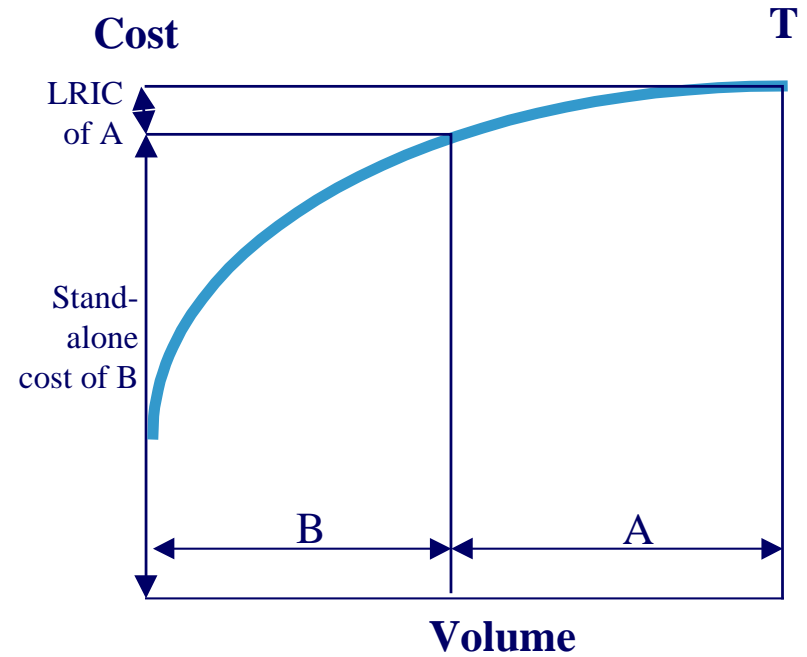
- Estimates the incremental cost of providing the service under consideration
- Defined as the total cost when the service is provided less the cost when the service is not provided
- By measuring over the long run, infrastructure investment is variable rather than fixed and can be matched to capacity
- If common costs are to be recovered, then a mark-up is required
- LRIC typically uses current or **forward looking costs** (cost of an efficient firm using new infrastructure)



FAC v LRIC: a two product example



Fully Allocated Costs



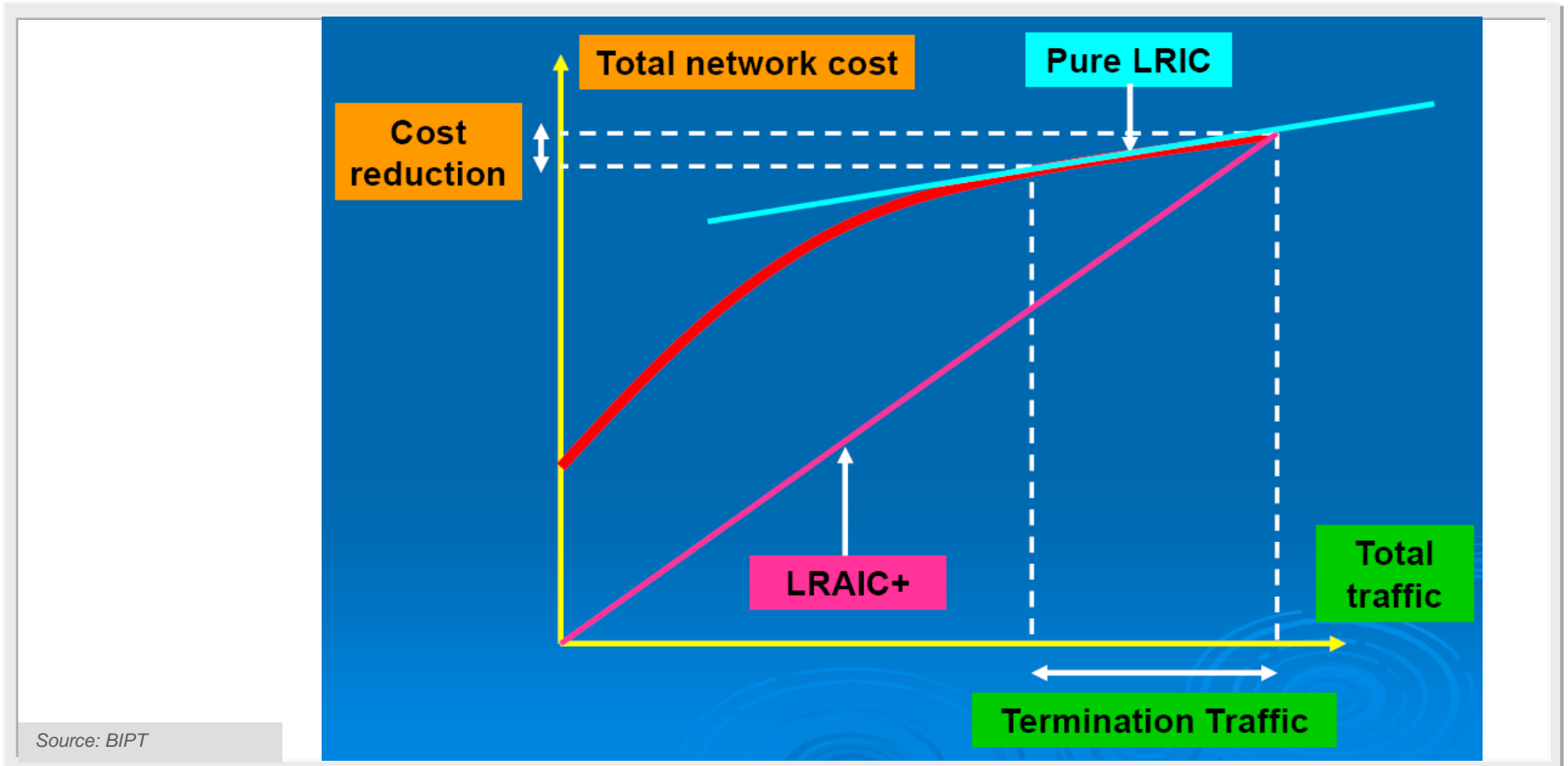
Long Run Incremental Costs

LRIC variations

- TSLRIC
 - Total Service LRIC
- LRAIC
 - Average LRIC
- LRAIC+
 - LRAIC plus mark-up for joint and common costs
- Pure LRIC
 - LRIC of a specific service (usually call termination)



The difference between Pure LRIC and LRAIC+

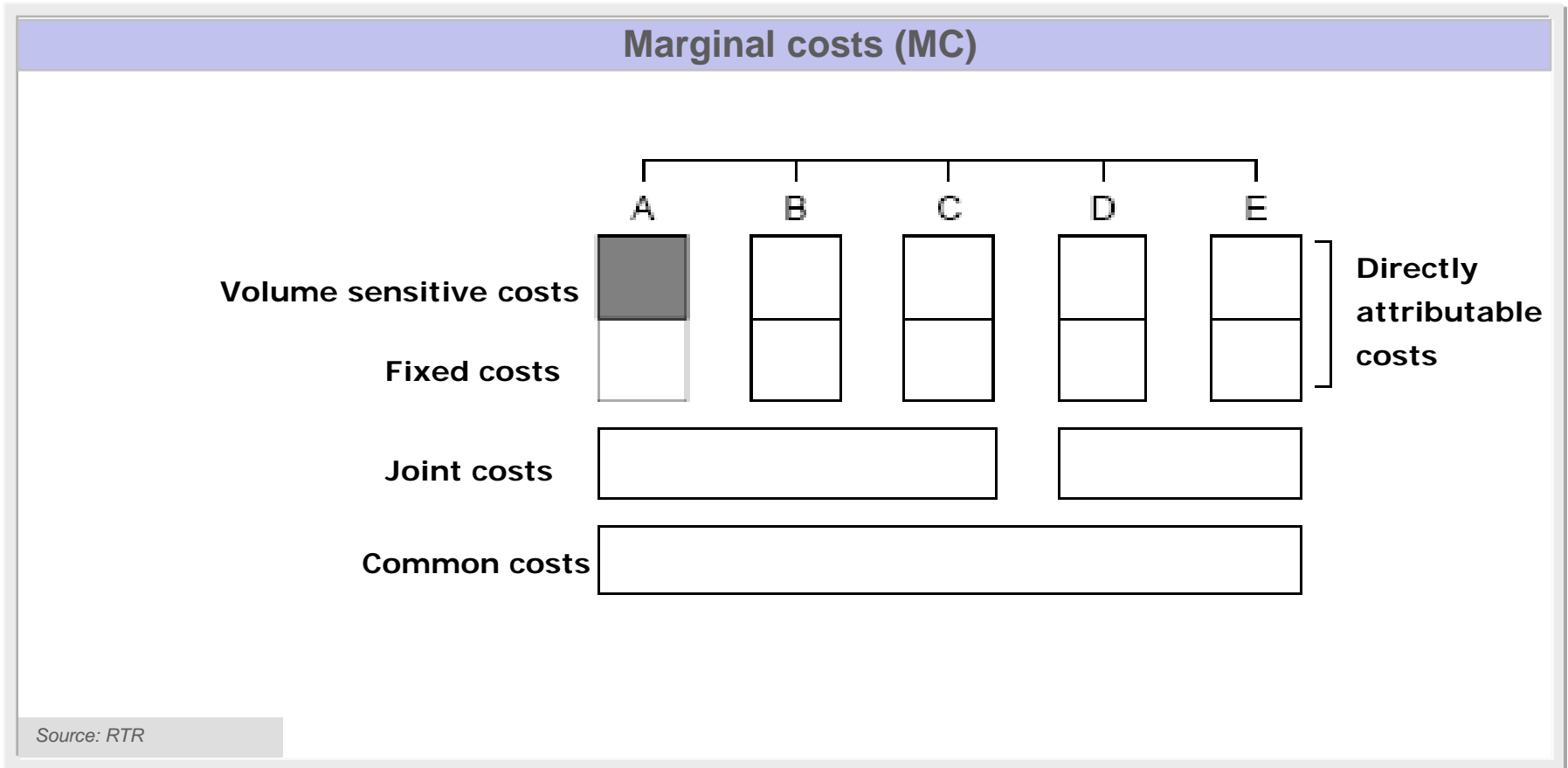


More costing definitions

- **Direct cost or directly attributable cost**
 - costs are incurred as a direct result of the provision of a particular service.
 - can be fixed or variable.
- **Joint or shared cost (indirectly attributable cost)**
 - The cost of inputs that contribute to the production of two (or more) different increments.
 - For example the costs of mobile towers contribute to 2G and 3G services (and maybe others)
 - Costs can be allocated on the basis of identifiable cost drivers (e.g. tower space)
- **Common cost**
 - inputs necessary to produce several services, which cannot be directly assigned to specific services.

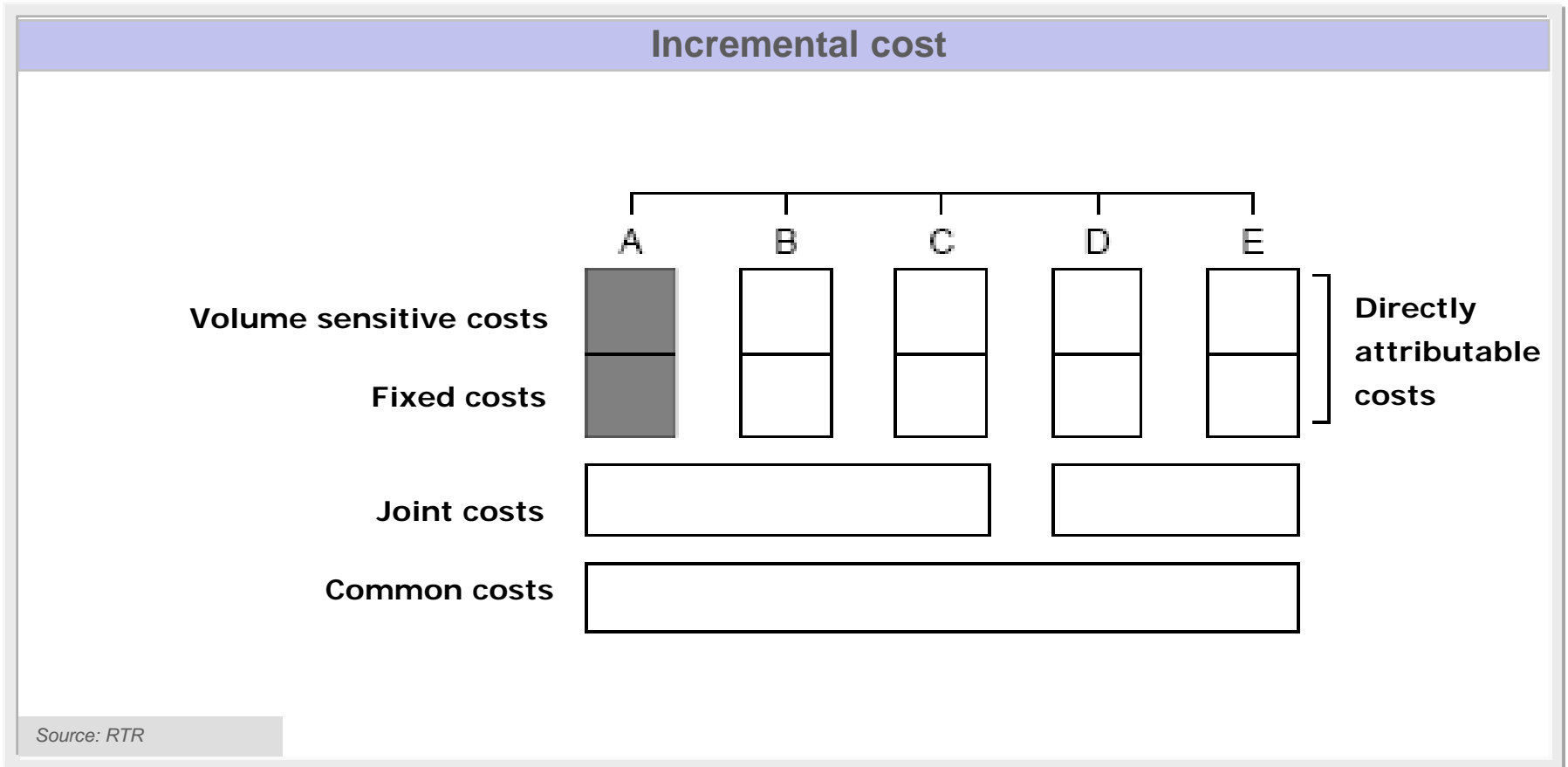


Cost categories for Pure LRIC or Marginal Costs



In Pure LRIC the increment is a full service (e.g. terminating calls), whereas in Marginal Costs it is the smallest possible unit (e.g. a single call)

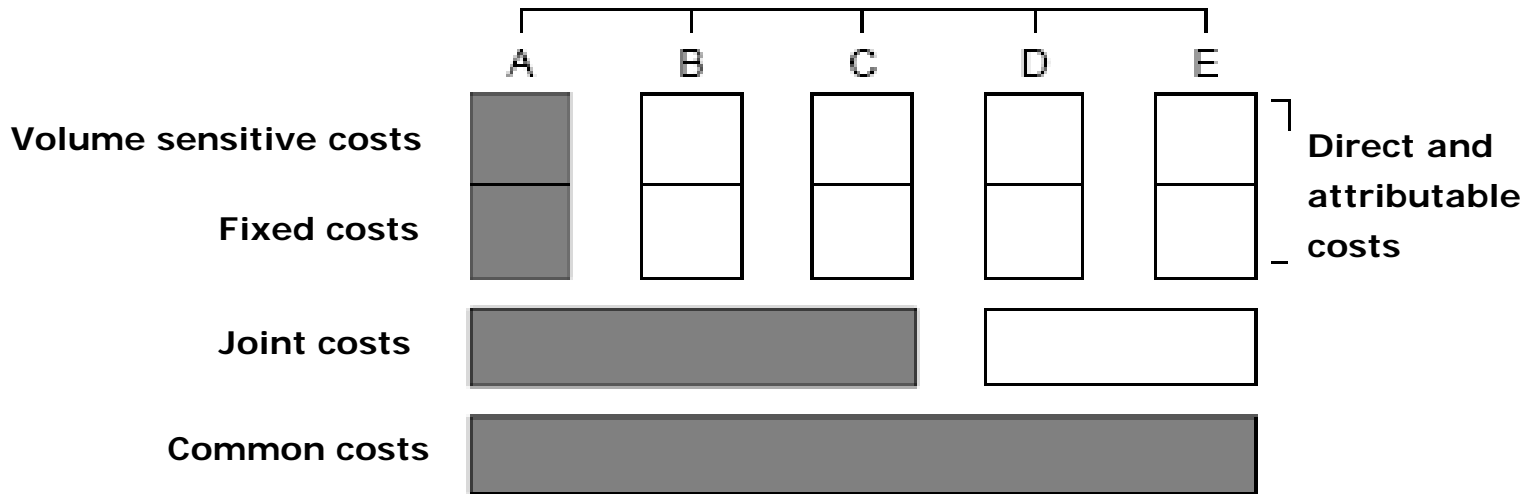
Cost categories for Incremental Costs



Source: RTR

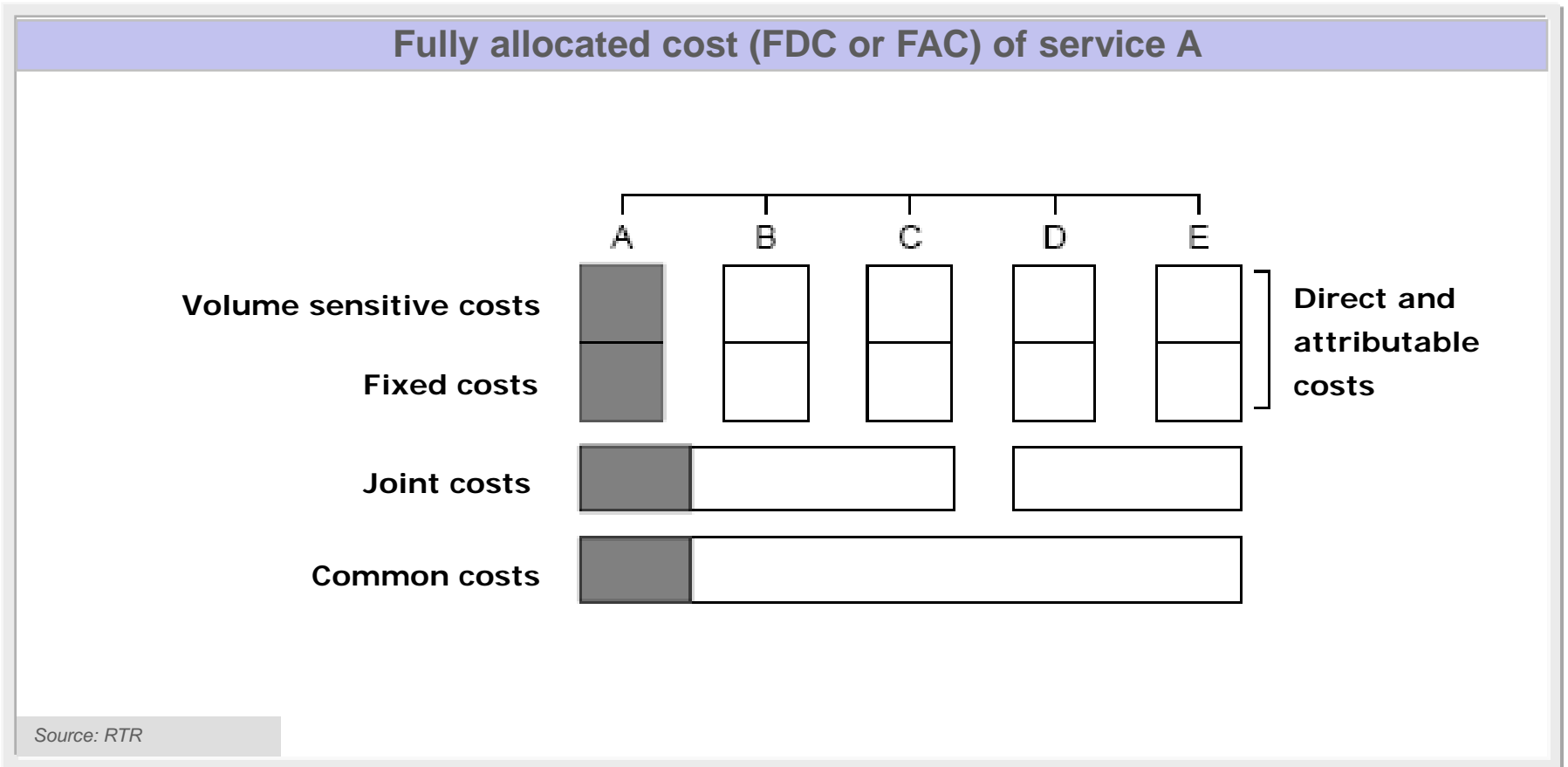
Cost categories for Stand Alone Costs

Stand alone costs (SAC)



Source: RTR

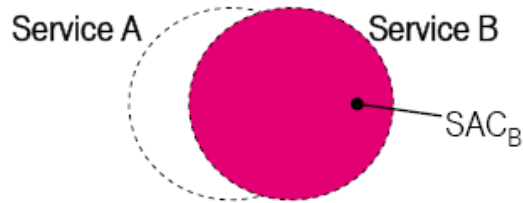
Cost categories for Fully Allocated Costs



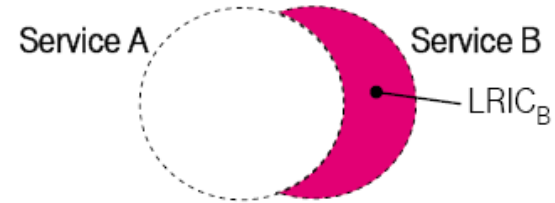
Another view of cost accounting concepts

Cost accounting concepts

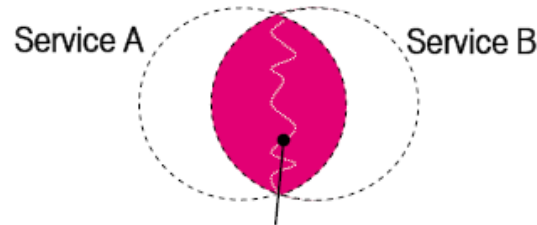
Stand-alone costs



Incremental costs



Joint costs & common costs



Joint costs if allocable to A and B.

Common costs if not allocable to A and B.

Source: DTAG

With LRIC the definition of the increment matters (1)

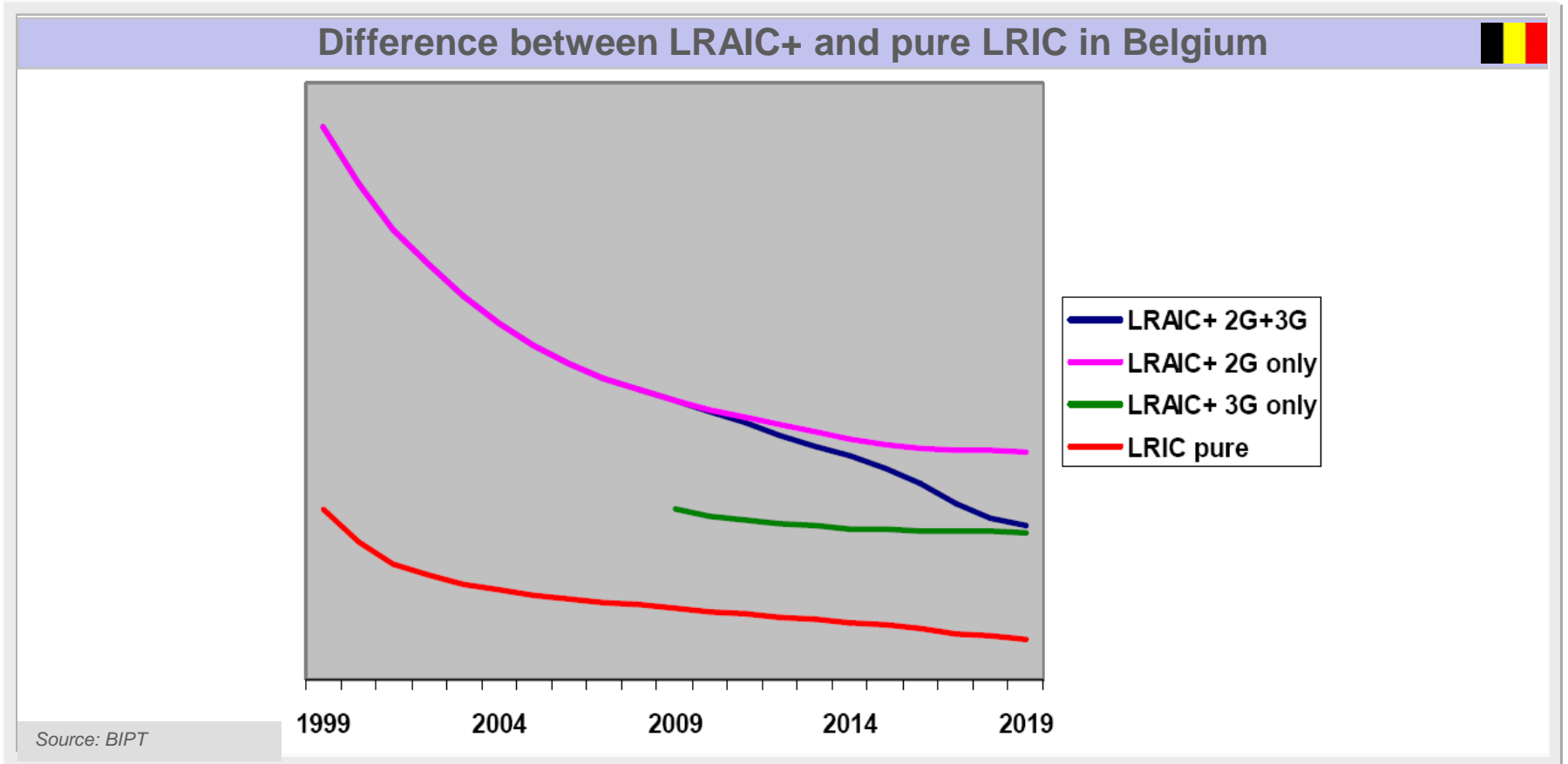
Possible increments in a mobile network

service traffic							
voice traffic				low bandwidth data traffic		high bandwidth data traffic	
call termination	call origination	check voicemail	leave voicemail	SMS origination	SMS termination	send GPRS/UMTS /HSDPA data	receive GPRS/UMTS /HSDPA data

Source: Europe Economics



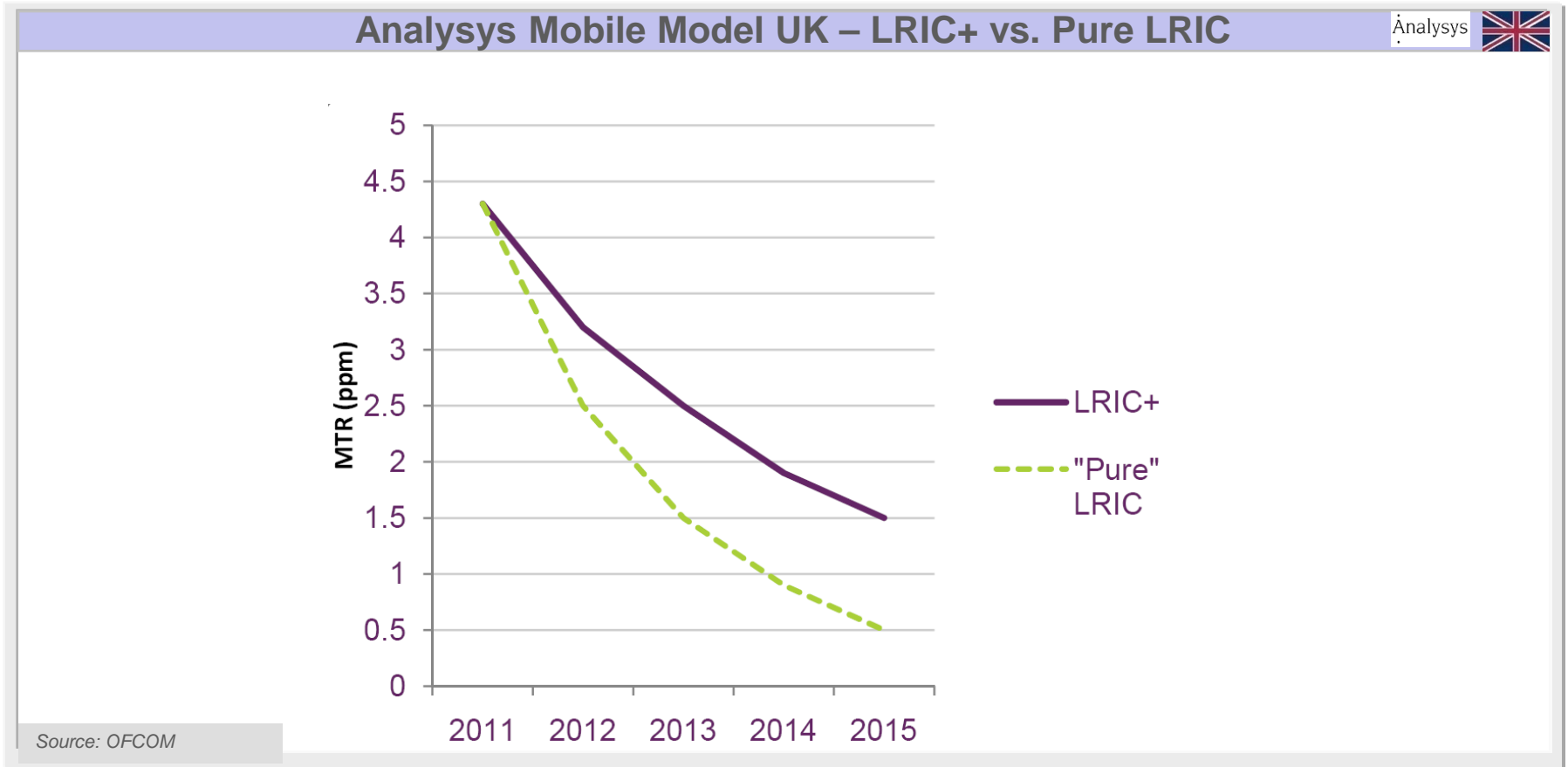
With LRIC the definition of the increment matters (2)



The larger the increment the higher the LRIC



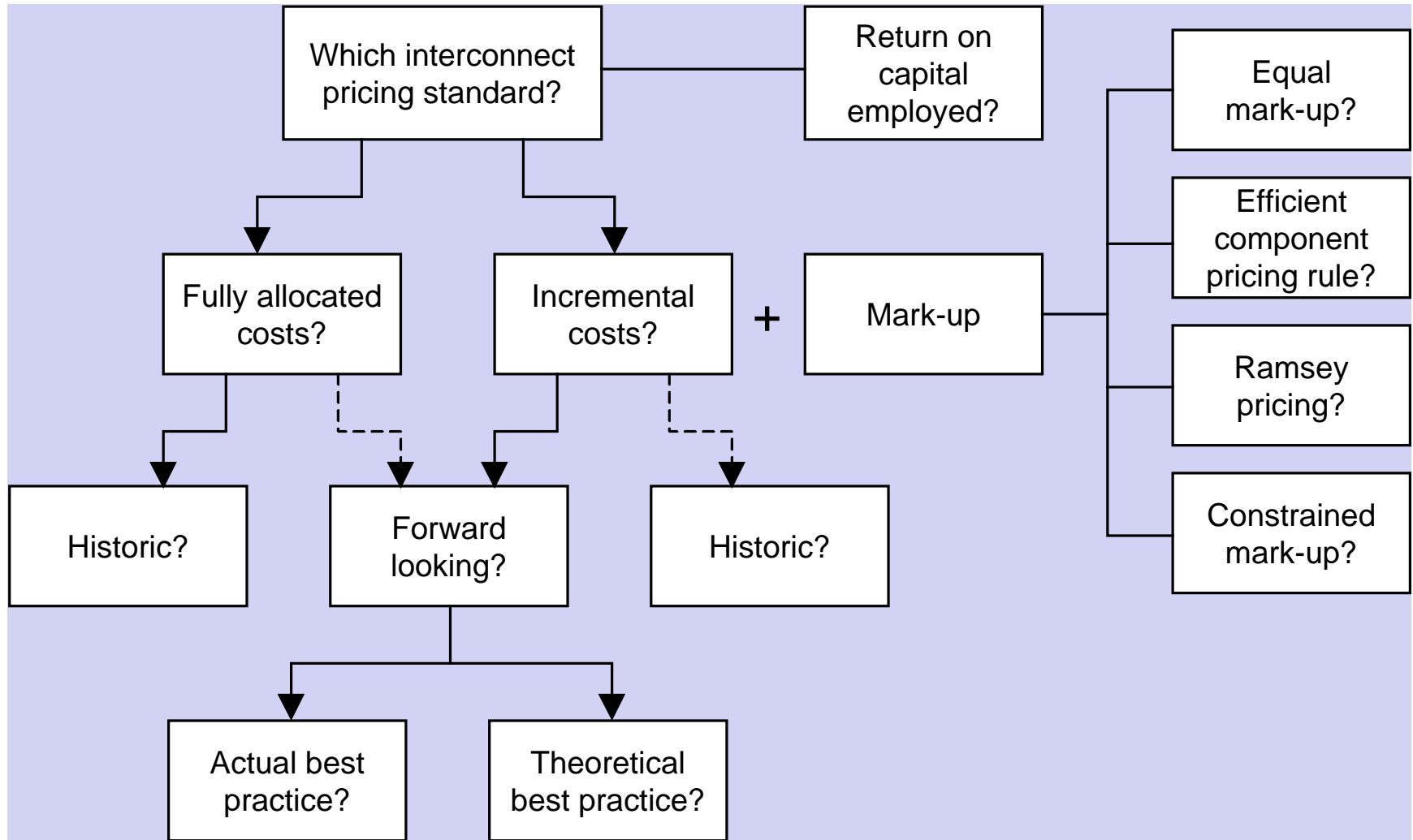
With LRIC the definition of the increment matters (3)



Applying the different cost standards to regulation



The questions regulators face



Emerging best practice

- Constant mark-up
 - same percentage to all services
- Efficient Component Pricing Rule (ECPR)
 - based on opportunity cost - considers retail prices
 - only works well if retail prices already competitively priced
- Ramsey Pricing
 - sets mark-ups inversely proportional to the price elasticity of demand
 - theoretically works well, but very difficult to implement
- Floors and Ceilings
 - allows the operator flexibility of assigning mark-ups within limits (generally defined as between MC and SAC)



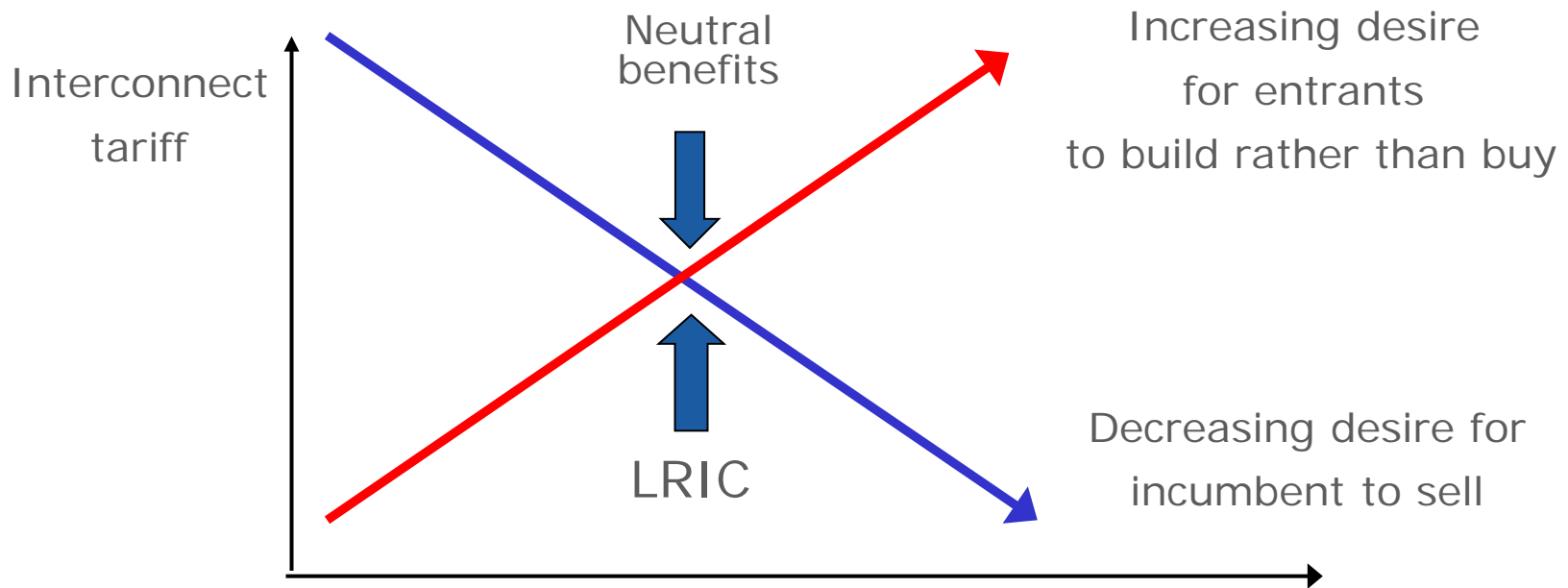
The aim of cost based regulation

- Aim is to encourage economically efficient investment to promote the long term interests of end users
- Balance between:
 - efficient use of existing infrastructure
 - investment in new infrastructure by incumbents and new entrants
- Regulation of interconnect services is required where there is potential market failure
- Without infrastructure based competition - ongoing regulation will be necessary



LRIC balances competing interests

- LRIC is an economic cost concept designed to:
 - Encourage use of existing facilities where desirable
 - Encourage investment in new facilities where justified



Deviating either side of LRIC has its dangers

Encourages greater investment
in infrastructure

Protects the incumbent
versus potential competitors



Encourages greater efficiency
in use of existing infrastructure

May deter otherwise appropriate market
entry by facility based competitors



Emerging best practice

FAC (or benchmarks) until
LRIC models in place

TSLRIC+ or LRAIC+ (for
all services initially)

Pure LRIC (for call
termination only)

