Roadmaps for success in telecoms liberalisation: issues and best practice

Integrating ICT in development programmes

Report for OECD, 27 March 2003

Contents

Analysys

0 Executive summary

Opening telecoms markets to competition in developing countries is generally desirable, usually resulting in sector investment, infrastructure development and choice for consumers. However, it is not easy to achieve. The success of this complex process depends on the adoption of a sequential approach, laying down essential regulatory and economic infrastructure, and limiting the negative impacts of rapid change. (See Exhibit 1.)

- **Stage 1: Set up regulatory framework**. A strong regulatory framework that provides stability and transparency is required, reflected in a clear remit for the regulator. The scope of an independent telecoms regulator should at the very least include licensing regime, competitive practices (including rights and obligation of various players), pricing policy, interconnection with the incumbent, and universal service obligations.
- **Stage 2: Clearly define an action plan**. The conditions of progressive liberalisation need to be defined. While the mobile market may provide the starting point for liberalisation, the scope and scale of the fixed market liberalisation needs to be established. Governments will need to set out terms and conditions for new entrants that more generally aid ICT development.
- **Stage 3: Prerequisites and a carefully designed implementation plan.** Such prerequisites include establishing an interconnection regime that enables competition from new entrants. Whilst interconnection rates can be defined by reference to the retail rates at the beginning, they should evolve to cost-based rates. Also, tariff re-balancing is required to incentivise the roll-out of the local access network. The impact on poorer sections of society may be limited by implementing 'soft rebalancing' schemes. In parallel, a carefully designed plan should allow specific areas of the market to be opened under specific conditions. Developing countries may benefit from allowing licensed services based on new technologies such as voice over IP (VoIP) and VSAT. Also, the introduction of competition may be accelerated by introducing indirect access.

In liberalisation, timing and synchronisation are critical success factors to enable full and open competition between a variety of entrants. Market opening along these lines will ultimately allow market predictability and attract investment to the sector.

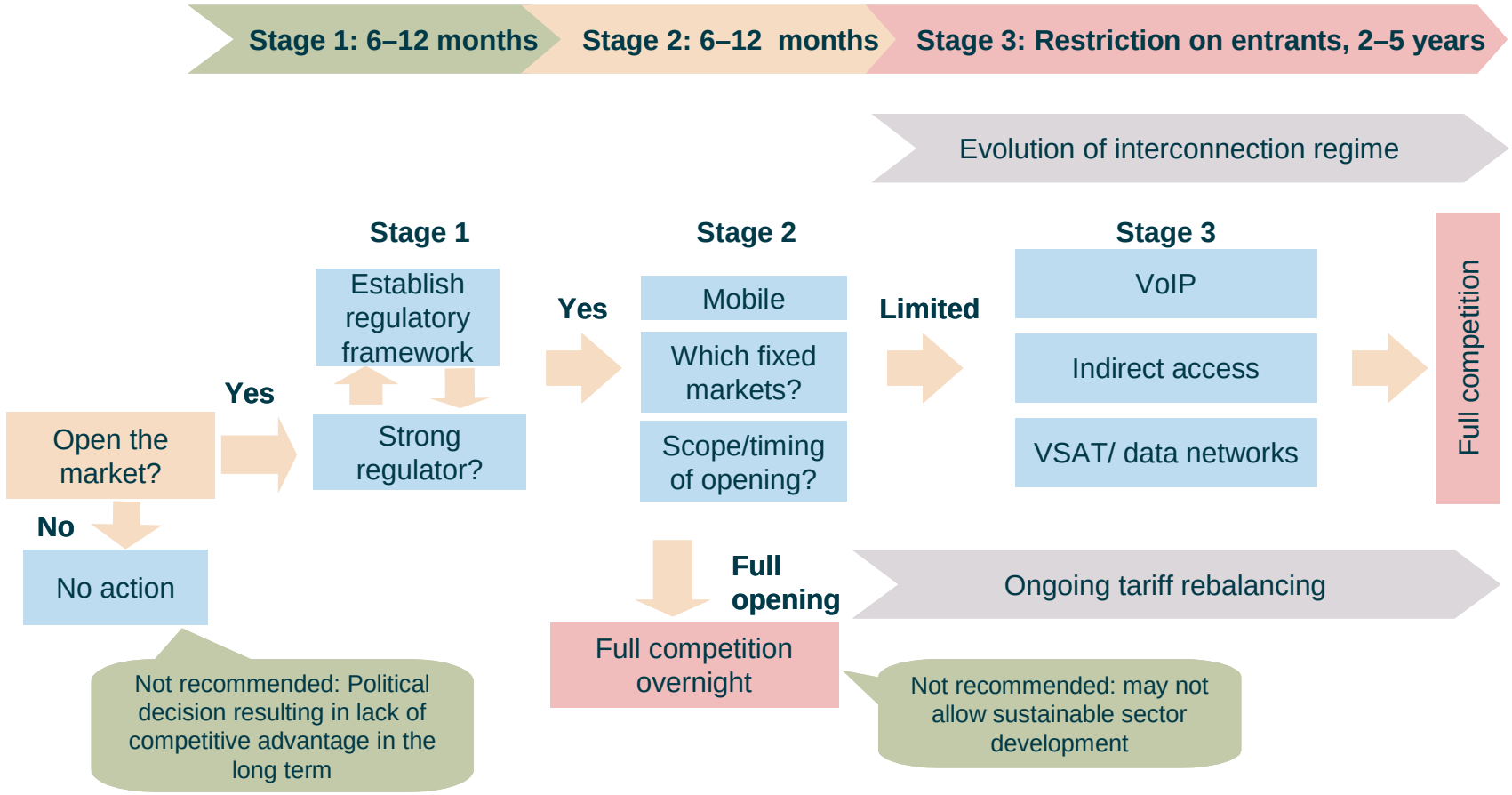

Exhibit 1: *Key stages in the liberalisation process [Source: Analysys]*

1 Introduction

This paper highlighting the challenges of telecoms liberalisation is the final deliverable of a project financed by the Japan International Cooperation Agency (JICA). This project also included a presentation "Roadmaps for success in telecoms liberalisation: issues and best practice", presented at the Joint OECD/UN/World Bank Global Forum on Knowledge Economy: Integrating ICT in Development Programmes" in Paris, 4-5 March 2003.

2 The need for liberalisation

Liberalisation is an established phenomena

Telecoms market liberalisation has gathered pace: although in 1995 only about 10 countries had opened their international telephony markets, by 2001, this had grown to an estimated 65.

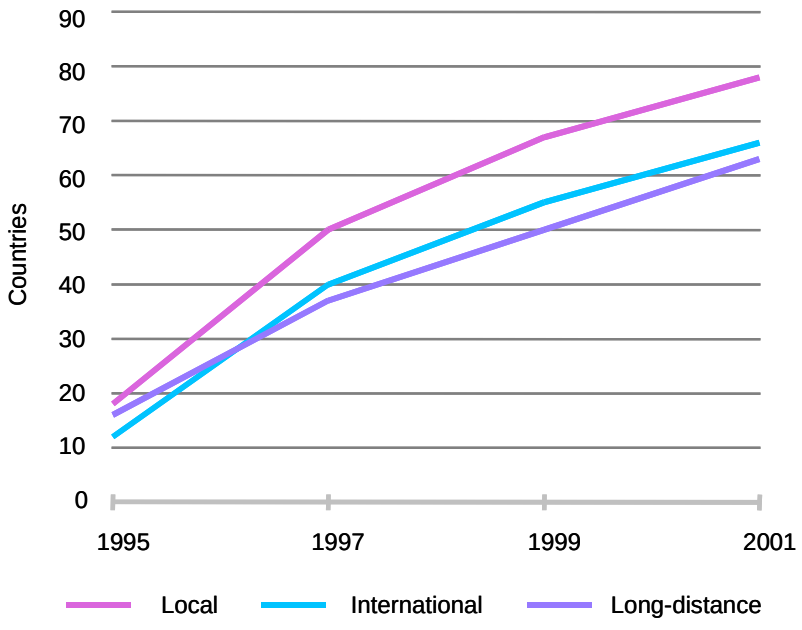

Exhibit2: *Countries with competition in basic services [1] [Source: ITU]*

The benefits of liberalisation are well known …

The importance of the telecoms sector for ICT development, and its positive impact on society has led many to believe that connectivity should be a right, not a privilege. Liberalisation has the potential to

[1] Includes developed countries, transition economies and developing countries

well known …

facilitate a step change in the ICT infrastructure of developing countries, typically resulting in benefits such as:

- sector investment
- infrastructure development
- universal service
- consumer choice.

… as a comparison of Latin American countries shows

A comparison of four Latin American countries shows that liberalisation can indeed deliver such benefits. As shown by the exhibit below, liberalisation is usually accompanied by a greater investment in the sector.

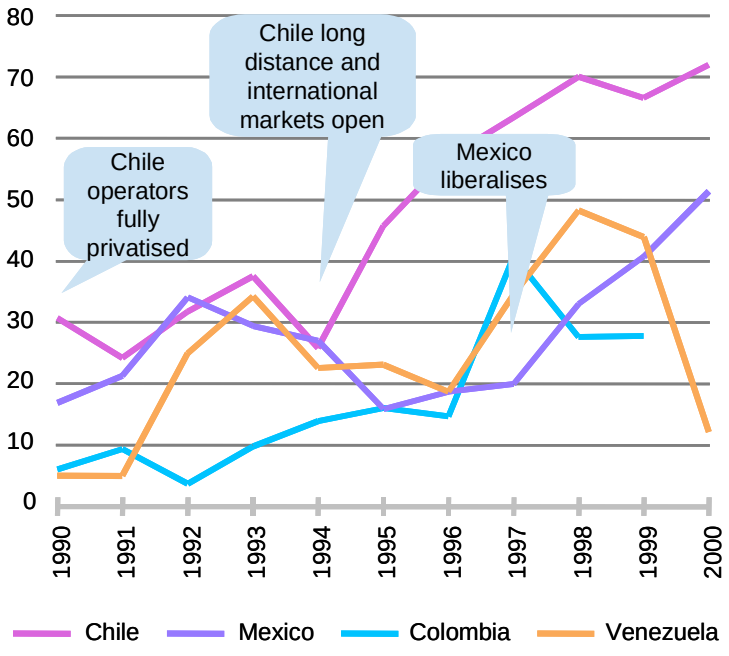

Exhibit 2: *Comparison of teledensity: investment per capita (USD) [Source: Analysys, ITU]*

Liberalised markets are quicker to achieve

Colombia, Mexico, Venezuela and Chile, all had similar teledensity (in the range of 7–8%) in 1990. However, as **Exhibit 3** shows, infrastructure development has been greater in Chile and Colombia,

higher teledensity where liberalisation occurred earlier[2].

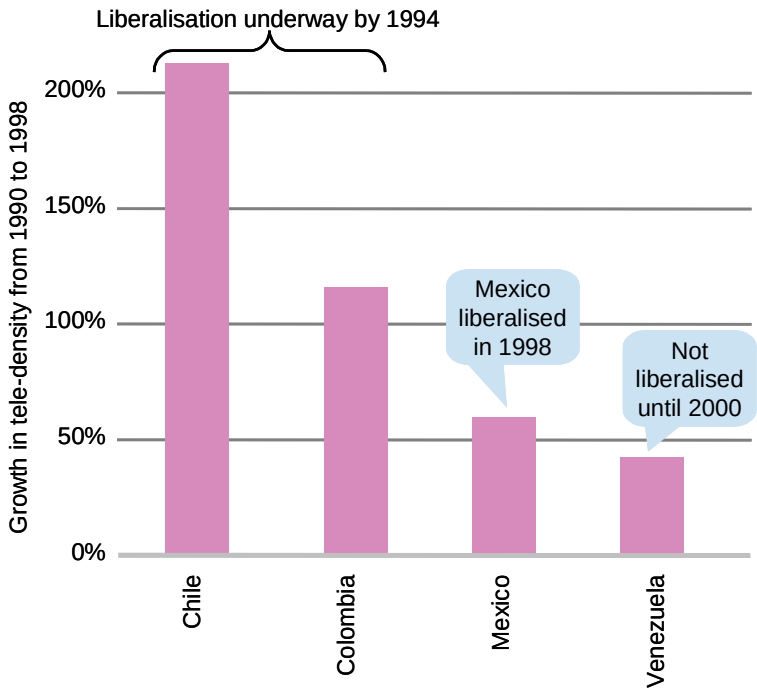

Exhibit 3:
Cumulative growth in teledensity (1990–1998)
[Source: CIT, ITU]

But liberalisation is not a panacea

Although liberalisation can deliver benefits to society, it cannot be implemented under any conditions. Certain countries may be unable to attract private investors, on terms that benefit society due to their political and economic situation. Therefore countries will have to balance the benefits of liberalisation with any costs involved in facilitating it.

3 A sequential approach is required

Changing the status quo may be

Liberalisation implies significant changes for various stakeholders. The government, the incumbent operator, and the incumbent

[2] In Chile, full infrastructure-based competition was allowed in fixed services by 1994. Telefónica CTC, the former fixed line monopoly, saw its market share of local lines fall from 90% in 1995 to about 76% by end June 2002. In Colombia, a new telecoms law was passed in 1994, eliminating licensing requirements for local services and facilities based operators EPB and Edatel were awarded local licences. However, implementation of liberalisation in Colombia has taken longer than originally anticipated.

difficult …

operator's employees may need to undergo tension in the short-term in order to reap benefits in the long run. This can be a significant barrier to the successful implementation of liberalisation[3].

Liberalisation in developing countries is further complicated by the fact that it takes places simultaneously with the roll-out of infrastructure. This is not the case in developed economies.

… and essential infrastructure needs to be put in place

In order to minimise any disruption from market liberalisation, we recommend that developing countries adopt a step-by-step approach. This provides the key stakeholders an opportunity to adapt to new market conditions progressively and thus prevents the instability that may result from full competition overnight.

The framework for liberalisation illustrated in **Exhibit 4** can enable key regulatory and techno-economic infrastructure to be implemented for full liberalisation.

3 In some cases, governments have been concerned that liberalisation may negatively affect state finances. This arises either from a concern regarding the privatisation value of the incumbent in a competition scenario or from the concern that competition may result in loss of revenues for the incumbent, and consequently the state. It may be noted that operating performance of incumbent operators tends to improve upon introduction of competition. Also, some countries consider the telecoms sector to be of vital national interest and are afraid of handing control to private entities. From a political viewpoint, the impact of privatisation and liberalisation on employment levels is highly sensitive.

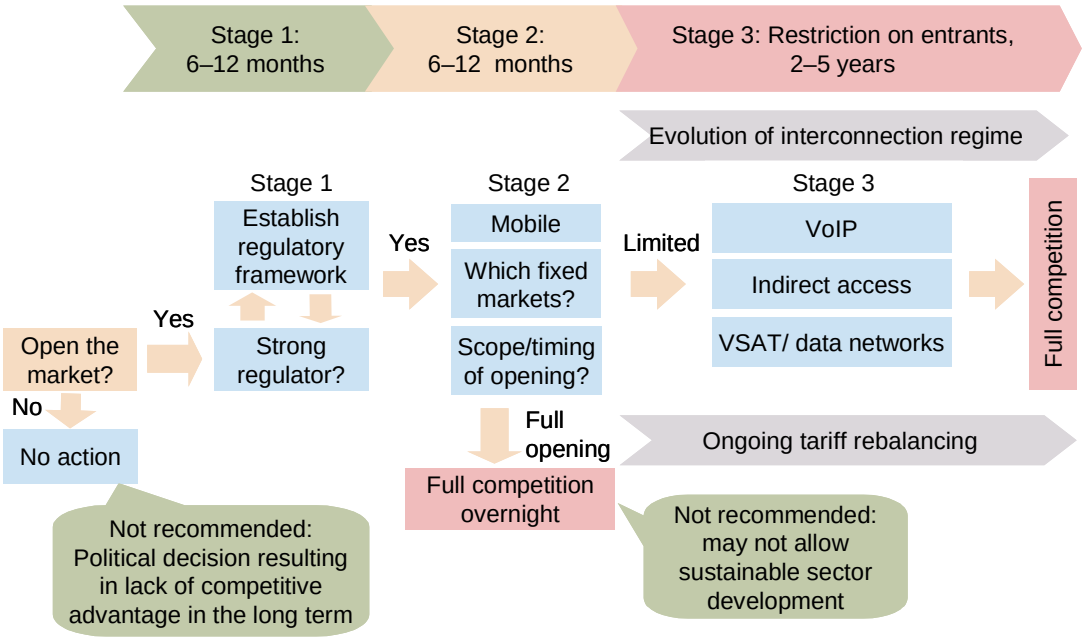

Exhibit 4: *Key stages in the liberalisation process [Source: Analysys]*

Markets opening up to liberalisation need continuous monitoring and evaluation

Governments and regulatory authorities of developing countries need to ensure access to relevant information on the operators, the usage of services and the roll-out of infrastructure in order to inform decisions.

The ultimate goal for governments and regulators should be to become self-sufficient in structuring and driving sector development. Where regulatory resources are scarce, regional initiatives (i.e. joint efforts by neighbouring countries with similar sector development objectives) that benefit from synergies and pooled resources may be considered. This will provide increased efficiency in the long term but possibly at a price – namely increasing implementation complexity in the short term.

4 Stage 1: Establishing the regulatory framework[4]

Investors place a premium on stability

Competition requires sector investment. For this to be realised, a regulatory structure is required that provides stability and transparency, and ensures a level playing field between the various operators. Investors will be wary if the rules governing the sector are ill-defined, or subject to sudden changes as can be seen in the case of India.

The remit of the regulator should be explicit

A clear remit, that lays down the powers and the scope of the regulator essential. The scope of an independent telecoms regulator as a minimum should include the licensing regime, competitive practices (including rights and obligation of various players), pricing policy, interconnection with the incumbent, and universal service obligations.

The need for regulatory clarity: an Indian case study

The lack of a stable regulatory environment in the Indian mobile sector has resulted in relatively slow development and the withdrawal of foreign investors.

a) With its decisions blocked by other authorities, there is uncertainty regarding the role and remit of the regulator[5]. This has created the perception that established legislative powers are not respected in decision making.

b) Lack of transparency is making long-term investors nervous – the regulatory position is seen to be unstable and unpredictable. There has been uncertainty

[4] The following links provide relevant examples and benchmarks, as well as a discussion forum on the independence of telecom regulators: http://rru.worldbank.org/documents/247Musta-062802.pdf; http://rru.worldbank.org/HotTopics/Hot_Topics_mustafa.asp

[5] For example, in October 2002, the Telecoms Dispute Settlement Authority (TDSAT) stayed decisions made by the regulator (TRAI) with regards to the incumbent's (BSNL) Reference interconnect offering (RIO).

regarding the number of mobile operators the government intends to allow into the market, as well as issues of interconnection and fixed mobility.

A comparison with China illustrates the point: in January 2003, India had 11.2 million mobile subscribers. By comparison, China with a roughly similar population (1.2 billion in China compared with 1.05 billion in India) had 216 million mobile subscribers in February 2003, and adds roughly 5 million subscribers every month. Although geography and culture explain some of the difference[6], regulation accounts for much of the gap.

5 Stage 2: Defining the scope and scale of liberalisation

5.1 Full market opening is desirable but may lead to some instability in the short term

Full market liberalisation has many advantages...

Countries have a choice of permitting only a limited number of market entrants, or opting for full sector liberalisation. In theory, the latter has many benefits including: greater service choice for consumers; opportunities for local entrepreneurship that can invest without regulatory constraints; and it avoids the government having to pick winners that ultimately may not perform satisfactorily.

Furthermore, entrants will invest where best returns are available, resulting in optimal use of capital and operators can switch to the optimal technology as the balance between the costs and performance of technologies changes.

…but it may result in instability

Where relevant market and regulatory infrastructure is not in place, an overnight move towards full liberalisation may result in instability. New entrants may not be able to effectively compete due to the anti-competitive practices of the incumbent, as in the case of

[6] The concentration of economic activity in China's eastern coastal region gives mobile operators big economies of scale.

New Zealand where the market was deregulated in 1991.[7]

5.2 Some restrictions on market entrants may contribute to sector development

In some cases, a transitional period may be useful

A transitional period of between at least two and five years may be used to introduce full competition. The required regulatory changes can take place over this period, thus avoiding the disruption that may result from a sudden full opening of the market. Such evolution towards full competition has been successful in many instances, including the UK[8].

Entry requirements may enable faster growth in lines

Some restrictions on entrants in the transitional period can help more targeted infrastructure development that can better meet government development priorities – such as growth in teledensity. Restrictions may be applied to the scope of liberalised services, or to the number of entrants allowed to offer specific services in return for allowing market entry, as in the case of Hungary.

Successfully applying new entrant conditions: Hungary

In February 1994, Hungary was divided into 54 local telecoms franchise areas, and new entrant local operators won tenders for 18 franchises, with exclusive right until January 2002.

The license conditions required that, by January 1997, each operator had to be able to achieve annual growth of 15.5% in fixed lines and fulfil 90% of customer demand for new lines within six months. This has helped infrastructure development in

[7] Lack of a telecoms-specific regulator enabled the incumbent to convert interconnection disputes into full-blown litigation, with numerous legal appeals and thus delay liberalisation.

[8] UK introduced duopoly in 1982 and full competition in 1991.

Hungary, with teledensity growing from 17% to 37% during 1994–2000. Waiting lists for lines fell from 720 000 to 27 000 over the same period.

5.3 Competition in mobile may be the first step towards full liberalisation

Competition in mobile has developed well in developing economies

Introducing competition in the mobile sector has proven to be easier than in the fixed sector. The main reasons are: the higher growth potential of mobile; increased opportunities to compete with incumbent (whose mobile network is relatively new); and lower incremental investment costs to provide mobile voice than new fixed infrastructure. **Exhibit 5** shows that competition in the mobile sector is generally more developed that in the fixed telephony sector.

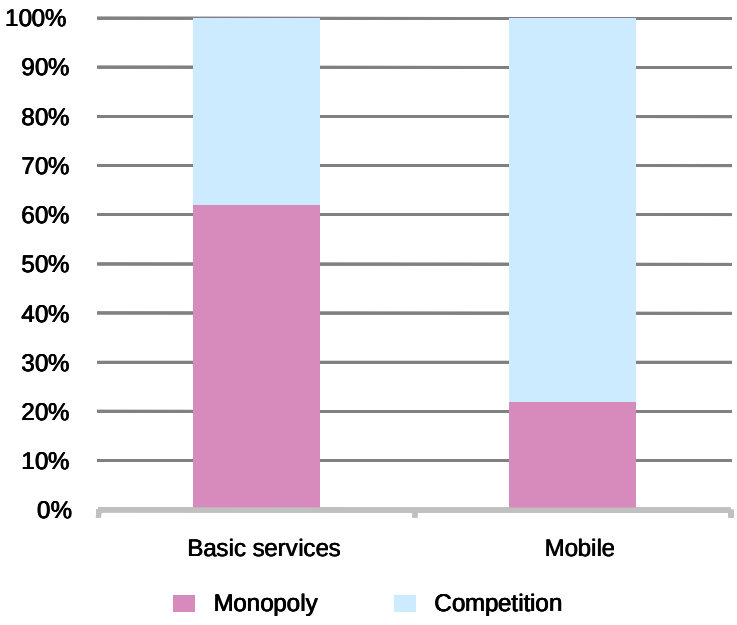

Exhibit 5: *Percentage of the world's countries with competition [Source: ITU]*

In Morocco, mobile has driven strong growth in lines …

Countries have the option of introducing competition in mobile first, in order to develop end user access to telephony services. In Morocco, the introduction of a second mobile operator in 1999 led to an strong increase in the growth of lines (see **Exhibit 6**).

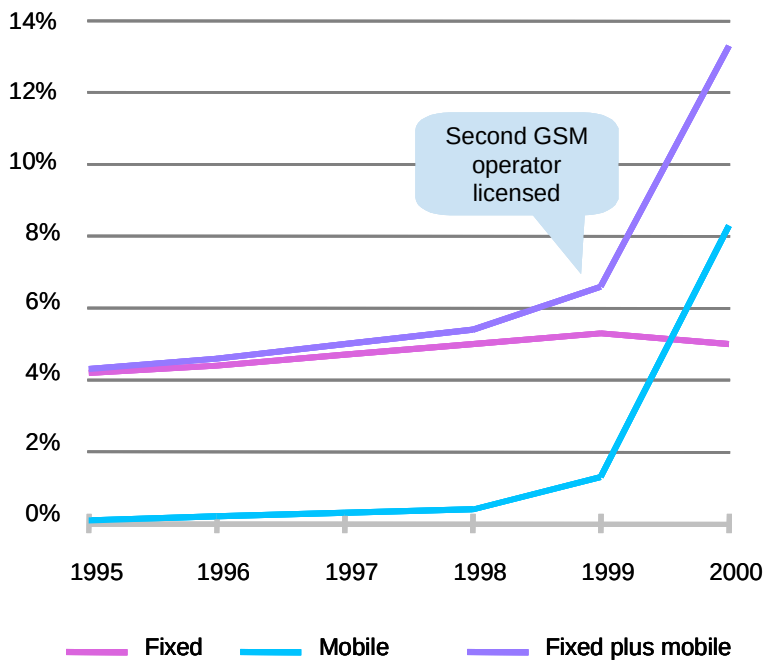

Exhibit 6:

Fixed and mobile density in Morocco [Source: ITU]

… but fixed line services are important for socio-economic and data services development

However, development of the mobile sector should not be at the cost of the fixed line sector. ICT development requires data services beyond those possible with the limited bandwidth available from mobiles.

Furthermore, fixed line services are important for economic development – businesses rely heavily on them for critical applications. Economies of countries with underdeveloped fixed sectors may suffer in international trade, and underachieve in terms of attracting foreign investment.

Currently, we observe that in a number of developing countries the focus on mobile is negatively affecting fixed market development. The availability of mobiles for voice services has diminished the incentive to expand access to the fixed network.

6 Stage 3: Prerequisites for success

6.1 A successful interconnection regime is required for new entrants to compete

Interconnection enables new entrants to connect to the incumbents network …

Interconnection refers to the connection of the networks of different operators. New entrant operators need to connect to the incumbents network, to enable users to make calls to other users on the incumbents network, or vice versa (see **Exhibit 7**).

By virtue of its dominance, the incumbent operator can dictate the terms on which interconnection is provided. Consequently, regulatory intervention is required in establishing the terms of the interconnect offer.

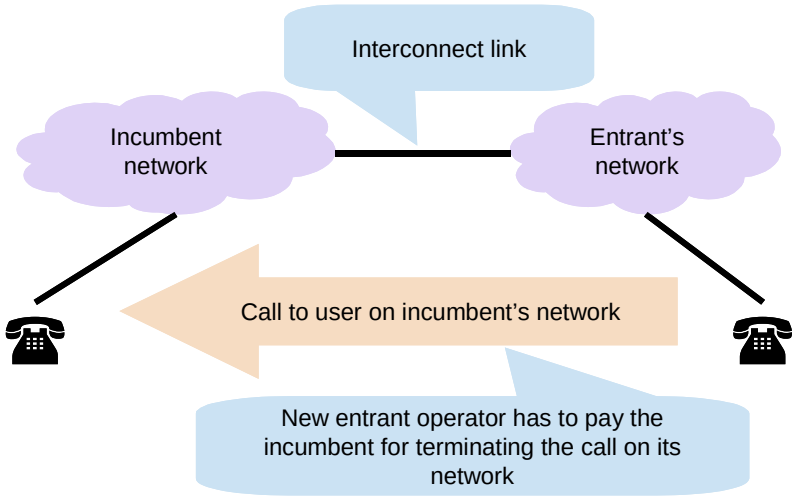

Exhibit 7: *Interconnection between incumbent and new entrant [Source: Analysys]*

… and can act as a barrier to competition

The provisioning and pricing of interconnection has been a significant hurdle in the path of effective competition in many liberalising countries.

Problems with interconnection: the Mexican example

In 2000, the US alleged that Mexico had failed to ensure a competitive environment in its telecoms sector:[9] It alleged that it had: failed to ensure timely and non-discriminatory interconnection with Telmex (Mexican incumbent operator); failed to resolve interconnection disputes within a reasonable period of time; and failed to ensure cost-orientated interconnection for all calls into and within Mexico.

Consequently, interconnection rates were reduced in a private agreement between Telmex and entrants[10]. However, the US is not fully satisfied that its concerns have been addressed and continues to monitor the situation.

Regulators must ensure compliance with accepted principles

Basic principles regarding interconnection are generally accepted. These include that interconnection should be non-discriminatory and that charges should be cost-based. Also, the incumbents' in-efficiencies should not be passed on to other operators. [11]

Implementation of such principles can prove difficult and generally takes more time than planned. In particular, we observe that in a number of both developed and developing countries, the technical implementation of interconnection has caused delays in the roll out of services by new entrants.

Regulators should ensure that the interconnection regime is defined before competition is introduced, and is compliant with accepted principles. Furthermore, the regulator must provide clarity regarding its role in the case of any disputes.

Exhibit 8 illustrates how an interconnection regime may

[9] The US complaint was lodged with the WTO Settlement Dispute Board in November 2000

[10] Agreement was reached between Telmex and Alestra and Avantel (the Mexican affiliates of AT&T and MCI WorldCom respectively)

[11] InfoDev Telecommunications Regulation Handbook contains more details on commonly accepted interconnection principles (http://www.infodev.org/projects/314regulationhandbook/).

progressively evolve in order to allow a viable transition for the incumbent operator and make market entry feasible for a new entrant. In the short term, the regulator may implement non-cost based interconnection regimes – such as bulk discounts which mimic discounts given to large customers or a discount based on the retail price. In the long term, cost studies may enable cost-based prices to be set.

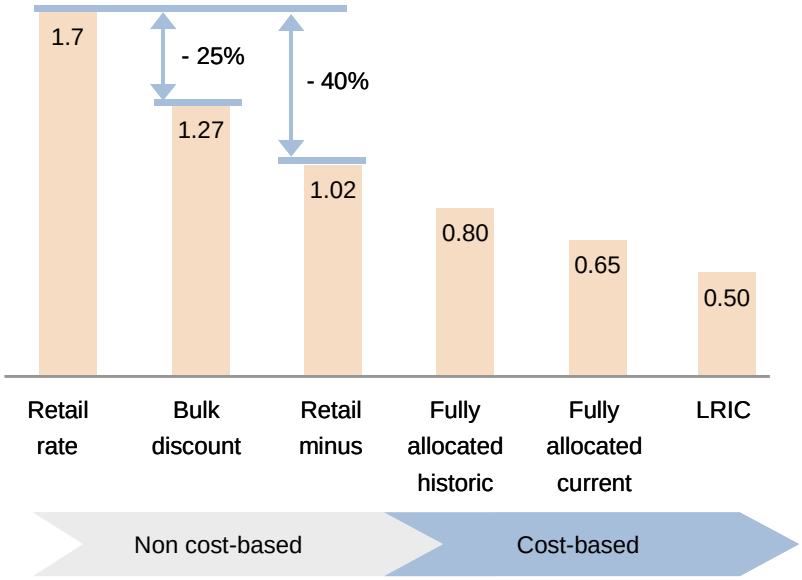

Exhibit 8: *Evolution of Interconnection – note that the numbers are purely illustrative [Source: Analysys]*

Such an evolution has been seen in many developed countries. In Spain for example, the interconnection regime has evolved to a cost-based regime, with prices expected to be set soon on the basis of long range incremental costs (LRIC).[12]

[12] LRIC is forward-looking methodology that considers the incremental costs of an efficient operator in providing the service in question.

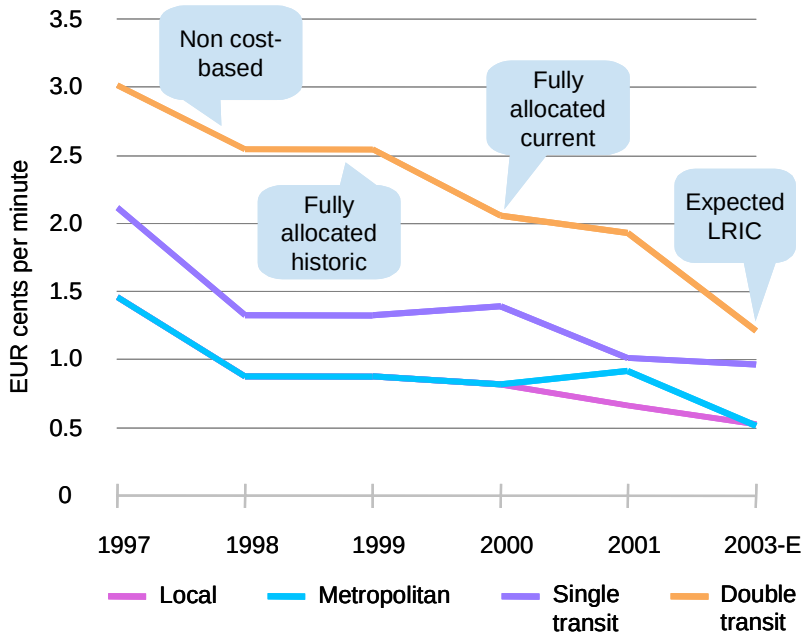

Exhibit 9:

Interconnection in Spain [Source: Analysys]

6.2 Tariff rebalancing is required for effective competition

Cross-subsidies often fund cheap line connections

In many developing countries, the costs of providing a connection are not fully covered by line rental. Instead, revenues due to long-distance and international calls cross-subsidise the line rental and local calls[13]. This is due to the historically social role of telecoms.

A re-balancing of the tariffs for line rental and traffic is required to incentivise the development of the local access network.[14] Furthermore, if tariffs are not rebalanced, new entrants will attack highly profitable market segment leaving subsidised ones alone, thus creating an unsustainable situation for the incumbent operator.

[13] From an economic perspective, the fixed network access costs should be covered by the monthly line rental and the per minute call charges should only cover traffic related costs of the network.

[14] Where operators are unable to easily recover the fixed costs of rolling out lines, they will not be incentivised to develop the local access infrastructure.

Peru demonstrates the benefits of re-balancing

Tariff re-balancing has been successfully implemented in Peru, resulting in strong development of the local access infrastructure. Line rental significantly increased over 1993–97 and this was accompanied by a sharp fall in the waiting list for new lines. **Exhibit 10** shows the correlation between the increase in line rental, and teledensity in Peru.

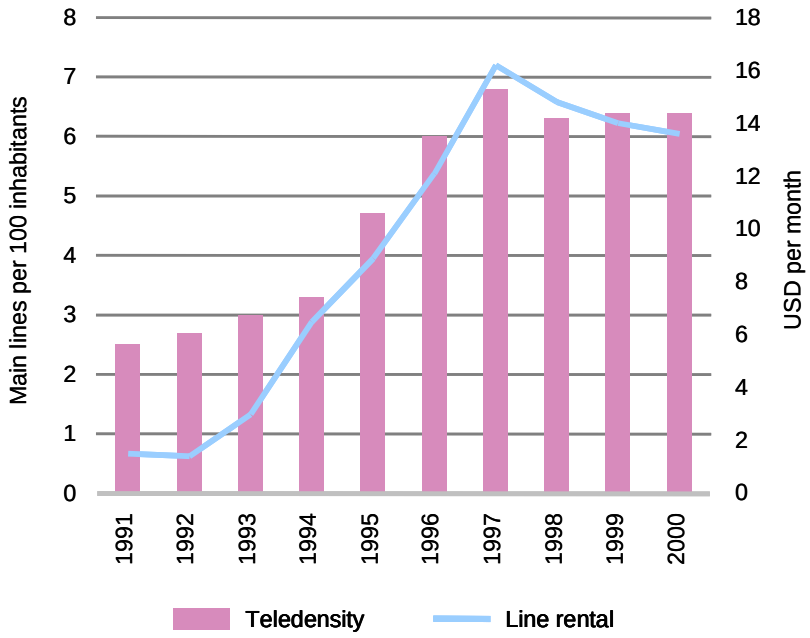

Exhibit 10:

Line rental versus teledensity in Peru [Source: ITU]

Rebalancing may affect the less well off but teledensity is supply-constrained

However, achieving re-balancing is not easy. Politicians are wary of raising line rentals and be seen to act against interests of the poorer sections of society. Although tariff re-balancing may affect the poor, it is beneficial to society at large, and to ICT development.

Furthermore, re-balancing will enable more people than before to access basic telephony services. Typically in developing countries, the market for telephony access is not demand but supply-constrained. Although significant demand for lines exists in many developing countries, only a proportion of the demand is met by operators lacking the incentive to invest. **Exhibit 11** shows that

[15] In Nigeria, it is estimated that only 10% of the demand for telephony lines is met by the incumbent Nitel. However, mobile has been meeting some unmet demand since August 2001, when the first mobile network was established.

raising line rental can achieve a point of equilibrium, where demand is met by operators willing to roll out lines. [15]

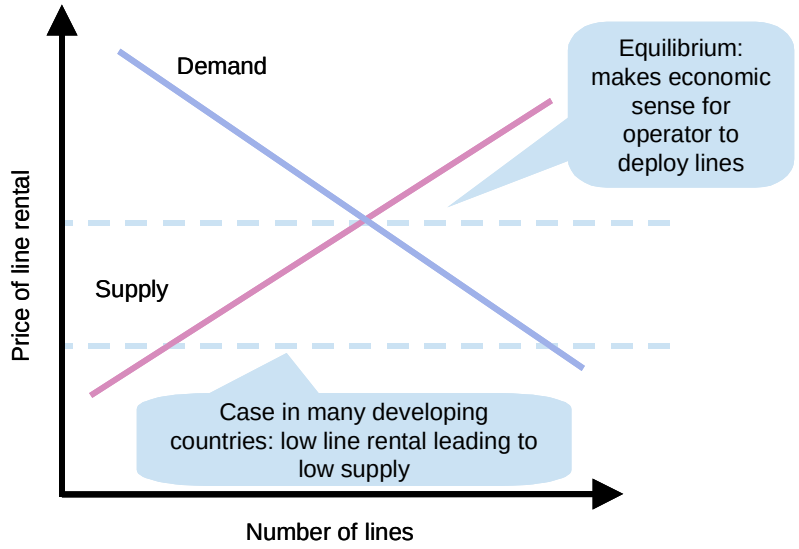

Exhibit 11:

Supply and demand graph

[Source: Analysys]

"Soft" rebalancing may limit negative social impact

A way to mitigate negative social impact of higher line rentals may be to introduce "soft rebalancing":

- bundling free calls with line rental, enabling marginal users to afford telephony services
- lower line rental (compensated for by higher pre-paid call rates), preserving accessibility to the service, whilst providing the operators with revenues that incentivise access network roll-out.

6.3 Cost-effective solutions for rural areas can help develop price flexibility

Averaged prices tie the hands of the incumbents …

Incumbent operators are usually required to offer geographically averaged tariffs – i.e. the same prices everywhere. This restricts the ability of incumbents to compete with new entrants that target high density urban areas which are cheaper to service. A case exists for allowing incumbents to vary prices in areas where they faces strong competition.

… and are a sensitive political issue

Geographic averaging of prices is an artefact of regulatory "tradition" for all utility businesses, and is not suited to the needs of a competitive market.

However, pricing flexibility is a sensitive political issue, and thus its implementation has not been seen anywhere. Governments are unlikely to relinquish control as in the case of Mexico[16].

Innovative mobile solutions may complement pricing flexibility

Pricing flexibility may reduce the incumbent's ability to serve rural areas. Lower revenues obtained from competitive urban areas may be insufficient to cover the costs of deploying rural networks. However, mobile solutions can be used that enable telephony services in rural areas at lower costs than rolling out fixed lines. This is illustrated by the following Colombian case study.

Alternatives to copper networks in remote areas: the example of Colombia

In Colombia, a cost-efficient alternative to rolling out copper wires is being used in remote areas. Users are to access fixed line services in the same way as normal. However, the telephone will link to a local GSM base station in the same way as a mobile handset. Users will be prevented from moving the phones either by physical restraints, or by software which only allows it to work from one base station

Apart from being cheaper, this system makes deployment much faster and allows extra services such as short message services (SMS) that are not available to traditional fixed line customers.

[16] The Mexican incumbent, Telmex, is required to offer the same prices in all areas of the country. There had been a proposal whereby it could offer different prices where its market share (by minutes) fell below 60% for more than 90 days or more. However, it appears that the proposal was not adopted, or was at least changed into a request to Telmex to come up with a more concrete proposal, especially about how to measure "minutes". We do not know if any such proposal was ever made.

7 Stage 3: Specific implementation issues

7.1 Developing countries should be open to technologies such as VoIP and VSAT

VoIP is being increasing used for telephony

Consumer use of VoIP has grown strongly over the past few years, particularly for international telephony. **Exhibit 12** shows that, by 2001, VoIP already accounted for a significant proportion of the incoming international traffic in a variety of developing countries.[17]

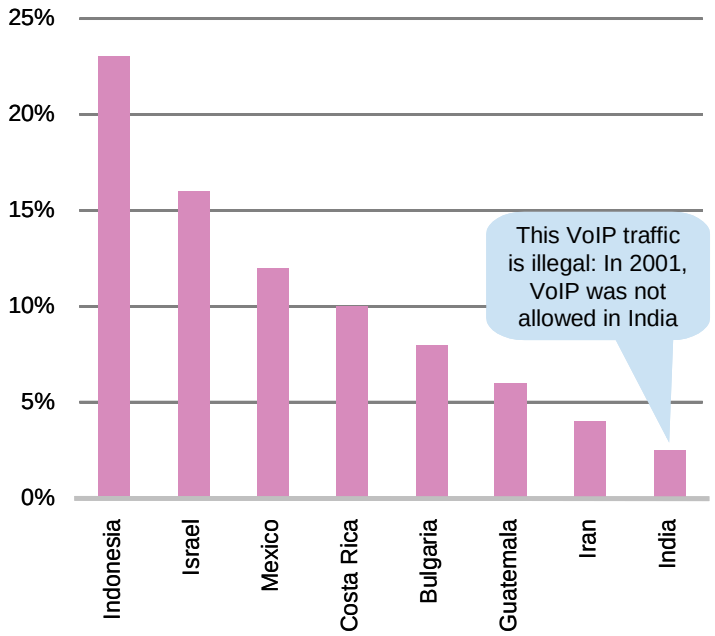

Exhibit 12: *Percentage of incoming international VoIP traffic in various countries, 2001 [Source: Telegeography]*

Though some countries have outlawed VoIP, its legal use can deliver benefits

A variety of responses to VoIP exist in the developing world. Some countries such as Bangladesh have prohibited its use, fearing a loss of revenues for the incumbent operator, as traffic is diverted away from the public switched network.

17 VoIP is a technology that enables voice conversations to be carried via the Internet, instead of the usual public switched voice networks. In VoIP, voice is sampled, compressed and packetised before being transported on an IP network and gets decompressed at the other end to be played back. VoIP services tend to be significantly cheaper than public switched telephony, especially in countries that have high tariffs for international calls

Other countries such as Panama and India have decided to allow licensed VoIP services. Panama legalised VoIP for international telephony in November 2002, and India in April 2001.[18]

Developing countries will benefit from permitting legal VoIP services. The illegal use of VoIP is in practice impossible to prevent. The prohibition of VoIP therefore only benefits unlicensed operators that make use of the large gap between the switched network prices and the costs of VoIP, to generate large volumes of illegal traffic.

Legal VoIP services will enable licensed operators (incumbent and new entrants) to share in the resulting revenues, and the government to collect taxes. Such a move will to a large extent disincentivise illegal VoIP operations (whilst not limiting the growth in traffic), as shown by the case of India (**Exhibit 13**).

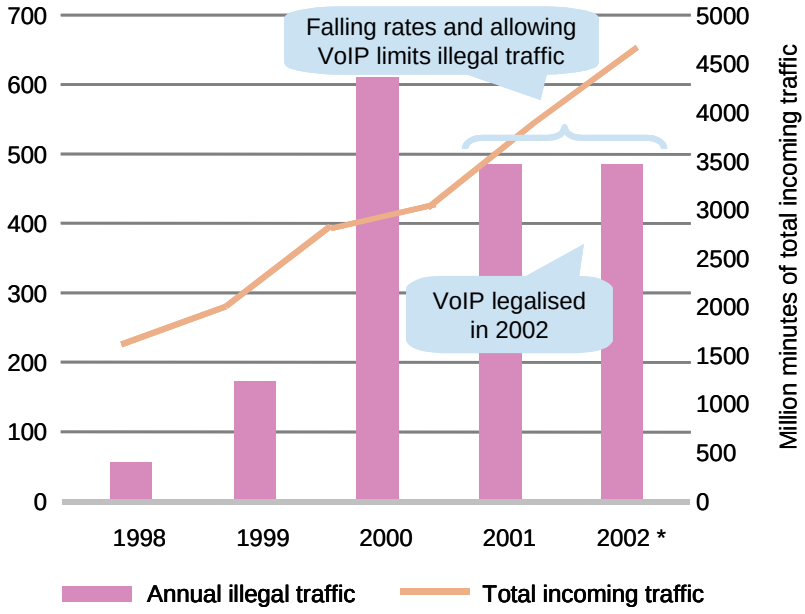

Exhibit 13: *International incoming traffic to India [Source: Analysys, Telegeography]*

[18] In Panama, the government originally decided against VoIP, for fear of damaging the incumbent (concession of Cable & Wireless). The regulator intended the ruling against VoIP to apply beyond the opening of its telephony market in 2003. However, in November 2002, the Supreme Court annulled the order blocking the use of VoIP technology for international long-distance calls.

VSAT presents similar issues

Businesses use VSAT services to enable internal and external communications that are essential for operations. However, VSAT possess a similar threat as VoIP: it may be used to divert voice traffic away from the public switched network, thus depriving the incumbent operator of revenues. [19]

Again, the benefits of services such as VSAT to trade and economic development outweigh any risks they present. A number of countries realise that the risks can be contained and the benefits harnessed by licensing some operators to provide such services.

7.2 Indirect access may be used to build momentum

Indirect access can introduce competition quickly

Indirect access is a means of introducing competition, using the incumbent's network. An alternative (indirect access) operator maintains a relationship with its clients, and pays a wholesale charge to the incumbent for the use of its network. **Exhibit 14** shows the call routing and flow of payments in indirect access.

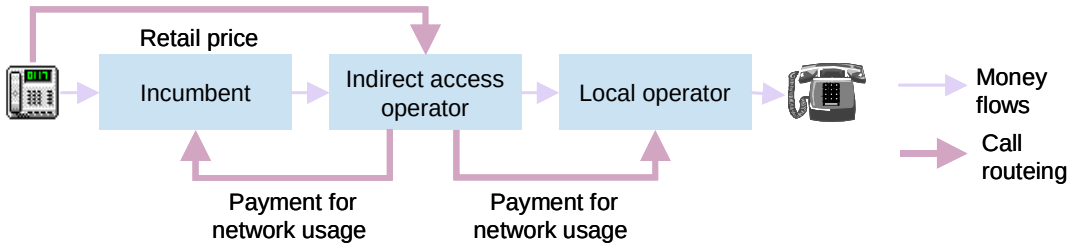

Exhibit 14: *Indirect access [Source: Analysys]*

Indirect access has many advantages

Indirect access enables competition to be rapidly introduced, without the delay that may result from alternative operators having to deploy their own network. Alternative operators may be able to

[19] VSAT refers to voice and data communications via satellite.

make service offerings that benefit from non-network efficiencies, in the process forcing the incumbent to become more efficient. New entrants may build market share using indirect access, and migrate such customers to their own network as its deployment progresses. **Exhibit 15** shows a full list of the benefits of indirect access.

Benefits	
Faster introduction of competition	Forces Incumbent to improve efficiency
Helps reduce prices	Capital inexpensive
Stimulates innovation service creation	Leads to greater network usage
Enables entrants to build market share which they may migrate to own network	Facilitates political decision-making on issues such as tariff rebalancing

Exhibit 15: *Benefits of indirect access [Source: Analysys]*

Costs should be taken into account also

Incumbent operators need to upgrade their IT systems for interconnection with alternative operators. This may include software upgrades at local exchanges, as well as operational systems for billing, customer management, etc.[20]

However, indirect access is not a substitute for infrastructure roll-out

Although it provides competition, indirect access does not increase teledensity and may be considered as a temporary measure. Planners should evaluate the impact of introducing indirect access on the development of infrastructure. If indirect access proves to be highly profitable, investors may prefer to invest in it and ignore the roll-out of more lines.

[20] In the UK, the implementation of carrier pre-selection is estimated to have cost GBP40 million (Implementation of Carrier Pre-selection in the UK", Oftel, February 1999).

8 Further research

This paper highlights the benefits of opening up the telecoms market to competition and describes a roadmap which may be followed. However, sceptics argue that the highlighted benefits may be achieved without liberalisation. Indeed, some countries such as Bhutan and Costa Rica have managed to significantly develop their telecoms sectors without market liberalisation.

Whilst the current paper provides a high-level overview of the issues surrounding telecoms market liberalisation, further investigations may be needed to explain:

- why some countries have done well without liberalisation
- whether these countries have been able to develop as well as they might have in a liberalised market.

Such studies covering countries with non-liberalised telecoms markets would provide a clearer and more objective view of the market liberalisation issue. This would complement the picture of the benefits of telecoms liberalisation presented here.