Competition and the Mobile Sector – in Developed and Developing Countries
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1.0 Introduction

No new service has spread so epidemically throughout the world’s population as mobile telephony. Recall McKinsey’s notorious forecast that by the year 2000 there might be one million mobile subscribers in the United States. Seven years later there were more than three billion worldwide. Moreover the traditional mobile voice services are now being supplemented by mobile broadband services, which have the capacity to transform certain economies quite as much as mobile voice has already done.

Although mobile communications got started in the richer advanced economies, their potential for change in developing countries is even greater. This arises because those countries lack the fixed telecommunications networks which have been ubiquitous in Europe, North America and elsewhere for decades. Poorer countries typically lack the funds to build fixed networks outside metropolitan areas, and their economic performance will hinge upon wireless technologies to a much greater degree. Already evidence is accumulating about how the spread of mobile is contributing significantly to economic growth.

In this paper, we draw on the lessons of mobile development in richer countries to reach conclusions about how they should be regulated elsewhere – in the interests of their customers and of the economies which they serve. We do not ignore the differences between developed and developing countries in penetration rates, GDP per capita, the availability of capital and so on, but we argue that one consideration is common to all countries: mobile communications is a sector which is potentially vibrantly competitive, even if it made up of a comparatively small number of firms. If governments ignore this potential and over-regulate the sector, they can put back the spread of mobile voice and broadband for many years, and do considerable harm to their economies. This risk has been present in developed countries, and some have succumbed to it by excessive regulation which has raised costs, stifled innovation, limited competition and harmed consumer welfare.

The risk of such over-regulation is present in developing countries and should be avoided. We argue that the best way to do this, in general terms, is to remove barriers to entry and to rely as far as possible on ex post interventions – taking action only after it has been shown consumers have suffered, rather than intervening in advance.

This distinction between intervening in advance and only when a problem develops is close to that between regulation and competition policy, as the regulator usually prescribes in advance how firms must behave, while a competition authority is responsible for enforcing the prohibition of certain general courses of action – excessive pricing, exclusion of competitors etc – but only enters the field after an abuse has occurred (except when it assesses and sometimes prohibits mergers). The distinction may become blurred, and the same agency may act as both regulator and competition authority in some jurisdictions.

We take the distinction between ex ante and ex post as the basic one. In some jurisdictions there is only a regulator, as there is no competition law. In at least one other (New Zealand) there was for a period only a competition authority, and no sectoral regulator. But we consider that, whatever the institutional framework, there is always a choice between ex ante and ex post intervention. And ex ante is a much more aggressive form of intervention which we argue is normally inappropriate to the mobile sector, where competitive constraints on operators should be strong.

In part 2 we discuss the course of regulation of mobile in developed countries – how there have been instances of over-regulation, although the trend today is towards increasing reliance on ex post competition law. In part 3, we outline how the mobile sector is emerging in developing countries and in part 4 we show how the benefits claimed for regulation in those counties can often be better achieved by alternative measures which seek to develop competition.
2.0 Learning from Regulating in Developed Economies
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The ‘stylised facts’ of how mobile networks in developed countries overtook fixed networking in numbers of subscribers and revenues over a period of two decades are well known:

- in the 1980s first generation mobile voice services began to attract business customers as prices fell and handsets became less unwieldy;
- one or two operators were licensed by governments and assigned spectrum to provide services; typically, the historic fixed monopolist initially held one (or the only) licence;
- from the early 1990s the GSM standard gained an ascendancy in many countries, although North American and other operators used a variety of standards. Using second generation digital technologies, and equipped with additional spectrum assignments, a growing number of licensed networks saw their customer bases ascending rapidly, to 20-40% of the population;
- charging regimes differed; in North America, the receiving party paid for incoming calls over the wireless network (so-called RPP); elsewhere, the calling party paid for the whole call (calling party pays, or CPP). Under CPP, networks normally remunerated one another for terminating calls, though there were some examples of ‘bill and keep’, under which nothing is paid for termination;
- after 2000, penetration in many countries became saturated at rates in excess of 100%, and data services have become widely available on 2.5G and especially 3G networks; take up has so far been limited (see Figure 1);
- competitive procedures for auctioning additional licences and accompanying spectrum assignments became the norm in many developed countries; the 3G auctions in Europe netted governments varying (and in some cases very large) sums; other governments continued to rely on beauty contests;
- new marketing methods, notably pre-pay and the development of ‘buckets’ of minutes for contract customers, furthered the growth of demand; and
- the price of mobile phone services has been in rapid decline, falling by 30-50% over the past five years (see Figure 2). In the US, where prices are appreciably lower than elsewhere, there are four national operators. Other developed countries typically have between three and four. Since 2004 there has been some consolidation through mergers authorised by competition authorities.

Figure 1: Global 3G and 2G take-up
These points represent a brief history of the growth of mobile communications in developed countries. Clearly, in terms of take-up, falling prices and service improvement, it is a remarkable success story. The focus of this paper, however, is on regulation, and in this respect the record has been more divergent. In some jurisdictions, notably the United States, there has been very little *ex ante* regulation. Instead, the sector has been subject to the normal rigours of US competition law on matters such as mergers between mobile operators. Operators in the European Union, Australia, and elsewhere have, however, been subject to considerable regulation of their behaviour. We shall shortly outline where the regulatory interventions have limited firms’ behaviour, and ask whether they are justified. But first we outline how regulation of the number of firms in the marketplace – structural regulation – has also influenced the development of the sector, by establishing or removing barriers to entry and allowing or prohibiting mergers.

In most developed countries, governments or regulators have kept tight control on entry into mobile communications, by restricting the number of licences available and controlling access to the spectrum which operators require. They have thus controlled the maximum number of network operators; the actual number is also determined by decisions firms take to leave the market or to acquire available licences. Early evidence from the 1980s suggested that allowing more operators to enter increased take-up and reduced prices. Following the growth of licensees in the past fifteen years, evidence\(^4\) of impact of the number of competitors on consumer outcomes has become less certain, and competition authorities in the USA and the EU have allowed mergers between operators to take place.

![Figure 2: Global Mobile price changes, 2004-2006\(^3\)](image)

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2 Source: Wireless Intelligence
3 Source: EU 12th Implementation Report
4 This has been confirmed by evidence from Africa; see Box 3 on page 22.
It is also possible to avoid close regulation of the maximum number of operators in a country via spectrum reform. The USA, the UK, Australia and other countries, including some developing ones, have a spectrum management regime which allows licences to use spectrum to be traded, and does not tie particular frequencies to particular uses. This enables firms to enter mobile markets by acquiring existing spectrum or buying at auction spectrum which can be used flexibly. The European Commission has proposed the extension of spectrum flexibility across all 27 EU member states from 2012.

Thus experience suggests ways in which structural regulation can lower barriers to entry into mobile markets. Within the framework of the traditional spectrum management regime based upon administrative assignments, more licences can be made available. Or the structural regulation itself can be replaced by the introduction of markets for spectrum use. Either of these approaches is likely to reduce the need for behavioural regulation, to which we now turn.

Behavioural regulation normally takes place within a legislative framework which sets out its scope in terms of general principles which apply to both fixed and mobile telecommunications. This is in itself potentially a problem because regulators are inclined to assume – mistakenly – that the problems of regulating fixed are similar in magnitude to those of regulating mobile, whereas mobile markets are inherently more competitive than fixed ones. This problem can be alleviated to some extent by having a framework which requires an affirmative demonstration of a market failure for regulation to be legally permissible. Box 1 provides an example of how this can be achieved.

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A. Regulating mobile termination rates

Where the calling party pays for the whole of a fixed-to-mobile (F2M) or a mobile-to-mobile (M2M) off-net call, then absent an alternative agreement between the two operators, the calling party’s operator may have to pay a termination charge to the receiving party’s operator. If such a charge can be exacted, and if there is no alternative way of reaching the receiving party other than via that party’s operator, then each operator is likely to be a monopolist in termination services and this may provide a basis for regulatory intervention.

Regulators in developed countries with CPP operators have progressively over the past decade ‘moved into’ the regulation of termination charges, usually capping them at an estimate of their costs. It should be noted that this procedure does not apply in the same way where RPP prevails, since under RPP the receiving party itself pays to terminate calls, and thus shops around for an operator which offers good value in its charges for calls received. Hence there is no more reason where RPP to regulate what the customer pays for termination than what he or she pays to make an outgoing call.

Opinions differ over whether and how mobile termination should be regulated. On the question of whether to regulate:

- high (i.e. above cost) termination rates may appear to be the market failure of ‘exploitative pricing’, i.e. they lead to higher prices of calls to mobile networks. But if the revenues are ‘recycled’ to mobile customers, via handset subsidies or other reductions in charges which increase mobile penetration and confer the benefit on others of being able to contact new mobile subscribers, then telecommunications customers in aggregate do not suffer, and may even benefit. This may provide a justification for not tampering with termination rates when the diffusion of mobile telephones is still on the increase; the situations governing termination charges for fixed-to-mobile and mobile-to-mobile (off-net) calls are quite different. Typically, fixed networks are regulated in the termination charges they can levy on mobile operators, so they have little bargaining strength. But mobile operators should be able to bargain with one another as to rates, because they are engaged in a reciprocal exchange of calls, even if the traffic between them may not be fully balanced. In relation to mobile-to-mobile termination rates, it may be enough to allow bargaining to occur without regulation, subject to interventions under competition law to prevent abuse of market power by the larger operators (which might, for example, discriminate against entrants by charging them higher rates). Alternatively, regulation can simply stipulate ex ante that rates should be reciprocal (i.e. the same in each direction). In such circumstances, operators may agree to operate a ‘bill and keep’ system, under which they agree not to remunerate each other for termination.

On the question of how to regulate mobile call termination:

- the developing methodology has been to base the charge on long-run incremental cost (LRIC) of call termination, found either from the operator’s management accounts (the so-called top-down method) or on the costing of an engineering model of a mobile network of the required traffic capacity and geographical coverage (a bottom-up model). The underlying concept is that a cost-based charge of this kind remunerates the operator terminating the call, and encourages the operator originating the call to set a cost-based retail price; this would happen if the retail price also embodied a cost-based origin element. The caller, who is assumed to be the beneficiary of the call, then faces a price signal which tends to encourage an efficient calling pattern. It should be noted, however, that this paradigm is coming increasingly into question.

- this leaves open many intricate questions about how precisely to establish a cost-based termination charge: how to value physical assets; how to value spectrum; how to identify efficient operating costs; how to deal with an operator which simultaneously operates a 2G and a 3G network, and how to deal with fixed network costs which are necessary to ensure coverage; it also raises the issue of the degree to which non-network costs, such as company overheads and customer acquisition costs, should be recovered in mobile termination charges. Most regulators have resolved this by allowing a small mark-up over network incremental costs to permit recovery in some operator-wide overhead costs (but not marketing and customer acquisition costs);
The issue has come up in the case of Peru. See Box 5 on page 27 relating to price of off-net calls. In addition, intervention to put a floor on the price in Turkey, the regulator has involved to put a floor on the price of of-net calls. In addition, see Box 5 on page 27 relating to the case of Peru.

The argument for regulating retail prices for mobile services, as distinct from fixed services, are inherently competitive; they lack the main feature of natural monopolies – high levels of sunk costs, increasing returns to scale, and major economies of density, demonstrated for example in a fixed network’s local loop. The evidence for this is before our eyes in every country where multiple operators provide service;

- a major aspect of competition concerns tariff design. The traditional fixed telecommunications charging regime (a monthly ‘access charge’ plus various per minute rates for different calls) has now been replaced in mobile services by sometimes confusing but highly varied offerings with quite different structures, tailored for different groups. In these circumstances attempts to control prices would congeal and homogenise tariff structures, and restrict competition.

There is thus very little appetite among even the most interventionist regulators for general retail price controls (except in the case of international roaming considered below). However, particular aspects of retail prices have come under scrutiny:

- in some jurisdictions, there was a prohibition on handset subsidies. These were typically temporary, applied almost entirely to contract customers, and appeared to lack a solid justification;

- the relation between the retail prices of on-net and off-net mobile calls has attracted discussion and complaint, especially from small operators which find it hard to compete against low on-net call charges offered by larger competitors. It can be shown that in particular circumstances on-net/off-net price differentials could be used by dominant operators in an anti-competitive way; and a number of legal actions have been attempted under competition law. In the light of the specific nature of any individual case, competition law is the obvious way of dealing with this issue.

Closely related to retail price regulation is the regulation of quality of service; a degradation of service quality is equivalent to a price increase. Here too, regulators have relied on competition to maintain quality, though they have sometimes published independent quality of service data to make consumers better informed.

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C. Imposing MVNOs on mobile networks

A regulator concerned about the lack of effective competition in mobile markets can either seek to regulate retail prices directly, or can mandate access to mobile network operators’ (MNO) facilities by mobile virtual network operators (MVNOs) or resellers, which can then sell into the retail market. By setting a particular access price, the regulator can indirectly control the retail price. If the access price is set low, the regulator can in effect expropriate the MNO’s assets (and thus risk deterring future investment).

Under the European Union regulatory framework for electronic communications services, between 2003 and 2007 NRAs were required to investigate the market for ‘mobile access and call origination’ in their countries, to establish if it were effectively competitive or if one or more mobile operators were exercising dominance in the market.11

Because most markets contained more than one significant player, the predominant form of dominance found was so-called joint or collective dominance in which two or more operators acted in parallel tacitly and without any explicit communication. NRAs would seek to show such behaviour by pointing to unreasonable refusals to supply potential MVNOs or resellers with wholesale products, and alleging parallel pricing behaviour in retail markets. Only in one member state (Spain) did the NRA impose a remedy on mobile operators found to be jointly dominant in this market.12 In 2007, the European Commission decided to omit the mobile access and call origination market from the list of markets requiring investigation by NRAs, on the grounds that it was competitive and therefore failed to meet the criteria for ex ante regulation. (This is an example of the operation of the structured approach to regulation described in Box 1 on page 8.)

At stake here are two issues. Is it possible or probable that two or more mobile operators would jointly collude to weaken or eliminate competition? And how best can this problem (if it exists) be tackled? The EU record has provided no evidence of a strong tendency to collude, but the possibility cannot be eliminated. As for the second question, use predominantly of competition law seems a more proportionate way forward.

D. International roaming

In 2007, a decision came into force in the European Union which imposed limits on the retail and wholesale prices which can be charged for intra-EU calls made or received by an EU subscriber who is travelling in another member state.13

This application of ex ante regulation was highly controversial, and opposed by almost all mobile operators. It represents a departure from the approach taken to the regulation of other electronic communications services markets within the EU. We do not consider it a precedent which developing countries should consider, except in unusual circumstances.

Some African operators with licences in two or more countries apply the same charges to their subscribers in whichever country they are located in; in other words, roaming charges are the same as home country charges. In another interesting development – see Box 2: The Case of Uganda on page 20 – when one multi-country operator in Africa offered international roaming at national rates, a group of independent operators quickly formed a consortium to match the offer, thereby providing a graphic demonstration of competition in action.

11 If the MNOs were not supplying to resellers and have not concluded agreements with MVNOs, this would be a market in which there were no transactions; it would consist entirely of ‘self-supply’ by each operator.
12 The decision is under appeal in Spain.
13 The subscriber pays its own operator for all the elements of an outgoing roamed call, and also pays, when abroad, a charge for conveyance of the call to his or her overseas location.
E. Regulation of coverage

Many regulators in developed countries have imposed coverage or universal obligations on the operators which they license. This is driven by the commendable desire to ensure that the benefits of communications are spread widely throughout the population, and that a ‘digital divide’ does not emerge. However, it is important that the resource cost of this regime is recognised and set alongside the benefit. Developed countries are normally rich enough to cover the cost of such regulation, and the marketing benefit to operators of being able to claim extensive coverage is often so strong that operators voluntarily match or even exceed their licence coverage obligations. But some coverage requirements can have a detrimental effect on end users; the losers lose more than the winners gain.

Coverage obligations can be reduced in several ways: firstly, by not imposing the same obligations on all operators. If there are five of them, it makes little sense to make each of them build a free-standing network in remoter areas, provided that a way can be found to prevent the more limited competition having a detrimental effect on consumers there. Alternatively, the costs of duplication can be cut by allowing the maximum infrastructure sharing consistent with the maintenance of effective competition. These lessons resonate very strongly in developing countries, where the risk that excessive coverage obligations will weaken and chill investment is even more acute.

F. Mobile network neutrality

Mobile network neutrality is regulations aimed at preventing firms from imposing discriminatory charges and conditions on content holders for what is charged for access to its network. Proponents of such regulation fear the creation of ‘walled gardens’ which tie subscribers down to particular content providers; either they are driven by ‘freedom of information’ concerns or believe that exclusive content is a means of expanding market power.

We believe that these proposals are misplaced in relation to mobile. In a market subject to competition, an operator risks losing customers by restricting the material to which they have access, just as it does by over-charging them. Hence an unregulated environment should both expand the range of information and services available and protect consumers. If there are abuses, competition law should deal with them. The same should apply to concerted practices by operators to place unnecessary restrictions on how customers can use their mobile networks – an issue which is more widely discussed in the US than elsewhere.14

Conclusions from mobile regulation in developed countries

The spread of mobile services in the developed world has been an unprecedented success, which at the very least shows that regulation has not killed it off. But the analysis above also suggests that the role of ex ante regulation (as opposed to the application of competition law) has exceeded what was strictly necessary. In particular, the following are suggested as possible lessons for developing countries:

- the case for regulating mobile-to-mobile termination rates is much weaker than for regulating fixed-to-mobile rates (and in developing countries fixed networks are secondary rather than primary providers of lines);
- intervention in retail prices is unjustified;
- collusion among operators is possible, but is better addressed by competition law;
- European regulation of international roaming should not be copied;
- coverage obligations should be set at low levels and ways found of achieving them at minimum costs;
- there is no imminent need to argue for mobile net neutrality.

Secondly, these conditions are best achieved within arrangements for structural regulation which reduce barriers to entry (and exit) as much as possible.
3.0 The Developing Country Context
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The context
The rapid proliferation of mobile technology across developed countries – to the point where many countries now exhibit penetration rates in excess of 100% – represents a success story for value creation and the development of the telecoms sector. As shown below in Figure 3, developing countries lag significantly behind their developed counterparts in terms of mobile penetration.15

However, whilst developing countries lag in terms of penetration rates, the recent growth rate in take-up has far outstripped those seen in developed economies. This is demonstrated in Figure 4 opposite, which shows penetration rates much lower in developing countries than in their developed counterparts – in 2006, 32 cellular phones per 100 inhabitants compared with 91 – but with the former rapidly catching up by virtue of much faster growth – 43% compared with 13% CAGR from 2000 to 2006.

Figure 3: Mobile penetration by region, 200616

16 Source: Telegeography
It is also interesting to note that, of the four countries with largest mobile subscriber base, three are developing countries – China (530m), Russia (169m), India (237m) – with the other being the USA, with 252m\(^{17}\), suggesting high absolute mobile access growth in both developing countries and, by extension, on a global scale. It is estimated by the GSMA that as many as half of the world’s two billion phones are found in developing countries, and that of those sold in the 18 months up to 2009, 85% will be in the developing world.

However, it is not only the growth in mobile penetration that is of interest, but also its comparison with prevailing fixed line availability. Figures 5 and 6 overleaf show that mobile penetration in developing countries – and in particular Africa – is far outstripping the very low levels of existing fixed line penetration and therefore – in comparison with developed countries, where fixed line access is typically very high – mobile access represents the singular widespread option for telephony access of any kind. For example, as highlighted in Figures 5 and 6, Africa has experienced mobile penetration growth rates in excess of 50% per annum since the turn of the century, and mobile access accounts for almost nine-tenths of all forms of telephony access.

\(^{17}\) Source: Wireless Intelligence – Data for Q4 2007
Figure 5: Growth and mobile subscribers, 2001 – 2006

Figure 6: Mobile and fixed line growth rates, 2006
This message is reinforced – taking Africa again as the example – by Figure 7 above, showing fixed line penetration across the continent at just 3%, and mobile access as being increasingly the primary means of telecommunications access. Whilst Africa is the extreme example, in terms of low fixed line penetration and high mobile take-up, the theme persists across other developing countries.

Figure 7: Fixed vs mobile penetration, Africa

Figure 8: Fixed-line penetration

Figure 9: Mobile penetration
The mobile market in Uganda currently has five mobile operators, with a sixth licence recently issued to Reliance Communications of India, which plans to launch GSM services in the third quarter of 2008. Increasing competition has forced operators to offer promotions and lower tariffs although mobile pricing is still high: a local mobile call costs as much as it does to call neighbouring Kenya. The high cost of mobile is largely due to high interconnection fees between operators. Costs associated with mobile use are also exacerbated in Uganda by the current tax regime, which combines a 12% excise duty on mobile phone calls and an 18% VAT rate.

An interesting development in the region was prompted by Celtel, that has mobile operations in Kenya, Tanzania and Uganda. In September 2006, the company launched an initiative called One Network which introduced regional tariffs without international roaming charges for the three countries. In Uganda, Celtel estimates that 40% of its subscriber growth since the launch of One Network can be attributed to the new service. Forced to compete, Safaricom in Kenya, Vodacom in Tanzania and MTN Uganda launched a similar offer in February 2007 when, one month after the introduction of the new service, MTN saw a seven-fold increase in the number of roaming customers. The One Network initiative was extended to include Congo, Gabon and the Democratic Republic of Congo in May 2007. Market penetration in Uganda at Q4 2007 stood at 14.4%, up from 9.5%, at Q4 2006 showing significant growth.18

Uganda has commissioned a study to review interconnection costs where the terms of reference appear to leave the door open to the construction of a cost-based retail pricing model based upon the price-cap method for mobile.19

So why so different in developing countries?

As discussed above, developing countries are, in the context of telecommunications networks, increasingly characterised by low (and barely growing) fixed line access and mobile access which is growing at persistent double-digit levels and far outstripping penetration levels of its fixed counterpart. This contrasts with developed countries, where fixed line access was already very high prior to the introduction of mobile telephony in the 1980s and 1990s, and mobile has grown so rapidly over the course of two decades or so that penetration rates in excess of 100% are common.

The fundamental difference, therefore, is that access to mobile telephony for large portions of the population in many developing countries represents the first opportunity to access telecoms services of any kind. As a consequence, it offers the opportunity to generate many of the economic and social benefits which have accrued in developed countries from the growth in fixed line – rather than mobile – penetration. In other words, the economic and social gains resulting from mobile penetration in developing countries in many ways represent the stand-alone benefits of both telephony access and mobility. In contrast, in developed countries, the benefits are far more associated with the incremental benefits of mobility, due to the existence of often ubiquitous fixed line penetration prior to the introduction of mobile networks.

Before discussing these benefits, it is worth considering why fixed line networks have not enjoyed success in developing countries, when assessed against networks in the developed nations. A key reason is that the deployment of a fixed line network requires not only heavy investment, but also that the necessary national infrastructure – and transport and power in particular – is sufficiently robust and reliable to allow for efficient deployment. In developing countries, a lack of supporting infrastructure has often been a significant barrier to investment and effective deployment and, by extension, a hindrance to economic development. This is illustrated by UN analysis (Figure 10) showing that, in 1999, LDC road density was significantly less than half of that in OECD countries, and less than 20% of the population had access to electricity, compared with ubiquitous access in developed nations.20

18 Information collated from Wireless Intelligence; Uganda – Mobile Market – Overview and Statistics, Nov 2007, Paul Budde Communication Pty Ltd; and Out of Africa, Dec 7th 2006, The Economist

19 Terms of Reference – Interconnection Cost Study, Ugandan Communications Commission, 2007

20 http://www.unctad.org/en/docs/iic2006p22b3_en.pdf; the electrification rate is defined as the percentage of the population with access to electricity.
Additionally, the relative investment requirements of mobile networks are significantly lower than for fixed networks (and therefore the burden on supporting infrastructure is lighter). This is particularly the case in areas of low population density, typical of significant parts of developing countries. Further, whilst low subscriber density (and calling rates) are likely to have the effect of increasing unit costs of service\(^1\), the significantly lower labour costs in developing countries mean that the labour element of deployment (indeed, of either mobile or fixed networks) will be significantly lower than in developed economies. By way of example, the average annual wage in the US is around 40,000 USD, compared with 1,200 USD in China.

The significance of the relative (and indeed absolute) investment costs when comparing fixed and mobile networks is particularly important in the context of relatively very low – and often very skewed – GDP per capita in developing countries. This makes the costs of investment, and hence the prices required to make the project financially viable, of critical importance. And indeed, mobile operators have recognized that the Total Cost of Ownership (TCO)\(^2\) is central to affordability and hence financial success, and have sought to tailor their service offerings to reflect this. In Africa, for example, where calling rates tend to be low and where access – rather than calling – is key, operators are establishing models where access charges are relatively low (including tailored low-cost, low-end handsets) and with higher per minute charges. Regardless of the pricing structure of the service offerings, TCO is very much a key consideration. Interestingly, the GSMA has identified that, whilst mobile penetration is significantly (and negatively) related to TCO – the higher the TCO, the lower the penetration – the same is not true of the handset price in isolation, since this represents on average less than 15% of TCO; significant variations in this figure have a disproportionately small impact on TCO.

This combination of lower costs – and hence prices – along with far quicker speed of roll-out and less requirement for large-scale civil engineering capabilities – have made mobile networks far quicker to deploy and more affordable when compared with their fixed counterparts. These two factors driving the double-digit growth rates discussed above.

\(^1\) Due to the presence of fixed common costs associated with the provision of coverage to support low levels of demand for capacity.

\(^2\) This is defined as the total cost of communications, comprising service fees, taxes and the handset price.
So, what are the benefits of mobile penetration growth in developing countries?

The impact of the proliferation of mobile networks in developing countries cannot be disentangled from the lack of the prevailing fixed line networks; it is precisely due to the lack of anything approaching a reasonably broad availability of fixed network access that the impact of mobile access, in both economic and social terms, has been – and continues to be – so significant.

Economic benefits

The economic benefits associated with mobile penetration growth have been significant. A study by Waverman et al (2005)\(^{23}\) suggests that, for an identified ‘low income’ sample, “a country with an average of 10 more mobile phones for every 100 people would have enjoyed a per capita GDP growth higher by 0.59%.” A study by the GSMA suggests an even bigger economic effect, suggesting, from a survey of 57 countries, that a 10% increase in mobile penetration leads to a 1.2% increase in the annual growth rate of GDP.

Regulation: Encouraging Competition and Mobile Roll-out

Some developing countries may have little in the way of competition law e.g. Jamaica and Barbados, but still choose to use a primarily ex post regulation approach through the regulator. In Ethiopia regulation of the mobile sector is so restrictive that a single operator dominates the market with little incentive to improve service or reduce prices to the consumer. At the end of 2007, market penetration in Ethiopia was still below 1%, whereas in neighbouring Uganda penetration runs above 14%. Additionally mobile markets in some countries continue to face heavy regulation to protect against the competition which mobile presents against the fixed telephony market where the state frequently holds a strong interest.

A study by Vodafone\(^{28}\) suggested that “62% of businesses in South Africa, and 59% in Egypt, said mobile use was linked to an increase in profits – despite higher call costs.”

This economic impact results from a wide range of entrepreneurial and business behaviour which was impossible prior to available access to reliable telephony. One fundamental effect has been the ability to improve the economic efficiency and functioning of existing markets, both in terms of improvements in the timeliness and availability of information, and the ability of market participants to interact far more effectively. Commodity markets are a clear example of such economic improvements at work: with mobile access, farmers are able to gain real-time access to crop prices. As an example identified in a UK Government study:

“The establishment Manobi (a French private telecommunications company) uses Wireless Application Protocol (WAP)-enabled mobile phones to obtain up-to-date market prices for Senegalese fruit and vegetable farmers. The prices are updated in real time via a central database by data collectors at various markets, and offer transparency of prices inside the market that many producers lack.”\(^{27}\)

Such examples are increasingly common across developing countries, and have the effect not only of improving information flows – and hence facilitating better economic decisions and better functioning economic markets – but also in significantly reducing the costs (both in direct financial terms but also of time taken) in travelling to markets to trade or gather information, with the often poor transport infrastructure often exacerbating the challenges. A study by Vodafone\(^{28}\) suggested that “62% of businesses in South Africa, and 59% in Egypt, said mobile use was linked to an increase in profits – despite higher call costs.”

Box 3: Regulation: Encouraging Competition and Mobile Roll-out


28 In Africa: the Impact of Mobile Phones, Vodafone Policy Paper Series, 2005
The economic impacts go further than improving the functioning of existing markets: they also present opportunities for entrepreneurs to establish new businesses and generate economic wealth. For example, Grameen Bank in Bangladesh offers women low-cost loans to set up village-based mobile telephony exchanges, from which they can generate up to three times the average national wage. The Vodafone study referred to above suggested that 85% of small businesses run by black people in South Africa rely solely on mobile telephony.

The business models of mobile operators in developing countries have differed in some significant respects, to account for local conditions such as low incomes and the wider economic effects of poor transport infrastructure. At the heart of this difference is the fact that in many developing countries, and in particular African nations, access – rather than calling ability – is central to the generated benefits, and phone sharing, as well as the use of practices such as ‘flash calling’ and ring back, all act as ways of keeping call charges to a minimum. As an example of phone sharing, the Vodafone / CEPR study showed that 97% of people surveyed in Tanzania stated they had access to a mobile phone, despite mobile penetration there being 20%. In addition, operators recognise not only relatively low incomes but also low cash availability – low levels of cash in hand – in structuring their service offerings. Many provide new ways to tackle this ‘cash barrier’, such as microfinance of handsets and lower denominations of top-up for prepaid service offerings (to which the majority of new subscribers in developing countries sign up).

In addition to innovations in pricing and financing to meet end user requirements in developing countries, operators are developing further uses of mobiles to help address the logistical challenges facing its existing and prospective subscribers. A significant example of this is the rapid growth in so-called ‘m-banking’, whereby a mobile network can be used to effect secure, timely and efficient transactions. Whilst for more than a decade there have been predictions concerning the rise of m-commerce and the emergence of a cashless society, it is in developing countries that a large proportion of the world’s estimated 2.5 billion ‘unbanked’ – those without access to formal banking services – live, and where m-banking take-up is happening. Here, services including bill payments, account transfers and cash deposits and withdrawals are increasingly being offered by operators across developing countries.

Examples include G-Cash and Smart Money in the Philippines, MTN Mobile Money in South Africa, M-Pesa in Kenya and Celpay in Zambia and the Democratic Republic of Congo. Furthermore, an extension of the relationship between mobile networking and banking is the use of airtime as a ‘virtual currency’, where prepaid top-up codes are, rather than being redeemed by the user, ‘traded’ for goods and services.

Social benefits

In addition to the economic benefits, there is significant evidence of widespread social benefits resulting from increases in mobile penetration in developing countries. The most obvious such benefit is greater accessibility and the ability to remain in contact with friends and family. This is particularly positive in terms of impact on quality of life where family members work away from their home regularly or for significant periods, with their ability to travel home being affected by often poor quality and sparse road and rail networks. However, other effects include access to the internet for education and information – creating a more connected society and economy – as well as access to remote healthcare and call-out services. An example of the latter is Bangladesh Grameenphone’s Healthline, which offers phone diagnosis and has medical records accessible at call centres. In collaboration with the GSMA, in 2006 it set up 400 Community Information Centres in rural areas, which are run by local entrepreneurs and equipped with PCs with EDGE-enabled internet access.

The experience from developed countries has provided a clear message that the mobile sector can generate significant benefits to the economy and society and, indeed, the scale and pervasiveness of the benefits in developing countries may outstrip those of their developed counterparts, due to low existing fixed line penetration and the opportunities which stem from providing access to ICT infrastructure for the very first time to large portions of the population.

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30 Examples from NextBillion.net

31 Telenor in Bangladesh – 10 years of empowering people
4.0 Regulatory Policy in Developing Countries
4. Regulatory Policy for Mobiles in Developing Countries
4.0 Learning from Regulating in Developed Economies

We now bring together the conclusions of the earlier sections of this paper to derive some policy recommendations for developing countries.

Our recommendations are governed by objectives which differ somewhat from those appropriate to developed countries. In the latter, regulation should be driven by the long term interests of consumers. In developing countries, the importance of mobiles for broader development of commerce, banking and other economic activities is so strong that it is appropriate explicitly to focus upon the goal of economic development. In practice, however, we believe that the interests of household and business end users and of the economy as a whole are highly congruent.

What flows from this is the encouragement of competitive investment in mobile networks, thereby leading to high levels of availability and low price levels which generate affordability for both households and small businesses, and high penetration.

In summary our recommendations are:

- adopt a general policy of liberalisation;
- develop an institutional framework of communications and spectrum regulation which can support this policy;
- minimise regulatory involvement;
- maximise spectrum availability;
- don’t allow taxation to hamper the growth of mobiles; and
- encourage universal service and coverage goals, but don’t let them inhibit either competition or investment

Proposal 1: a general policy of liberalisation

There is a temptation, visible in all countries, for governments and regulators to want to curb and confine their mobile sectors. This is a product of recognition of the popularity and importance of mobile activity, and a desire to shape it in socially or politically useful ways (perhaps by using it as a source of tax revenue, perhaps by improving significant social obligations on operators).

Proposal 2. Develop an institutional framework of communications and spectrum regulation which can support this policy.

The structure of the institutional framework plays a critical role both in the incentive to invest and the nature and effectiveness of competition thereafter. There are clear lessons to be learned from developed countries in respect of general characteristics of effective policy framework specification, which can be discussed in terms of (i) the effectiveness and structure of the overarching legal framework and (ii) the effectiveness of the sector-specific regulatory body.

OPEN MARKETS

Developing countries with a more defensive stance may have concerns that foreign mobile companies with foreign interests will dominate the market and export the financial rewards. Foreign investors become wary of participation in markets where they perceive treatment to be unfair. In November 2007, the Indonesian competition agency found that Temasek, the Singapore state investment body, had breached competition rules through ownership of stakes in the country’s two largest mobile phone operators – Telkomsel and Indosat. The agency subsequently ordered Telkomsel to reduce tariffs by at least 15%. Temasek also found problems when it purchased Shin Corp, the leading telecommunications group prompting public protests that led to a military coup in 2006. Generally countries with an outward-looking perspective are loosening controls on foreign ownership as the mobile market develops. Saudi Arabia joined the WTO in 2005 with the government agreeing to open up the telecoms industry progressively to foreign investment. By the end of 2008, foreign investors will be allowed to hold up to 60% of fixed and mobile phone companies. The auction for the third mobile phone licence in Saudi Arabia in March 2007 was won by the operator MTC from Kuwait which has operations in four of the neighbouring countries. With the allocation of the third mobile licence, competition looks to become fierce against the dominant operator Saudi Telecom which still held 70% of connections at the end of 2007.

Box 4: Open Markets

We argue, by contrast, that freedom for operators from the shackles of regulation best serves the interests of end users – who get cheaper prices, more choice and better service from a competitive regime without unnecessary barriers to entry, of governments – who see their economies (and the tax base) expending significantly faster than it otherwise would; and of more successful operators. Possible losers are inefficient operators and households which would have benefited from a more vigorous universal service policy. Balancing the interests of winners and losers is a political decision, but we conjecture that the winners’ gains greatly exceed the losers’ losses.

32 Indonesia launches mobile tariffs probe, FT.com, Dec 13th 2007
33 Discomfort zone: a divided Asean struggling to match dreams with reality, FT.com, Nov 27 2007
34 MTC pays S$1.8bn for Saudi licence, Financial Times, March 26th 2007; The telecom spring, Economist Intelligence Unit, Feb 1st 2007
An effective legal framework

Central to a well-functioning telecoms sector is the existence of a legal framework which ensures the effective functioning of competition and, where policy intervention is required, provides the necessary powers to enforce and, where necessary, impose remedial action and penalise offenders as appropriate. In most developed countries, such legal frameworks, as relevant to the telecommunications sector, comprise two main elements: general competition law, and sector-specific law.

OSIPTEL: TELECOMMUNICATIONS REGULATOR AND COMPETITION AUTHORITY IN PERU.

OSIPTEL in Peru has two roles with respect to the supervision of the telecommunications market in Peru. Firstly it acts as a regulator, defining the established (ex ante) rules that prevent the development of behaviour that negatively affects the market and consumers, through the imposition of tariff controls, quality controls and interconnection obligations. Secondly, it acts as a competition authority, enforcing antitrust guidelines (ex post), designed to prohibit monopoly power and anticompetitive practices. OSIPTEL adopts a distinction based upon American jurisprudence whereby actions are divided between per se rules and the rule of reason. In their application of the general law on free competition (Ley de Libre Competencia, Decreto Legislativo N° 701) as well as the relevant articles relating to the guidelines for free competition within the telecommunications law (Ley de Telecomunicaciones, approved by Supreme Decree N° 013-93-TCC), OSIPTEL controls abuse of dominant market position and restrictive practices such as control of essential network resources and information.

Following from a period of strong growth in the mobile sector in Peru, self-regulation by the operators began to fail when significant differences between on-net and off-net call prices became apparent. This failure was the result of discriminatory termination costs. On this footing in 2005 the regulator intervened in the market. More recently, in April 2007 Peru introduced a law on number portability assuring that any user has the right to maintain their number when changing mobile operator.

Box 5: Osiptel: Telecommunications Regulator and Competition Authority in Peru

Prior to the 1970s, competition law policy was rare in developing countries. However, since then, both developed and, increasingly, developing countries, have introduced some form of competition law; today, over 100 countries have some form of such legislation. This development is borne of both external and internal factors. External pressure from bodies such as the IMF, WTO and UNCTAD have proven somewhat effective in raising competition law as a key element in economic development, for example, the recent Doha round of WTO trade talks included discussion of the possibility of a global framework for the enforcement of competition law. In addition, countries themselves are increasingly recognising the importance of such legislation in ensuring effective market developments for the benefit of the economy, with this being particularly the case where developing countries face competition for Foreign Direct Investment (FDI) and with FDI favouring countries with established frameworks to facilitate fair and effective competition. However, many developing countries have yet to tackle the challenges – political, logistical, legislative and expertise-related – involved not only in putting in place a competition law framework but also ensuring it is functioning effectively as a deterrent and, where necessary, a punitive framework. As put directly by the South African Competition Commissioner: “Developing countries have never taken seriously the introduction of competition policy as a key instrument to economic development. I say this because there are today many developing countries that still question the role that competition policy can play in their development and, whilst professing to taking competition policy seriously, however still lack the political will to not only put in place competition policy and relevant structures but also to support those that are in place...The infrastructure is either non-existent or is in such a state that no meaningful benefit can be derived from it.”

35 United Nations Conference on Trade and Development.
36 The WTO does not have international enforcement powers; however, the International Competition Network potentially provides a basis for international coordination across national competition authorities.
SIZE AND MARKET POWER

The model for telecoms regulation in the developing world relies heavily upon defining significant market power and identifying anti-competitive practices. This process is helped by having regulators that operate transparently and systematically, and conduct appropriate analysis. In a small market, such analysis might lead to the conclusion that the market may be adequately served by a duopoly as long as competition functions properly.

Developing countries may have a tendency to act in a much more pre-emptive manner to prohibit firms from expanding past a certain size and dominating the market. This approach may stem from an historic tendency for firms to collude and monopolies to dominate markets, coupled with poorly functioning competition law and timid government. One example of note is Mexico where a large number of industries are dominated by duopolies or monopolies. In a bid to encourage competition in the mobile market, the regulator has since July 2005 restricted operators to accumulate a maximum of 35 megahertz of spectrum in any one region, preventing concentration by a single company. This underlies the necessity for effective and accountable government and regulators who systematically apply policy.

Box 6: Size and Market Power

Whilst competition law and sector-specific measures are distinct, they are intertwined in two key ways. First, as increasingly reflected in the specification of sector regulation in developed countries, the principles used in competition law to test for abuse are also strong underpinnings for the assessment of the need for sector-specific ex ante regulation; across developed countries, standard competition law approaches to market definition and the identification of dominance are used determine the need for, and breadth of, regulation. Second, and relatedly, regulation should be seen as a transitory measure: it is designed to mimic the effects of competition (innovation, lower prices, choice, quality) where market failure exists but, crucially, regulation should be removed where possible – i.e. once competition is established and markets are working effectively – with reliance then upon general competition law to deter anti-competitive behaviour.

So, progress towards a framework of effective competition law has been made in many developing countries, but any failure in its design – and, of course, in effective implementation – is likely to have negative consequences in the context of telecoms penetration and its socioeconomic benefits. These may stem from a lack of confidence in the legal framework governing commercial affairs, and a consequent lack of incentive to invest – or as a minimum a higher required return borne of increased risk. This is particularly true in the face of competition for FDI, with those countries better established in terms of overarching policy frameworks likely to fare better in terms of inward investment. This lack of investment is likely to result in a consequent lack of competition, and the opportunity for existing players to stifle competitive entry and success. This is in turn likely to have a negative impact on prospective economic growth rates, and an inability to fully exploit those benefits – both economic and social – outlined in Part 3 above.

Furthermore, in the face of a sector-specific framework but an absence of effective competition policy, regulation takes on a permanent and entrenched feel, since a lack of competition law means not only that there is no-one to pass the task on to once (or if) competition becomes effective, but also that the sector-specific law is likely to have to serve both purposes – the ex ante regulation necessary for the introduction of competition but also the ex post role of deterring anti-competitive behaviour. We argue, therefore, that a strong dual approach – combining targeted sector-specific ex ante regulation and ex post competition policy – provides a solid foundation for effective market development.

What to do, then, in the absence of competition law, as is still the case in a significant number of developing countries? Some believe that the demarcation lines between competition policy and sector-specific regulation are increasingly blurred. As a consequence, where there is no competition authority, giving sector regulators the right to apply both ex ante and ex post measures may represent an effective and expedient means of establishing a well-functioning framework for both effective competition and – crucially for developing countries – a reliable, stable and predictable environment conducive to infrastructure investment. Reliance on sector regulators to perform both ex ante and ex post roles may therefore, in the absence of a working competition framework, present an effective route to establishing a well-functioning market conducive to investment and growth.

38 “Antitrust Thrust”, The Economist, Nov. 30th 2007
An independent and effective regulatory body

As discussed above, *ex post* competition law is likely to prove insufficient to fully deter anti-competitive behaviour in a number of key areas in telecoms. Therefore, in addition to an effective legal framework – encompassing both competition and sector-specific legislation, and the relationship between the two – a further requirement for the successful development of the telecoms sector is the establishment of a regulatory body which can efficiently carry out those tasks assigned to it. Precedent suggests such a body will be distinct from – and independent from – Government, so that political pressures cannot be brought to bear in a way that inappropriately influences policy or changes with changes in Government. The body will have clearly articulated roles and responsibilities, with such roles and responsibilities commonly spelt out within the overarching policy framework (such as the Telecommunications Law). In addition to independence from Government, independence from market participants is also crucial to the success of a regulatory regime, in terms of establishing fair and effective competition and therefore setting the ground-rules which will encourage investment and competitive entry. The significance of the independence of such a regulatory body – i.e. the avoidance of actual or perceived ‘regulatory capture’ – is reflected in the WTO’s reference paper, stating that “the regulatory body is separate from, and not accountable to, any supplier of basic telecommunications services. The decisions of and the procedures used by regulators shall be impartial with respect to all market participants.” Take as an example the UK. The Telecommunications Act 2003 prescribes at the outset the duties, functions and general powers of Ofcom, the UK sector regulator, with its duties being to “…further the interests of the citizens in relation to communications matters; and to further the interests of consumers in relevant markets, where appropriate by promoting competition.”

Under its remit, Ofcom is specifically required to provide for, inter alia, the optimal use of spectrum, the availability of electronic communications services and the availability and plurality of radio and television services. Crucially, in so doing, it is required to take into account a number of factors, including the desirability of competition and the establishment of incentives for investment and innovation.

In addition to considering the duties of the regulatory body, it is also necessary to consider the breadth of its powers and obligations, in sectoral terms. Increasingly, in developed countries, we are seeing the integration of previously separate regulatory bodies for telecoms, spectrum and media, in recognition of the convergence of the related networks and downstream services. Whilst wide-scale convergence in developing countries is less obvious, a key consideration in this regard when establishing a regulatory framework is how best to manage spectrum policy. A key requirement is to establish arrangements that recognise the importance of the proliferation of mobile telephony in generating the economic and social benefits articulated above, and ensure that the effective and efficient management of spectrum policy is recognised as central to the success of competition and penetration growth.

However, in addition to establishing a regulatory body with clearly articulated roles, responsibilities and obligations, it is also important that this body is sufficiently skilled and resourced to ensure it can fulfil its duties appropriately. Increasingly, and encouragingly, Government contracts for assistance in establishing regulatory frameworks include specification of the appropriate roles, responsibilities and resources of regulatory bodies. There exists much guidance from international bodies, as well as a wealth of international precedent to guide decision-making, that any failure to appropriately equip and resource regulators risks an outcome which is inefficient, inappropriate and ill-specified. Whilst regulatory bodies can recognise, in general terms, the axioms of effective regulation – non-discrimination, transparency, timeliness, proportionality and so on – a key risk is that international precedent is adopted without recognition that country-specific characteristics must be taken into account in order to arrive at the right regulatory measures.
THE CASE OF CHILE

Chile has made much progress in recent years in terms of developing competition law, procedural mechanisms for competition review and regulatory frameworks. The government in Chile has made it a priority to improve competition law enforcement. The main thrust of reform has been the creation of a new Antitrust Tribunal. An OECD report on competition law and policy in Chile in 2004 highlights aspects of the progress made.

The competition institutions have been particularly impressive in their work with infrastructure monopolies. Chile’s Antitrust Commission once prohibited the telecom regulator from allocating spectrum to two firms it had chosen and ordered the regulator to hold an auction instead... A Commission ruling that local telephony services were not competitive laid out six provisions aimed at creating a genuinely competitive market.

An important element of the application of regulation surrounds clarity, consistency and the efficiency of bureaucratic processes. The OECD review reports positive progress in this area too.

Chile’s enforcement authority, the National Economic Prosecutor’s Office, is taking some important steps to decrease uncertainty. Summaries and the full text of all Preventative Commission and Antitrust Commission decisions will be on the Office’s website by year’s end, and the Office’s own decisions will eventually be added.

For example, the progrowth agenda is proposing to reduce the harm caused by slow and non-transparent licensing and other procedures, particularly at the municipal level, by enacting a law decreeing that all requests not acted upon within a certain time period are deemed to be approved.

Chile’s stance on regulation is primarily market oriented and it chooses only to intervene in the case of access prices. The telecom regulator (Subsecretaría de Telecomunicaciones, SUBTEL) is not authorised to set tariffs (except from access charges) unless the Commission (Competition Tribunal) has found the market not to be competitive. SUBTEL is only a subsecretariat of the Ministry, and not independent. The OECD report states:

The telecoms law states that providers may generally set the price of their services, except that access charges are always fixed, and other prices may be fixed if the Antitrust Commission (today the Competition Tribunal; created by law in 2003) finds that competitive conditions do not exist.

This contrasts with the previous system in which, according to a recent World Bank study on antitrust and competition law in Chile:

In Chile, for example, the pricing provisions of the 1982 General Law of Telecommunications were vague and prices were set through informal negotiations between incumbent operators and the Ministry of Economy. Prices were set at inefficient levels, cross-subsidisation between services was maintained and antitrust authorities did not intervene to correct the situation.

Proposal 3: Minimise regulatory involvement with operators’ behaviour

We have argued above, based on experience in developed countries, that many regulatory interventions are unnecessary and even harmful if alternative structural solutions are available. In relation to developing countries, we believe it follows that:

1. there is no basis for ex ante regulation of retail prices, in respect of either level or structure, although a background capability to deal ex post with abusive behaviour by dominant firms is described below. There are signs that some regulators are contemplating or studying retail price controls; we think this is almost certainly a poor solution to the problem of high prices, and given the sophistication and complexity of mobile pricing, it may only work if the regulator imposes very strict limitations on the structure as well as the level of tariffs – which will almost certainly be detrimental to consumers; price controls will also form a basis around which collusion can be effectively organised; in our view, even requirements on firms to prenotify price changes have an adverse effect on the development of competition;

2. while it may be necessary to regulate the price at which fixed to mobile calls are terminated on mobile networks, termination of mobile to mobile calls can be left in the first instance to market negotiations. However, we may want the operators to bargain ‘in the shadow’ of some type of interventions so that bad outcomes for end users are avoided. This ties in with the institutional situation. A competent competition authority or regulator could produce good results by lurking in the shadows. But if such an ex post intervention were expected to be capricious or politicised, it might be better to have a more predictable system of ex ante regulation; and

3. coverage obligations are considered in Proposal 6.

Box 7: The Case of Chile

40 Competition Law and Policy in Chile: A Peer Review (2004), OECD. Thanks go to comments from Telenor regarding the case of Chile.

PRICE AND SERVICE REGULATION IN JORDAN

Jordan has recently released a public consultation document\(^{42}\) on the development of a process for handling price and service offers. Whilst the Jordanian telecommunications Regulatory Commission (TRC) sees competition as serving the interests of the industry and consumers well, it is seeking a framework for monitoring competition and prohibiting anti-competitive practices. The public consultation document refers laudably to the required features of any process implemented as responding to simplicity, stability, fairness, transparency, flexibility and symmetry with respect to the treatment of industry players. The consultation document does not refer to the construction of pricing rules, but to a process of reviewing the prices and service offers chosen by operators. Conscious of the fact that an established review process can create market rigidities, the TRC believes that this problem can be surpassed through good procedural design. But we doubt whether a price review process for mobile is, as a general rule.

Proposal 4. Ensure spectrum is available

The key here is to avoid making spectrum access a barrier to entry, or at least to minimise its effect. Having more operators really does make a difference to prices, as is shown by comparisons of country pairs. An example is provided by Congo, with two operators, and the Democratic Republic of Congo, with four; prices are higher in the former than in the latter. This means that ensuring speedy entry into the marketplace on the part of wireless operators is likely to be a higher priority than the attainment of full long run optimality in spectrum use. This is best achieved by a two-stage approach.

The first stage involves freeing up and making available spectrum suitable for wireless voice and data services, especially mobile services. This prevents spectrum from becoming a bottleneck in the provision of new services. It may involve assignment of spectrum with constraints on its use for particular technologies if the alternative is a long wait for ‘technical studies’. It may involve auctions. It may even involve beauty contests for licences, provided these can avoid favouritism and undue influence. In certain cases, it may even involve the official assignment of spectrum to existing unofficial operators. In almost all cases, it will encounter opposition from influential users or competitors for extra spectrum such as broadcasters.

Might this endanger longer term goals? It could clearly lead to longer term inefficiencies if hasty decisions were made. It is therefore necessary to ensure that such situations can be retrieved. One way forward is to make spectrum licences tradable with minimal restrictions on use\(^{43}\).

Guatemala and San Salvador have led the way here by showing how a ‘low transactions cost’ spectrum market can be created.\(^{44}\) They have encountered problems – for example with the allocation to exclusive use of frequencies used on an unlicensed basis in other countries for Wi-Fi. Other spectrum regulation in developing countries might therefore adopt different approaches. And it must be acknowledged that the introduction of a market-based spectrum management regime is a process demanding both of time and of legal, technical and economic resources.

These may involve elements of regional harmonisation which are present, for example, in plans to develop wireless communication in West Africa. However, the incentives of small ‘standards taker’ to conform to spectrum assignment conventions adopted elsewhere are very strong, so formal harmonisation may be unnecessary and counter-productive.

Auctions of Spectrum Licences

Auctions of spectrum are commonplace in the developed world and in some jurisdictions licences can subsequently be traded; spectrum is often not restricted to a particular use and thus the market can exploit spectrum efficiently. Where mobile spectrum is assigned and limited to a specific use, there is less incentive to use spectrum efficiently and competitive forces are impeded from having any impact on the use of the spectrum once the auction is complete. Beauty contests, on the other hand, are often opaque and sometimes biased exercises in which it is difficult to specify criteria and evaluate bids. The Spanish and Swedish 3G beauty contests provoked litigation and political debate. However, even where auctions are held, questions around auction design still exist. The Netherlands and Italy adopted ascending-auction rules as were applied in the UK for 3G mobile licences. However, because of the smaller number of applicants, a sealed-bid auction would probably have been more effective. A major problem with auctions is ensuring that the applicants do not collude – particularly for developing countries with limited systems for checks and controls.\(^{45}\) A second problem is the so-called ‘winner’s curse’ – that the successful bidders will be those which most overvalue the licences available for sale; if this happens, auctions will lead to over-payment attendant problems.

Box 8: Price and Service Regulation in Jordan

Box 9: Auctions of Spectrum Licences

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\(^{42}\) Process for handling price and service offers: Consultation, Jordanian Telecommunications Regulatory Commission, November 2007


\(^{44}\) For example, see the work of Paul Klemperer available at http://www.paulklemperer.org/index.htm

Proposal 5. Resist the temptation to put excessive taxes on mobile communications

Unfortunately the success of mobile telephony, and the resulting prosperity of the companies which provide it, make the service a target for taxation, especially in countries where other sources of tax revenue are few and far between. But there is strong evidence that consumer taxes or specific taxes on mobile business:

- raise the price of mobile services;
- reduce take-up; and
- as a result hold back economic growth in developing countries.

As a consequence of the last effect, taxing mobile services can, in the very short run, reduce the government’s tax revenue, as the extra tax per unit of consumption is more than compensated for by the reduction in mobile use that the tax leads to, and the decline in output in the economy as a whole which that reduction in mobile use causes. For example, the consulting firm Deloitte estimates that the mobile specific tax of 10% applied in Kenya will have the effect, compared with a tax rate of 5%, of cutting usage by 7%, numbers of subscribers by 5% and operator revenues by 8%.

The lesson is clear: excessive taxation can harm output, tax revenues and growth. The same observation applies to the ‘taxation’ of inputs, accomplished by imposing high tariffs on equipment imported by mobile operators.

Proposal 6: Avoid onerous coverage and universal service obligations and unnecessary cross-subsidies

Some forms of regulation are similar in their effect to taxation. If a government or regulator sets prices above costs for some services and allows the operators to use the proceeds to subsidise other services, this is a kind of sector-specific tax-benefit scheme: taxes are raised and spent with the sector via ‘taxation’ by regulation.

Even more blatantly, revenues might be raised as part of a regulatory process with a view to using them for cross-subsidy, and then might not be used for that purpose; in this case the parallel with taxation would be painfully exact.

The proper starting point for this debate is: what specific goals is the government or regulator trying to achieve by obligations or cross-subsidies? Are such interventions necessary? And how best can they be achieved?

The goal of widespread affordable access to mobile telephony is a sensible one, in view of the benefits in terms of economic growth which such services can demonstrably bring. Clearly, in developing countries, some areas may be too poor to justify network construction, so some kind of subsidy may be required if connectivity is to be provided.
However, this does not provide a justification for any kind of intervention. In the first place, competition by itself spurs coverage; this may be more of a consideration in developed countries where better transport systems promote personal mobility and make a wide area service more valuable, but the business test for a mobile operator thinking of extending into an area is whether incremental revenue (including ingoing and outgoing calls to and from a new region) exceeds incremental cost. With the very limited and ineffective cross-subsidy arrangements now in place, coverage of mobile phones in 2007 was 80% of the world’s population, double the level in 2010, and it is expected to grow to 90% by 2010.

Secondly, the subsidies have a cost, and in the competitive environment we recommend and generally observe, they will normally mean higher prices for other consumers, which hits penetration elsewhere. As usual, there is no free lunch. Thirdly, the objectives need to be spelt out. In most areas where subsidies are in question, the natural or only method to provide connectivity is by use of wireless technologies. Spending on wireline networks in remote areas makes no sense, and using mobile revenues to extend the footprint of wireline networks in urban areas may well be a waste of money.

Fourthly, there is the method used to promote coverage in developed countries. This often involves imposing an obligation upon all mobile licensees to achieve specified population coverage limits. This is almost certainly inefficient, and it is not what would happen in a competitive market, where fewer firms normally serve smaller, less affluent areas. It makes even less sense in developing countries, where obligations should be restricted to one or possibly two licensees, even at the cost of carrying over some form of regulation into them.

If licenses are auctioned, the expected cost of meeting any universal service obligation will be incorporated into bids for the licence(s) with such obligation: operators will be willing to bid less for them, because of the loss-making obligations they may entail.

The advantage of this approach is that the operators themselves determine the subsidy in a competitive bidding process. The disadvantages are that the system requires long-term planning and that there may be problems in enforcing fulfilment of the obligations.

An alternative ‘continuous’ rather than ‘once and for all’ approach is to set up a universal service funds to which all operators (normally both mobile and fixed) contribute. The proceeds are then used for network expansion. A competitive tendering process can be used to identify the operator best able to provide the service, as has been done in Uganda.

If such intervention has been shown to be both necessary (the roll-out would not happen without it) and proportionate (it covers its costs from society as a whole), this may be justified. But GSMA research in 2007 showed that while 32 of 97 developing countries surveyed did have a fund, and 15 such funds had collected none that US$6 billion of which one third come from the mobile industry, only US$ 1.62 billion had been spent, of which US$ 75 million (1.25% of the fund) had gone on mobile networks, the most appropriate way of increasing voice-call connectivity in virtually all the countries concerned.

This suggests to us that, as a general rule, a high hurdle should be passed before coverage and universal service obligations are imposed and before funds are set up to promote them. In essence this is because:

• this particular form of regulation is akin to a tax, and its imposition via a universal service fund raises the costs of the operators; even if it is only 1-2% of revenue, it adds up to a considerable sum;
• it is better to finance such expenditure via licence obligations associated with spectrum auctions; here the government bears the cost, in lower auction revenues, but there may be enforcement problems; and
• practical experience shows the inefficiency of such schemes to date.
