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Analysing regulatory barriers to trade in telecoms services[Φ]

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1. Introduction

Imagine Idaho were a state in a 27-member 'Second life' union of states of varying sizes. It has its own recently liberalised telecommunications sector, consisting primarily of an historic monopolist whose network is confined to the state; all interstate calls being accomplished via interconnection with another operator.

Telecommunications purchasers in 'Idaho' consist of three categories: households, intra-state businesses and businesses, such as 'Wal-Mart', which operate in other states as well. The requirements of the three categories are different: the first two need little in the way of value-added services; the last has significant data-processing requirements – which are subject to substantial economies of scale.[1]

How can competition develop, especially for the third type of customer?

[Φ] Please do not quote or site without the authors' agreement.

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[1] We confine ourselves in this paper to discussion of such 'corporate services', but the connection between them and – for example – the provision of telecommunications services to support activities such as banking and gambling is a close one.

One possible outcome is autarchy. All three categories of service are produced and consumed within the state, in a way which restricts data-processing to a low-scale inefficient operation.

A second is 'free trade', by which we mean that services can be produced in one state (the exporter) and consumed in another.[2] Clearly, the proportion of the value added of each of the three types of services which are tradable is different. In the first two, it might be a low percentage, confined to customers near the state's borders. In the third it might be 50%. But almost all goods and services exhibit a similar dichotomy of value added into traded (e.g. manufacturing) and non-tradable (e.g. local distribution and retailing).

The third outcome is the construction of non-tariff barriers to trade, implemented via regulation. The precedents for this are very wide: fears (substantiated or otherwise) about technologies such as GM food; environmental regulations related to carbon-emitting equipment, and so on. The regulatory barriers can be price or non-price based. They can emerge from a variety of political processes.

[2] In other words, in the terminology of General Agreements on Trade in Services (Article 1.2) 'the supply of services from the territory of one Member into the territory of any other Member'. Another on the four modes of trade in services is 'by a service supplier of one Member, through commercial presence in the territory of any other Member' – i.e. foreign direct investment. The other two are noted in Section 5 below.

There may also be attempts by federal authorities to combat them. In the 'real' Idaho, this has been accomplished by the principle of federal pre-emption by the FCC. But things are rather different in the only too 'real' European Union where there are indeed 27 member states of varying sizes each with its own historic monopolist owning a network confined to the state's territory, a raft of smaller competitors relying on domestic (or more rarely foreign) direct investment, and its own national regulatory agency. The land areas and populations of the EU and the USA are comparable. European competition law has a 'pre-emption' on matters affecting interstate trade, provided the other conditions for intervention are also fulfilled. But compared with the Single Market of the USA, the EU Single Market in telecommunications services is something of a sham.

In this paper, we begin a discussion of the possible costs of 'non-Europe' in the telecommunications field. As part of those costs is likely to result from failures to exploit comparative advantage, we review some basic models of trade theory applicable to telecommunications services, and measures of effective protection in the presence of non-tradable inputs. We then discuss how recent developments in network design are altering the balance between tradable and non-tradable activities. This is followed by a review of the rather limited evidence on the (apparently) equally limited flows of trade in telecommunications services. The final section discusses policy responses, especially in Europe.

2. The economic impact of telecommunications services

The deficiencies of European productivity growth when measured by US standards has been analysed in articles with titles (suggesting a degree of *schadenfreude*) such as 'why was Europe left at the station when America's productivity locomotive departed?' (Gordon 2004). Analysis by Bryan Williamson, in Basilisco *et al*, 2007, Part 2, Ch.4 reviews and analyses the contribution to this differential made by ICT investment. He finds that in the US, overall productivity growth rose dramatically after 1995, with the largest part of the increase attributable to intensive ICT-using private services. In the 15 member states of the European Union in 2004, by contrast, productivity growth fell after 1995, and the contribution of intensive ICT-using private services is about one third of that in the US.

Williamson goes on to speculate about the contribution of networked companies to productivity growth, citing evidence of various kinds that the use of computers and the extent of computer networks are complements – leading to the conclusion that the communications networks which permit the networking play an important role in enabling the effective use of ICT investment. This hypothesis underlies the analysis of the importance of international competition in the provision of such services which we now undertake.

3. Trade theory and regulatory barriers to trade

According to traditional trade theory, the sorting of goods into the categories of exports/exportable and imports/importable depends on comparative advantage. That comparative advantage is analysed in a one-factor (labour) world by Ricardian trade theory, a two-factor (labour and capital) world by Heckscher and Ohlin, or in various ways in a multi-factor world. Thus comparative (and not absolute) advantage is found by Ricardo to operate in Portugal's favour with respect to port and in England's favour with respect to wool. In Heckscher-Ohlin, different factor endowments lead to capital-abundant countries specialising in capital-intensive products and services, while labour-abundant countries export labour-intensive goods.

More modern theories of trade incorporating increasing returns to scale and (correspondingly) imperfect competition predict a pattern of more specialised two-way intra-industry trade in differentiated products (possibly driven by the serendipity, or by cumulative effects, or by policy intervention), superimposed upon a level of inter-industry trade created by different factor endowments.[3]

This must be contrasted with alternative theories which sought to explain a country's exports by its particular technological aptitudes: as Krugman and Obstfeld (2006, p.75) put it: 'the British are good at software, the Italians at furniture, the Americans at action movies.'

[3] See Grossman and Rossi-Hansbert (2006).

Such claims run the risk of collapsing into tautology. And, as we show below, the identification of those countries which have a comparative advantage in the provision of internationally traded telecommunications services for corporate customers is hard to achieve on the basis of existing statistics. However, a pattern of heavy recent investment in ICT, combined with investment in co-specialised human capital, does look like a good way of establishing comparative advantage (or of benefiting from increasing returns to scale) in the market places we are concerned with here – see section 2 above.

Our second point of interest is the use of regulation as a barrier to trade. To approach the subject indirectly, consider the theory of effective protection. In the simplest case (Corden 1971, pp. 35-37), an input i accounts for a share of the costs of producing final service j equal to a_{ij}. Suppose there is a nominal tariff on j of t_j and on i of t_i. Then g_j, the effective rate of protection (ERP) for activity j – the proportional increase in the effective price resulting from the tariff – is given by:

$$g_j = \frac{t_j - a_{ij} t_i}{1 - a_{ij}} \qquad [3.1]$$

If j is a non-traded good with a zero tariff, then the effective rate is simply the nominal rate 'marked up' by the inverse of the cost share accounted for by traded goods.

The measure of the effective rate of protection is getting at the point that, if a proportion of inputs is non-traded, it is not receiving protection, the full extent of which is therefore focussed on the tradable component.

We are dealing with a different case in which a regulatory 'tariff' – an excess in the charge for a non-traded input when it is purchased by an exporter over what it costs to produce – is imposed on a non-traded input. Suppose that this tariff is 20%, and applied to 75% of the value-added, the remainder being tradable (i.e. a_{ij} = 0.75). Then the ERP on the tradable component is given by:

$$ERP = \frac{t_i \times a_{ij}}{1 - a_{ij}} = 0.6 \qquad [3.2]$$

Of course, the effective level of protection is even higher if exporters simply cannot buy the non-tradable input at any price. This is a situation akin to that of manufacturers which are unable to get any distribution for their products in another country.

Despite the existence of an extensive empirical and policy literature on the impact of regulatory barriers on trade patterns in a variety of goods and services, the theoretical analysis is rather scanty.

A major recent exception is a paper by Martimort and Verdier (2007). Its setting is a 2 x 2 Heckscher-Ohlin economy for a small open economy, on which is grafted a number of non-tradable inputs produced under monopolistic conditions. These markets are subject

to regulation in conditions of asymmetric information, with the consequence that the regulator has to 'buy' privately held information, for example about the firm's cost, by conceding above-cost prices. As a consequence, the pattern of comparative advantage may change significantly as compared with the case of perfect information: the effects are akin to those which would emerge if the monopoly were left unregulated. The main conclusion is that trade is affected by, and trade policy should take account of, regulatory problems associated with asymmetric information. Our approach is less pessimistic in the sense that we focus on regulatory improvements, not the trade policy implications of imperfect regulation.

4. Defying gravity

It is commonplace to explain the extent of trade via a gravity model (Krugman and Obstfeld 2006, p.11-17). Newton's law of universal gravitation held that attractive force between two objects was given by the product of their two masses divided by the square of the distance between them, multiplied by the gravitational constant.

Economists are a little less precise, allowing for the volume of trade to be determined by the product of the sizes of the economies, each raised to a power, and divided by the distance between them also raised to a power. The powers and the constant term are estimated from the data, and a bunch of additional factors such as the existence of national boundaries is thrown in too (see Head 2000).

However, in telecommunications, gravity is increasingly being defied as a result of new developments in, especially, long distance communications; in another popular metaphor, we are seeing the death of distance.

We note that cost structures for fixed telecommunications networks are characterised by:

- Material fixed costs, in both core and access networks; and
- Non-zero marginal costs of service provision.

This is true both for circuit-switched PSTN networks, and also leased line and data networks underpinning the provision of services to corporate clients.

However, network technology developments in recent years – and specifically the use of Internet Protocol (IP) to underpin the deployment of IP-based Next Generation Networks (NGNs) – will play a key role in service provision going forward, both in terms of the breadth of the service portfolio and the underlying costs of service provision.

There is no single, optimal IP-based NGN: the appropriate development and deployment of new networks will depend on a numbers of factors specific to each operator and jurisdiction, such as the business plans of the operator in question, the extent of existing and prospective competition, the performance capabilities of the existing network and the investment required to upgrade or replace. However, in general terms, there are two forms of IP-based network development (for fixed network operators): the core NGN and the access NGN (often referred to as Network Generation Access, or NGA).

The core NGN involves the replacement of existing core switching and transmission equipment with IP-based routers capable of supporting Voice over IP (VoIP), multimedia and other packet-based services. A key feature is the replacement of the existing plethora of different networks developed to provide different services – leased lines, voice conveyance etc. – with a single multi-service network. This can involve significant rationalisation of and simplification of the existing core network structure with deployment of fewer nodes and prospectively fewer points of interconnection (PoIs) with other operators, as well as the distribution of network intelligence (e.g. routing and signalling) towards a core structure of 'soft switches', routers and multi-service access nodes (MSANs) and away from the traditional model characterised by a switching hierarchy with switching elements towards the periphery of the core network. The NGA typically builds on the core NGN principles but extends this to development of the access network to involve investment in deployment of fibre deeper into the access network (for example Fibre to the Node (FttN) or Fibre to the Home (FttH)) in order to provide higher speed access to end users.

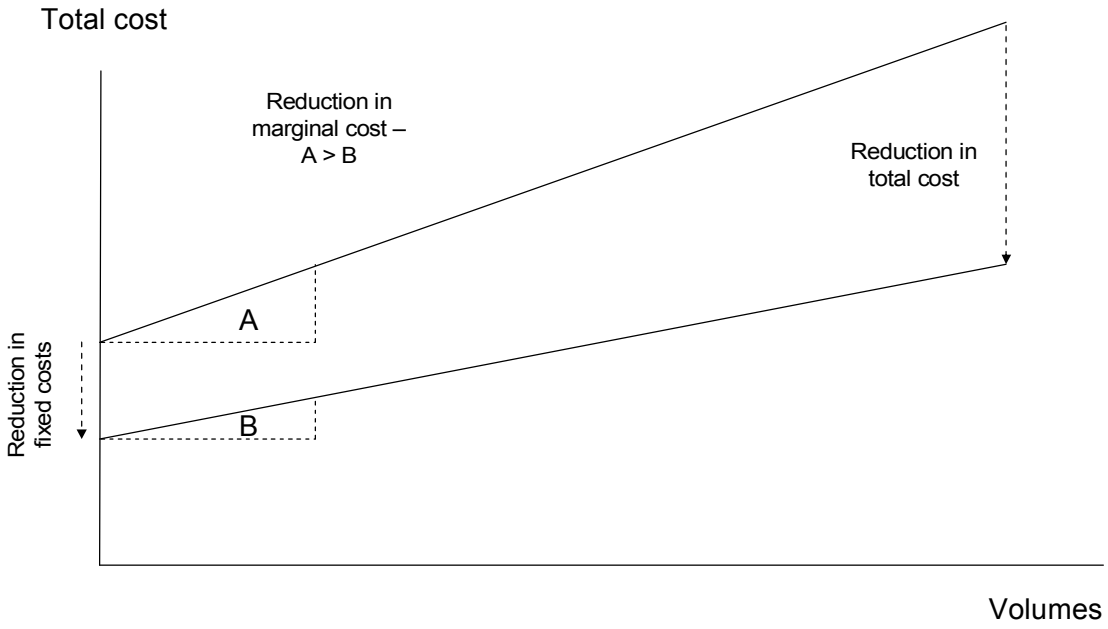
Such developments have established a basis for (i) reduction the overall costs of telecoms service provision and (ii) a reduction in the marginal cost of providing call and data services. These cost reductions have resulted from:

- the conveyance efficiency of packet- compared with traditional circuit-switched technology (as well as the IP protocol representing an efficient packet-based solution); and

- the multi-service nature of NGNs, wherein the previous multiple networks to support a wide range of services – voice, data, etc – are combined into one multi-service network, allowing for increased exploitation of scale and scope economies.[4]

The diagram below describes the changes in cost structures with the deployment of NGNs.

Figure 1



Traditionally, network costs are a function of (i) volume (whether lines, call or data volumes) and (ii) distance. In the context of the deployment of next generation networks, however, there has been much discussion of the 'death of distance', i.e., the tendency of marginal costs to tend to zero (or at least very low levels) such that the costs of traffic conveyance are invariant to the distances over which such traffic is conveyed. Whilst NGN deployment may not represent the

[4] For example, BT is in the process of investing 10 billion GBP to replace its existing 17 networks with one multi-service '21 Century Network'.

'death' of distance, it is accepted to provide the ability to reduce the distance-related costs. The consequence of lower (if not zero) distance-related costs is a greater opportunity to exploit the principles of comparative advantage across countries in providing value-added services since the costs of distance represent less of a factor in the costs of production.

There are two fundamental consequences from the above:

1. cross-border trade in value-added services is increasingly viable with reduction in the costs of distance; and
2. such trade will, absent barriers, provide a basis for efficient provision of services, reflecting the comparative advantage of different regions or countries.

Indeed, to the extent that NGNs represent a complete death of distance, value added services will – absent barriers or distortions – be created in the region or country with comparative advantage. And even where NGNs fall short of removing all distance-related costs, they still represent an opportunity for improvement in efficiency since they reduce the extent of comparative advantage or increasing returns to scale required in order to make it worthwhile to provide the value-added element of services in an alternative location. For example, assume with traditional telecoms technology that country A is able to produce a service at a cost of 100 eurocents, and that conveyance costs to country B are 20 eurocents. Under such a scenario, providers of the service in country A would source the service from country B only where country B was able to produce it for 80 euros or less, such that the cost of service net of conveyance is below that of production in country A. However, with the introduction of IP-based NGN technology and the consequence reduction in distance-related costs, the 'hurdle' for country B's comparative advantage falls: with the full death of distance, countries A and B compete directly in the provision of the service with geographic location being an irrelevance; even with a reduction (but no eradication) of distance-

related costs, country B needs be more effective at producing the service than country A but not to the same extent at under the original scenario, i.e., under NGN conditions, the distance-related element falls to somewhere between 20 eurocents and zero eurocents; the closer to zero, the more competitive, *ceteris paribus*, country B becomes.

The prospective ability of NGNs to facilitate greater competition and cross-border trade in value-added services is significant, both when considering directly the provision of value-added telecommunications services, but also in terms of the role of telecommunications as a facilitator for value creation and economic growth. But, as we have seen, the benefits to end-users are vulnerable to protectionist or inefficient regulation. Before examining this in more detail, it is helpful to look at the data on trade in telecommunications services.

4. Data on trade in telecommunications services

Understanding statistics on trade in services is a challenge to which the authors have not yet fully risen. The difficulties arise in part because of the four different modes of supply recognised under the GATS: cross-border trade ('the service crosses the border'), consumption abroad ('the consumer travels'), commercial presence ('direct investment') and presence of natural persons ('an employee or self-employed person visits another country').

The two categories of trade in services of interest are (out of 12 identified in 1991) are 'communications services' and 'computer and information services'. The former has two major categories of transactions relating to international communications between residents and non-residents:

- postal and courier services; and
- telecommunications, or 'the transmission of sound, images and other information by telephone, telex, telegram, radio and television cable and broadcasting, satellite, electronic mail, facsimile services etc., including business network services, teleconferencing and support services. It does not include the value of the information transported. Excluded are …….. and database services and related consumer services to access and manipulate data provided by database services (included in "computer and information services")' (Manual, 2002, p.40).

The OECD (2007b, Ch.8) also helpfully points out that exports of communications and telecommunications are growing but 'a substantial percentage of traffic cannot be measured if it is carried over leased lines, as such lines do not pass through an international gateway. Moreover, telecommunications services which are transmitted in the form of IP packets sent over the Internet are not included.

Computer information services include (i) computer services; (ii) news agency services; and (iii) other information provision services.

Our interest lies at the intersection of 'telecommunications' and 'computer services', but unfortunately these two categories are not always adequately distinguished in the data from their larger aggregates of 'communications' and 'computer and information' services.

By far the largest expansion has occurred in computer and information services – a fifty-fold increase from 1990-2004, achieving a figure of $140bn by 2004. Over the same period,

communications (and telecommunications) services grew approximately five-fold, to $70bn and $20bn respectively in 2004.

Among OECD members, the US was the largest importer and exporter of communications services but, in terms of exports as a percentage of GDP it was second lowest (Japan was lowest) in 2004. By that metric (Luxembourg) was the highest by far, followed by Belgium and the Netherlands. The OECD explains Luxembourg's high figure (four times that of its nearest rival) as being caused by 'the size of the banking sector in Luxembourg and the scope of the related information and communications technologies [which] foster extremely intensive ways of outbound telephone service.' [ibid]

It seems that two possible conclusions can be drawn from these data, with difficulties in the way of discriminating between them. Either the data are not reliable, and disguise a large and possibly increasing amount of by-pass of trade statistics – for reasons give above. Or the relatively low growth rates within the OECD of trade in communications services between 1999 and 2004 (a CAGR of 4%) suggests the existence barriers to trade.

A symptom of the anxiety about the tradability of IT- and ICT-enabled services – a category much broader than the one we are considering – is the preparation by the OECD of a study of China's possible role (OECD 2007a). This study shows the large volume of trade in IT- and ICT-enabled services, growing EOI and the large number of research centres set up by multi-nationals. But the OECD concludes that there are obstacles to further growth.

5. Regulatory barriers in telecommunications

As discussed above, telecommunications provide a basis for the exploitation of country or regional advantages in production and the exploitation of comparative advantage and, consequently, economic growth, with the deployment of NGNs increasing the possibility for such. Economic efficiency is key to maximising such effects; where economic efficiency is not attained – either through market failure or through inappropriate or ineffective regulatory intervention – then the ability to generate economic growth through such means is constrained.

At the heart of economic efficiency is the establishment of prices consistent with the efficiently-incurred costs of service provision. Where cross-border trade is required to exploit comparative advantage, the price of non-traded of telecommunications conveyance plays an important role in the extent of cross-border trade and by extension, the extent to which comparative advantage can be fully exploited in the interests of economic growth.

Regulatory intervention can take numerous forms, depending on the (prospective) market failure which is being addressed and the nature of the party or parties involved. However, in this context, those which are most likely to affect (i) telecommunications sector value add directly and (ii) the extent of cross-border trade – and hence the ability to exploit comparative advantage – are:

1. prices in excess of efficient levels (and, by extension, volumes below efficient levels); and
2. lack of supply on the part of (typically) the incumbent operator, thereby constraining output and the ability to optimise use of the telecommunications network.

The 2003 European regulatory framework was established in order to provide greater consistency in policy and regulation across the EU member states. A key characteristic of this framework is the systematic process in specifying regulatory measures. This process is characterised by three distinct phases:

1. market definition, wherein the market under consideration is defined under the principles of competition economics;
2. considering, within the defined market definition, whether an operator (or operators) holds a position of Significant Market Power (SMP) (individually or jointly); and
3. *only* having established SMP, regulation is then specified in order to address the (prospective) market failures resulting from SMP.

In addition to being required to adhere to this process in establishing regulation, National Regulatory Authorities (NRAs) must choose from a list of possible regulatory measures – referred to as 'remedies' – with this list covering a range of measures including (i) mandating access to services and / or facilities and (ii) imposing cost orientation obligations in respect of regulated prices. As a consequence, NRAs have the tools at hand to address the possible concerns raised above by establishing regulation which effectively mimics the outcome of a competitive process. However, in practical terms, there exist a number of factors which will impact or constrain the theoretical outcome, including:

1. the status of different players in the market, and the stage of market evolution. An example is the use of glidepaths in setting price controls for regulated services where prices are above cost at the beginning of the regulatory period, with such measures used to prevent shocks to

the revenue structure of the operator and achieve a balance between price reductions and financial impacts;

2. information asymmetries, in terms of both available data and capacity of regulatory authorities to analyse and process data in order to arrive at appropriate forms and stringency of regulatory intervention. This is discussed above with Martimort and Verdier (2007) refer to the 'purchase' of private information by the policymaker; and
3. asymmetric risk, insofar as – in the face of complexity and informational asymmetries – the risk of over-regulating (either in terms of regulating those areas where competition may be effective, or in terms of applying over-stringent regulation, for example in terms of stringency of price controls) may be considered to be more significant than that of under-regulating to the extent that over-regulating may cause financial distress and establish longer-term disincentives to invest, whereas under-regulating may mean prices somewhat higher than otherwise would be the case but a stronger incentive to invest.

The diagrams below compare price information across EU member states (European Commission, 2006). The tables show prices for (i) leased circuit local ends, (ii) full unbundled local loop (LLU) and (iii) shared access charges, all of which are used to provide access to networks by incumbent operators.[5]

[5] Where wholesale broadband offerings are concerned, the access prices are underpinned by full unbundling or shared access services to provide the broadband access offer.

Figure 2

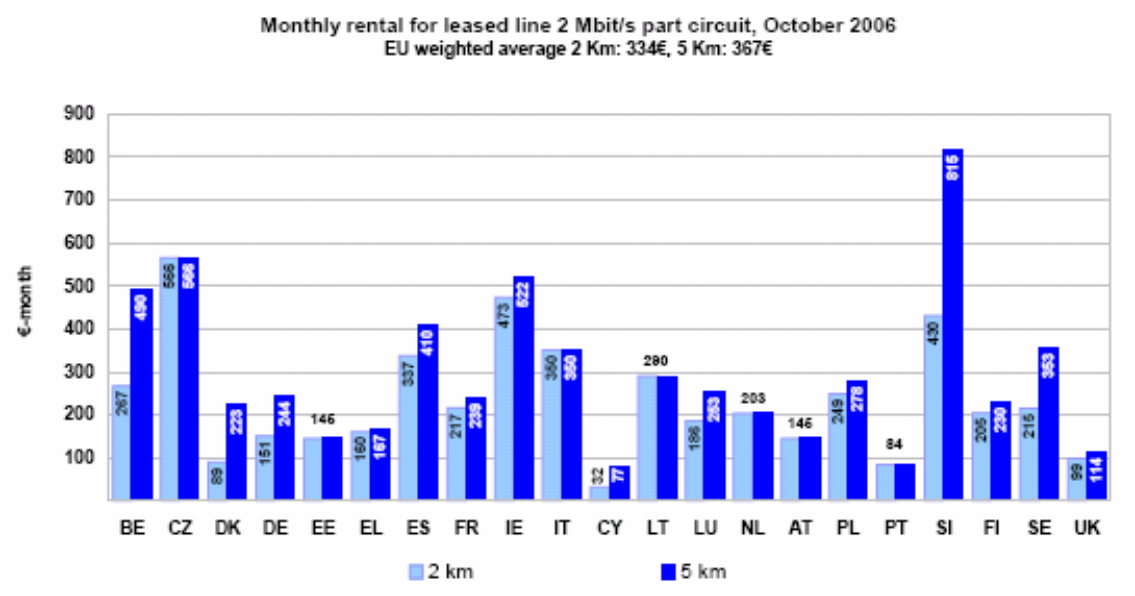


Figure 3

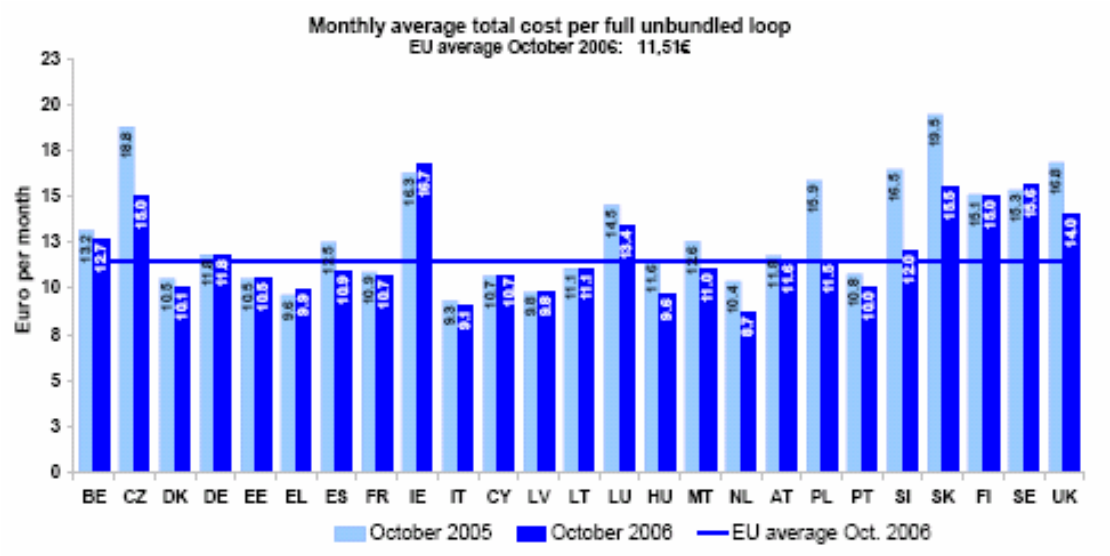
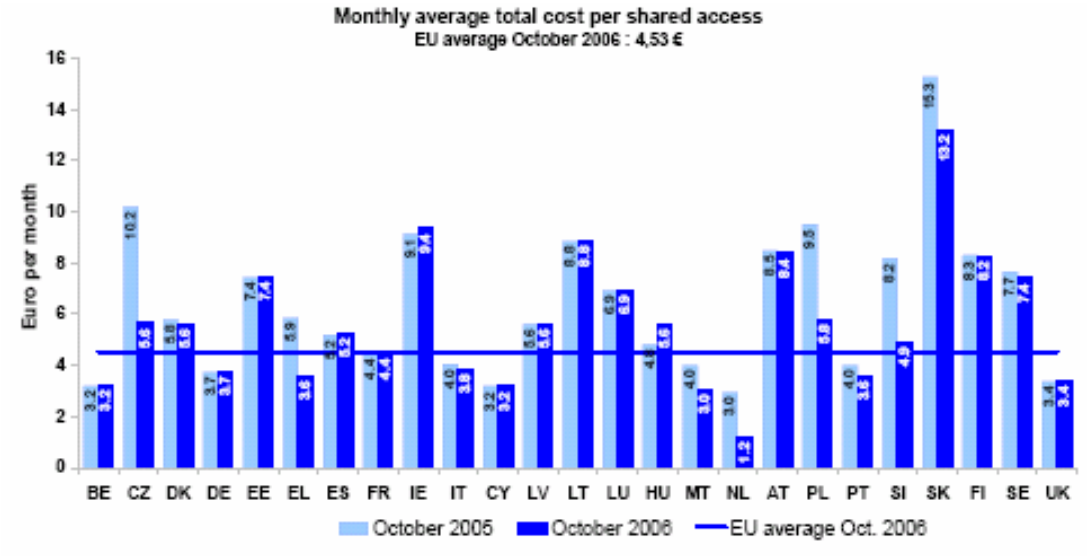


Figure 4



These access products, which are typically subject to price regulation and access obligations, represent the main non-traded inputs in the provision of telecoms services to the major classes of end users, including large corporate customers (through private circuits) and SOHO / SME business customers, as well as residential customers (via LLU and shared access to support wholesale broadband offerings).[6] In particular, in the context of this paper, such services are a central non-traded input in the provision of value-added telecoms services to corporate clients and where the issues associated with cross-border trade and comparative advantage are of particular relevance.

Referring to the discussion of the representation of a 'regulatory tariff' in Section 3 above, it is clear that the Effective Rate of Protection (ERP) will depend upon two factors, namely: (i) the level of the 'tariff' – in this case the extent to which regulators, through information asymmetry,

[6] These correspond roughly to 'Idaho's' Wal-Mart, intra-state and residential customers respectively, as referred to in Section 1.

transitional factors or for other reasons, allow prices to exceed costs for the non-traded input; and (ii) the proportion of the value added represented by that non-traded input.

Whilst a detailed cross-country comparison of unit costs and prices is beyond the scope of this paper, we can provide broad illustration of price-cost comparisons by taking lowest prices as a rough proxy for cost-based prices.[7] So, by way of example, a comparison of EU average prices to, say, the average of the lowest three rates for the access products discussed above – by way of a cost proxy – yield the following illustrative 'mark-ups' of price over 'cost':

Table 1

		[1]	[2]	[1] / [2] -1	
	euros / month	EU weighted average	Lowest 3 average	Mark-up	
			(= cost proxy)		
	2km local end	334.0	68.3	389%	
	5km local end	367.0	91.7	300%	
	full LLU	11.5	9.1	26%	
	Shared access	4.5	2.5	84%	

Even adjusting for country-specific factors – such as differences in factor input costs and network cost drivers (such as population density) – there are clearly material differences in unit prices for comparable services across the sample set. These differences may result from the above factors, or indeed be because NRAs have yet to grapple with the market failure at hand, with this being of particular concern in countries recently having joined the EU. This suggests prices differ

[7] Such an approach has been used in the past by the European Commission in establishing 'best practice' interconnection rates using benchmark price data across member states. This analysis does not represent in any way a robust cross-country benchmarking exercise, which would seek to normalize for country-specific factors; it serves merely, with the graphs, to highlight the material differences in prices of key access services across member states.

materially from cost and that – assuming over-regulation is avoided and that NRAs err on the side of caution – price are, on average, above the unit cost of service provision (or, to use the phraseology above, that regulators 'buy' private information to address information asymmetries in respect of operators' cost).

Furthermore, whilst consideration of prices – and specifically the extent to which prices are consistently set with reference to the underlying costs of efficient service provision – is of importance, it is also necessary to consider the extent to which access is *not provided at all*, in addition to whether it is provided *at the right price*. As noted above, European NRAs have available to them the remedy of mandating access, and hence have the ability to tackle the most obvious or blatant attempts by SMP operators to foreclose competition through such means. However, more subtle – and more pervasive – is an approach of non-cooperation and non-price discrimination by the incumbent operator, thereby favouring its own downstream operations to the detriment of its competitors). Such actions can include delay in service provision or the quality of service and delay in ordering, processing and billing and can result in, effectively, the inability to provide an effective service for existing and prospective service providers.[8]

However, in addition to the existence of such anti-competitive practices, there also exist examples of proposed regulatory intervention which has *explicitly allowed for* such outcomes. An example is the ongoing debate surrounding the notion of a 'regulatory holiday' for Deutsche Telekom under which approach it can invest in and deploy its NGN *without third party access obligations* for a finite period. Indeed, the European Commission is challenging the new law which allows

[8] Such practices, whilst nothing new, have come to the fore in the context of broadband penetration and the access of LLU services by competing operators. Ofcom, the UK NRA, considered this matter of such significance that it has worked with BT to establish a framework of operational separation in order that BT's access business (now branded Openreach) is incentivised to provide access of fair and equal terms to BT and others, and other regulatory bodies are following suit.

for such an arrangement and has referred Germany to the European Court of Justice; in launching infringement proceedings in February, the Commission expressed its view that 'the new German law jeopardises the competitive position of Deutsche Telekom's existing competitors and makes it much harder for new competitors to enter German markets.' (European Commission, 2007)

Whilst the varied and often bespoke nature of corporate value-added services does not easily allow for an assessment of the proportion of value-added accounted for by the non-traded services referred to above, it is a reasonable assumption that they represent a material proportion of the total cost of service – i.e., a_{ij} in the equations 3.1 and 3.2 above is significant, where i is the access service (i.e., the main non-tradable input) and j is the corporate value-added final service. And, with the deployment of NGNs and the resulting death of distance reflecting the declining marginal costs of network conveyance, this proportional effect may be expected, *ceteris paribus*, to increase (i.e., a_{ij} will rise) such that the effect of any regulatory tariff is intensified.

Therefore, combining these two likely characteristics – a material regulatory tariff impacting a significant proportion of the total value added – we can identify a potential risk that inefficient regulatory intervention, either through the consequence of prices in excess of cost or through supply being below efficient market levels, can result in the establishment of a significant effective rate of protection born of inefficient (or inappropriately absent) regulatory intervention. By way of illustration, taking the ratio of prices to (rough proxies for) costs for access services in the table above, and assuming such services account for, say, 30% of total value added for corporate services, then the ERPs – resulting at least in part from regulation – associated with the provision of such services are shown in the table below:

Table 2

		[3]	[4]	[5] = ([3] x [4]) / 1 - [4]	
	euros / month	Implied tariff	Proportion of value added	ERP	
			(= a_{ij})		
	2km local end	389%	30%	1.67	
	5km local end	300%	30%	1.29	
	full LLU	26%	30%	0.11	
	Shared access	84%	30%	0.36	

The existence of a regulatory tariff would therefore, using the above figures purely for illustration, yield ERPs for value-added corporate services of between 36% and 167% (depending on the means of access). This suggests a potential outcome which, through prices in excess of efficient production costs and consequent output below efficient levels, inhibits not only effective competition in the domestic market under consideration, but also the full and efficient functioning of cross-border trade and the ability to fully exploit comparative advantage across the European Union.

Indeed, the European Commission's own assessment of the timeliness and consistency of regulatory measures across Member States identifies concerns in this regard:

> 'Indeed, in a number of Member States there have been significant delays in the practical implementation of remedies, as well as divergence in the nature of the remedies chosen following completion of the market analyses and findings of significant market power (SMP). These are key factors that in practice have restrained the framework from exercising its full effect.'

Further:

> '… the Commission's report … found that, in a number of cases, the solutions which national regulators impose in order to remedy a lack of competition vary considerably, leading to the danger of a fragmentation of the internal telecoms market to the detriment of consumers and operators with pan-European business activities.'

Such observations therefore present both immediate and longer-lasting effects. In the near term, inconsistency and inefficiency in regulatory policy potentially limits both domestic competition *and* the extent to which cross-border trade across European member states can be used to exploit comparative advantage in order to maximise productive output and economic growth. Further, in the longer term, under-consumption of telecommunications services – resulting from prices too high or lack of supply – may have a detrimental effect in incentives to invest in NGNs. Indeed, this therefore risks a self-reinforcing negative effect: lower demand for telecoms services and, by extension, value added services which can be best provided over NGNs potentially results in a lower investment in NGNs than would other be the case, thereby restricting the extent to which the lower cost characteristics of NGNs can be used to exploit country- and region-specific comparative advantage to the benefit of growth in economic output.

6. Conclusions

Underlying this paper are two propositions: firstly that the 'death of distance' is changing in a radical fashion the scope for trade (in the sense of cross-border trade, not FDI) in telecommunications services and other services which they enable; secondly, that the limitations of regulation in the United States of Europe are preventing the benefits of such trade from being realised, whereas they are realised in the United States of America.

We have illustrated the proposition by looking at one market place in particular, that for telecommunications services provided to corporate customers, typically multinational companies, form part of the routine business of communications regulators. But we are aware that other services which rely on telecommunications, such as payment systems or off-shore gambling will raise similar issues.

Trade in such services will yield the classic benefits from comparative advantage and specialisation, lower prices and differential services. However, classic post-claimant policies, implemented by means of regulating 'tariffs' can prevent the realisation of these gains.

Our conclusion is that regulators should be more alive to the new possibilities and take the necessary steps to allow the emergence of genuinely international trade, or in the first instance at least, of pan-European markets. So doing has the opportunity to unlock significant benefits accruing from the exploitation of country- or region-specific comparative advantage across the European Union.

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