

9: Shifting from Equity to Efficiency Rationales: Global Benefits Resulting from a Digital Solidarity Fund

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Introduction

Realising the potential of the Information Society requires an adequate infrastructure, a sine qua non condition for usage. One of the key principles of the *WSIS Declaration of Principles* is entitled '*Information and communication infrastructure: an essential foundation for an inclusive information society*'. Item 21 stated that '*Connectivity is a central enabling agent in building the Information Society. Universal, ubiquitous, equitable and affordable access to ICT infrastructure and services, constitutes one of the challenges of the Information Society and should be an objective of all stakeholders involved in building it.*'

Investment in broadband, which requires a significant improvement of the existing infrastructures or even a new network deployment, will mainly come from the private sector. The public sector must help create a favourable environment and stimulate demand. However, it is unlikely that operators will maintain any interest outside grouped-and-profitable-customer-filled urban areas. Isolated and rural areas may have to wait quite some time until they can enjoy, not the arrival of effective competition, but any broadband connection. So, governments must also take action on the supply-side of the market.

This is a problem faced by developed countries, since they need to avoid the extension of the digital divide which threatens leaving their remote or depressed regions behind. However, this problem is especially serious in less developed countries. When the national sector is incapable of meeting such needs, aids and loans become the primary, if not the only, solution. Without any foreign aid, the objective of achieving general access to telecommunication services seems to be quite far away, despite the existence of mechanisms guaranteeing that access, at least in theory, in almost all of them.

Programmes fostering a general economic development must allocate special importance to telecommunications. Nonetheless, more specific actions are required. As expected, this fact has been highlighted in a summit such as the WSIS

that establishes as its first declaration the *'desire and commitment to build a people-centred, inclusive and development-oriented Information Society'*. The WSIS *Declaration of Principles* calls for digital solidarity, both at the national and international levels (Item 17). However, the section dealing with international cooperation represents no more than a simple declaration of intentions.

It is our idea that without the richest countries becoming aware of the advantages they would receive by supporting these actions, the chances of building a policy that proves actually effective are very small. The consideration of externalities and the provision of global public goods open a path that can transform a perspective of discretionary and insufficient donations into a cooperation model based on self-interest for the global development of the networks.

The chapter is structured as follows: the role of governments in network development is analysed in section 2, giving special consideration to the scenario in less developed countries. Section 3 describes the reasons why the development of advanced telecommunication networks in all countries would generate global benefits. The results of this section lead us to proposing, in section 4, a new political orientation which would replace 'aid' with 'cooperation'.

Mechanisms Allowing Generalised Access to Telecommunication Services

From Monopoly-Based Public Service to Universal Service

The mechanisms that intended to guarantee generalized access to telecommunications have existed almost since the beginning of network deployments. One of the fundamental goals of regulated national monopolies was the provision of voice communications to all citizens at uniform (i.e. geographically averaged) 'affordable prices'. The network development plans were historically funded by cross-subsidies within the regulated price structure of national monopolies. Long-distance calls and customers in urban areas subsidized telephone access (and sometimes local calls) and customers in rural (high-cost, scarcely populated) areas. However, for a greater part of the century, the service extension commitment was in most countries more implicit than explicit, and interpreted from a basically voluntaristic perspective by most governments.

In recent decades, the dramatic technological progress as well as the changes observed in the regulatory framework have completely transformed the telecommunications sector. Competition forces (even when benefiting the telecommunications industry as a whole) undermine the sustainability of cross-subsidies and then destroy the traditional funding mechanism of network deployment.

At the time market opening was set out, it was necessary to elucidate whether, under these conditions, the competing industry, by itself and without regulations, could provide the service under reasonable conditions to all that requested it. Since it was predictable, as later confirmed, that competition processes would extend unevenly and would target the profitable segments of the market, finding a system that continued to guarantee access to essential services seemed necessary. This is

no other than the universal service, which emerges, thus, as an attempt to reconcile the principles of public service with those of a market economy.

A unique global definition of universal service does not exist. What does exist, however, is an agreement on the fact that the basic core of the concept should usually cover the availability in the national scope of specific services for which non-discriminatory access and generalized economic affordability are guaranteed (ITU, 1998).

The approach to universal service is quite pragmatic. Despite a certain uniformity of the definitions included in most telecommunications legislations, the practical construction of universal service differs from one country or region to another, and even inside the same country when the context varies (ITU, 1994). This is nothing new: even before the figure of universal service in telecommunications appeared in its modern sense, the objectives of universality had changed through time according to technological development, infrastructure deployment levels and user requirement perception (Bardzki & Taylor, 1998). Furthermore, the WTO agreement on basic telecommunications services respects each country's faculty to define its own domestic universal service obligations and finance them in the way it considers most suitable.¹

Universal access does not necessarily imply a line for every household. Establishing a shared or community access is the universal service modality chosen by many developing countries where the objective of one telephone per household is a Utopian plan (see Falch and Anyimadu, 2003). The requirement can be connected to a distance (one access point available in less than 'x' kilometres), 'trip time' or population size datum (refer to ITU, 1998). According to Item 23 of the *WSIS Declaration of Principles* 'the establishment of ICT public access points in places such as post offices, schools, libraries and archives, can provide effective means for ensuring universal access to the infrastructure and services of the Information Society.'

The Scenario in Developing Countries

Western transition models from monopoly to competition were 'exported' to poorer countries, though one might wonder whether their validity is universal when national conditions differ so profoundly (Castelli et al., 2000).

In high-teledensity economies (the ITU defines teledensity as the number of main telephone lines per 100 inhabitants), the reform mainly aimed at introducing dynamism in the sector and harnessing the deployment and usage of new services. Far from it, the enforcement of a telecommunications policy in least developed countries is more complex. When networks do not exist, their creation is obviously the first and necessary prerequisite, as any project is necessarily based on the development of an infrastructure. Melody (1997: 20) pointed out that '*it is perhaps a misnomer to consider telecom reform in developing countries as a process solely of reform [...] Their task surely involves reform, but the major objective is to build a national telecom system from the beginnings of the system that the PTOs now provide.*'

In some cases, especially in 'second world' countries, the liberalisation and privatisation of the telecommunications sector has contributed to a more dynamic development.² The number of lines has grown substantially during the past few

years. In particular, the number of wireless connections, as in other parts of the world, has been subject to impressive growth rates. Nevertheless, even in these cases, the task of achieving an authentically universal service is still far from being achieved.

However, a majority of low-income countries are facing two difficult challenges: attracting foreign capital to subsidize their network construction and, especially, finding ways to compensate the reduction in one of their main financing channels brought on by the modification of the rules regulating international communications. Traditionally, as a matter of fact, their telecommunications industry profits have been insufficient and heavily dependent from the ‘net settlement payments’³ they receive to terminate (that is to convey on domestic networks) incoming international telephone services. The relevance of the international dimension of funding universal service for developing countries is made explicit by countries whose ratio of net settlement payments to total telecommunications revenue in a year can be greater than 20% or 30% and can reach the 50% (Castelli et al., 2000).

The pressure exerted by developed countries (and especially the United States), added to the development of technological alternatives avoiding the usage of traditional operator networks, has led to a reform of this system, basically translated into a dramatic reduction of the payments for each transnational communication (see Thuswaldner, 1998; Stanley, 2000). Those economies are thus much more worried about how the traditional system is breaking down, their investment programmes and the possibility of their operators’ viability being jeopardized by the pressures exerted to reduce prices on international services.

Incentives for the Support of a Global Telecommunication Infrastructure Development

As we have said previously, telecommunications access has been a major target of governments during the last century in practically every country in the world. This suggests that the benefits of a large connection to telecommunications services have been perceived regardless of the political option in power. Could the benefits of a broad connection not limited to national frontiers be perceived as well?

Consideration of Externalities

Any telecommunications service presents two types of positive externalities: ‘external ones’, that appear outside the service itself favourably influencing other productive activity sectors,⁴ and ‘internal ones’ (linked to their own consumption) that result from being network-based activities.

The general definition on why *club* externalities exist is quite simple:⁵ since telecommunications networks provide interaction between all users, each new subscriber benefits from (and is prepared to pay for) accessing a group of pre-existent users, whilst offering a new possibility for communication (actual or potential) to that group of connected customers. These ‘social’ benefits are not taken into account by the individual user when considering the possibility of joining the network. It can occur that the additional benefits the existing customers would receive should the ‘marginal’ customer join the network (maybe discouraged by a costly subscription fee, not necessarily above costs), exceed the

losses the company would incur – if it should reduce the subscription fee to attract that customer. However, it is not easy to include in the network the benefits provided by a new user: there may be many potential beneficiaries, but not all of them can know each other and, even if that were so, it would be difficult to reach agreements. Additionally, those transaction costs could exceed the benefits provided by the externalities (Littlechild, 1979).

Some authors also consider network externalities those that result from the fact that users who do not initiate communications also benefit from a certain utility despite not having paid for the service (Bar & Munk Riis, 1997; Cave et al., 1994).

In new services, the club characteristic is extraordinarily strengthened. With the telephone, the group one interacts with is basically limited to personal or work-related circles, with a highly improbable chance of communicating with ‘strangers’. However, whoever enters nowadays in a chat room, an interactive game or a forum does not know most of the time any details of their interlocutor, maybe not even their nationality. The group of users receiving some sort of actual usefulness by the connection of a new member is, thus, impossible to define in advance although, surely, it is much more important than with traditional services.

A second type of network externalities are those considered ‘indirect’. Individual usefulness is not only a direct consequence of the number of users, but an indirect one as well, since it also depends on the amount of services available, which represent a portfolio that grows in parallel to the number of users that allow to achieve a return on them.⁶

Telecommunications ‘as a Tool’

In the previous paragraphs we have referred exclusively to communicating. However, each individual or institution connecting to a network can also, in addition to communicating, make public all sorts of information, which takes us to the next argument: advanced services are a ‘necessary tool’ for the enjoyment of other goods.

The basic idea is the one considering telecommunications as a tool for the dissemination of global public goods. An international public good is a benefit-providing utility that is – in principle – available to everybody throughout the globe (Morrissey et al., 2002).

The first of these public goods would be information, or from a broader perspective, knowledge. Knowledge is a global public good because the marginal cost of a new individual receiving it, is zero, while its advantages are geographically unlimited; although some sort of exclusion, which would transform it into an impure public good, is possible, it would not be desirable due to that absence of marginal cost (Stiglitz, 1999). But, and here is the role of the tool, for a country, the adaptation and creation of new knowledge is as essential as its dissemination, which is affected by the effectiveness of its communications system.

The importance telecommunications services have at present, and will further have in the future, for information access, exchange, generation and dissemination, seems without any doubt undeniable. Using Conceição’s methodology (2003), we could establish that the underuse of this knowledge would be caused by access problems specified in the underprovision of adequate connection resources.

Second, we must consider the relationship between telecommunications and

economic development. Poverty has the property of a public ‘bad’. If poverty were to reach even more excessive proportions, it could result in a rising number of failing states, civil strife, international conflict, and international terrorism and crime (Kaul & Le Goulven, 2003). Thus, to reduce extreme poverty can be considered relevant to the goals of global public goods. Also, it is unanimously accepted that any future economic development shall not be viable without advanced telecommunications.

Item 9 of the WSIS *Declaration of Principles* makes this instrumental, although key, role of the ICTs for generating economic growth very clear: *‘we are aware that ICTs should be regarded as tools and not as end in themselves. Under favourable conditions, these technologies can be a powerful instrument, increasing productivity, generating economic growth, job creation and employability and improving the quality of life of all.’*

Conclusions

Financing advanced telecommunications services infrastructure requires more than just money. The state’s role lies also in providing incentives to enable private actors to contribute to network deployment. Governments should take action in order to support an enabling and competitive environment for the necessary investment in ICT infrastructure and for the development of new services (Item 9 of the WSIS *Plan of Action*). Yet in many countries international financial assistance is absolutely necessary.

The declaration on international cooperation included in the WSIS *Declaration of Principles* is extremely vague: *‘we recognize the will expressed by some to create an international voluntary Digital Solidarity Fund, and by others to undertake studies concerning existing mechanisms and the efficiency and feasibility of such a Fund’* (Item 61). The *Plan of Action* dedicates a major section to the Digital Solidarity Agenda although it takes no steps forward in respect of creating mechanisms, and simply promises a review of the adequacy of all existing financial mechanisms, including the feasibility and the creation of the voluntary Digital Solidarity Fund.

Thus, the future of said voluntary fund⁷ depends on the generosity of the richer states. However, there is more than a risk that resource allocations will fall short of required funds. It has been argued that the pattern of aid-giving is dictated by political and strategic considerations (Alesina & Dollar, 2000) or even that nation-states are likely to consider spending on international cooperation only if it is in their national interest (Kaul & Le Goulven, 2003).

Therefore, we believe that the only path to success starts with the conviction of possible donors that they are making investments instead of providing a philanthropic contribution. There is no doubt as to the fact that equity provides solid arguments for international cooperation, possibly the most solid ones. However, from a strictly pragmatic point of view it seems necessary to find other reasons. This is precisely what the results of many other programmes traditionally guided by equity-related considerations advise: global inequity is increasing and poverty is still pervasive. Keeping the Digital Solidarity Fund under the ‘aid’ umbrella would probably lead to equally poor results. Approaching it as a ‘cooperation’ action would be more adequate. The rationale for aid is equity, while

that of cooperation is efficiency. An improvement of efficiency would generate non-restricted benefits, perceived by all the participants of the Information Society.

Arguments used to back plans for the development of enhanced telecommunications infrastructures are almost always too vague. Frequently, their positioning is based on the resource to using scarcely rigorous terms such as ‘social importance’, ‘digital divide’ or ‘budgetary realism’. The awareness of the role of advanced telecommunications services as a necessary tool for the provision of global public goods and the existence of important externalities would consolidate the convenience and need for those programmes. Specifically, there is the convenience of and need for a Digital Solidarity Fund, which in any other case would probably be relegated to the limbo of appealing but hollow ideas.

Notes

- 1 *Any Member has the right to define the kind of universal service obligation it wishes to maintain; such obligations will not be regarded as anti-competitive per se, provided they are administered in a transparent, non-discriminatory and competitively neutral manner and are not more burdensome than necessary for the kind of universal service defined by the Member’.*
- 2 China, Vietnam, Botswana, El Salvador, Jamaica, Hungary, Mauritius, Chile, The Philippines and Morocco are the 10 countries that moved up the most positions during the 1990–2000 decade in the classification of countries per total telephony density (ITU, 2002).
- 3 The system ruling settlement procedures in international telecommunications emerged when national monopoly carriers provided international services and has remained fairly static for more than a century. To provide switched telephone services between country A and B, an international carrier of country A must agree with an international carrier of country B upon the terms and conditions. Such compensation, averaged on a ‘per minute’ basis, is referred to as the ‘accounting rate’. Assuming that the international transmission link is jointly owned, a country A carrier owes to a country B carrier one-half of the agreed bilateral accounting rate to terminate a minute of service in carrier B’s country. This latter charge is referred to as the ‘settlement rate’.
- 4 Telecommunications services provide an alternative to physical transportation, reduce the transaction costs and contribute to promoting competitiveness. See Gómez Barroso and Pérez Martínez (2003).
- 5 The pioneer works in telecommunications are those of Artle and Averous (1973) and Rohlfs (1974).
- 6 See Curien (1993). Jebisi (1997) declares that there is a virtuous circle connecting services and users: more users will lead to the creation of more services, which will attract more users, and so on. Katz and Shapiro (1985) provide a general review of this type of externalities and add post-sales service, information securing and even psychological benefits (‘bandwagon effect’).
- 7 The voluntary nature of the fund rules out any options (whose acceptance would indeed be extremely difficult) imposing procedures considered coercive or involving other actors, such as that of Hayashi (2003), proposing a ‘global universal service fund’ fed by the carriers of richer regions.

References

- Alesina, A., Dollar, D. 2000. 'Who gives aid to whom and why?', *Journal of Economic Growth* 5(1): 33–63.
- Artle, R., Averous, C. 1973. 'The telephone system as a public good: static and dynamic aspects', *Bell Journal of Economics and Management Science* 4: 89–100.
- Bar, F., Munk Riis, A. 1997. 'From welfare to innovation: toward a new rationale for universal service', *Communications & Stratégies* 26: 185–206.
- Bardzki, B., Taylor, J. 1998. *Universalizing universal service obligation: a European perspective*. 26th Telecommunications Policy Research Conference. Alexandria, 3–5 October.
- Castelli, F., Gómez Barroso, J. L., Leporelli, C. 2000. 'Global universal service and international settlement reform', *Vierteljahrshefte zur Wirtschaftsforschung* 69(4): 679–694.
- Cave, M., Milne, C., Scanlan, M. 1994. *Meeting universal service obligations in a competitive telecommunications sector*. Report to European Commission DG IV. Luxembourg: Office for Official Publications of the EC.
- Conceição, P. 2003. 'Assessing the provision status of global public goods', pp. 152–179 in Kaul, I., Conceição, P., Le Goulven, K., Mendoza, R.U. (eds.) *Providing global public goods*. New York: Oxford University Press.
- Curien, N. 1993. 'Économie des services en réseau: principes et méthodes', *Communications & Stratégies* 10: 13–30.
- Falch, M., Anyimadu, A. 2003. 'Tele-centres as a way of achieving universal access – the case of Ghana', *Telecommunications Policy* 27(1–2): 21–39.
- Gómez Barroso, J. L., Pérez Martínez, J. 2003. 'Análisis del fundamento económico de una posible ampliación del servicio universal de telecomunicaciones', pp. 145–154 in Joyanes Aguilar, L., González Rodríguez, M. (eds.) *Congreso Internacional de Sociedad de la Información y el Conocimiento. Libro de actas*. Madrid: McGraw-Hill.
- Hayashi, T. 2003. *Fostering globally accessible and affordable ICTs*. Report of the ITU 'Visions of the Information Society' project. Downloaded from www.itu.int/osg/spu/visions/papers/accesspaper.pdf.
- International Telecommunication Union (ITU). 2002. *World telecommunication development report 2002*. Reinventing telecoms. Geneva: International Telecommunication Union.
- ITU. 1998. *World telecommunication development report 1998*. Universal access. Geneva: International Telecommunication Union.
- ITU. 1994. *The changing role of government in an era of telecom deregulation*. Report of the

Second Regulatory Colloquium held at the ITU Headquarters 1–3 December 1993. Geneva. Downloaded from http://www.itu.int/itudoc/osg/colloq/chai_rep/2ndcol/coloq2e.html.

Jebsi, K. 1997. 'Effet club, externalité de services et tarification de l'accès au réseau', *Communications & Stratégies* 25: 45–59.

Katz, M. L., Shapiro, C. 1985. 'Network externalities, competition, and compatibility', *American Economic Review* 75(3): 424–440.

Kaul, I., Le Goulven, K. 2003. 'Financing global public goods: a new frontier of public finance', pp. 329–370 in Kaul, I., Conceição, P., Le Goulven, K., Mendoza, R. U. (eds.) *Providing global public goods*. New York: Oxford University Press.

Littlechild, S. C. 1979. *Elements of telecommunications economics*. London: The Institution of Electrical Engineers.

Melody, W. H. 1997. 'Policy objectives and models of regulation', pp. 13–27 in Melody, W. H., editor, *Telecom reform. principles, policies and regulatory practices*. Lyngby: Den Private Ingeniørfond, Technical University of Denmark.

Morrissey, O., te Velde, D. W., Hewitt, A. 2002. 'Defining international public goods: conceptual issues', pp. 31–46 in Ferroni, M., Mody, A. (eds.) *International public goods: incentives, measurement, and financing*. Boston: Kluwer Academic Publishers.

Rohlf, J. 1974. 'A theory of interdependent demand for a communications service', *Bell Journal of Economics and Management Science* 5: 16–37.

Stanley, K. B. 2000. 'Toward international settlement reform: FCC benchmarks versus ITU rates', *Telecommunications Policy* 24(10–11): 843–863.

Stiglitz, J. E. 1999. 'Knowledge as a global public good', pp. 308–325 in Kaul, I., Grunberg, I., Stern, M. A. (eds.) *Global public goods*. New York: Oxford University Press.

Thuswaldner, A. 1998. 'International telephony revenue settlement reform', *Telecommunications Policy* 22(8): 681–696.

World Summit on the Information Society (WSIS). 2003a. *Declaration of Principles*. Document WSIS-03/GENEVA/DOC/4-E. Downloaded from http://www.itu.int/dms_pub/itu-s/md/03/wsis/doc/S03-WSIS-DOC-0004!!PDF-E.pdf.

World Summit on the Information Society (WSIS) 2003b. *Plan of Action*. Document WSIS-03/GENEVA/DOC/5-E. Downloaded from http://www.itu.int/dms_pub/itu-s/md/03/wsis/doc/S03-WSIS-DOC-0005!!PDF-E.pdf.

