

From the “public service” model to the “universal service” obligation

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1. Introduction

This chapter addresses the question of public services of the network industries. This is a quite complicated issue, given that, before liberalization, enterprises in the different sectors, whatever their private or public objectives, were actually equated with “being public utility” or “public service”, in particular for public enterprise. The very idea of public service in the infrastructures in some countries must therefore be seen in light of the very history of the public utilities and their transformation as a result of infrastructure liberalization.

Traditionally, public services were thus generally provided by public-owned enterprises, themselves the result of public policies. The national or local states owned these enterprises in the relevant infrastructure sectors – e.g., PTT for postal and telecommunications services, electricity and gas operators, railway companies, water utilities and many others more. Public service in this sector meant a combination of objectives ranging from guaranteeing supply security, contributing to national and social cohesion by equality of treatment, pursuing industrial policy and recently ensuring environmental protection and some others more. In the perspective of economics, public services monopolies were justified by the character of natural monopoly of this activities and its combination with the offer of public goods, and the issue of social equity.

It was possible for these public utilities to provide such public services because they were not competing with other companies, enjoying legal monopoly protection, but in exchange of submission to public service obligations controlled by ministry. Of course, the definition of a public service varied from region to region, but generally it included services whose cost could not be recovered from the customers who directly benefit from them. This thus implied cross-subsidization from more lucrative activities or subsidies from the public authorities.

This model could however no longer be sustained in an open market. Indeed, competitors looked for the most lucrative segments of the market and were not interested in providing public services. As a result, the historical enterprises were threatened simultaneously in two ways: on the one hand, the competitors seized the most lucrative market segments, i.e., these market segments from which the public enterprise was precisely cross-subsidizing their public service obligations. On the other hand, this very public service obligation did not intrinsically change in the first step of reform, leading to the fact the historical enterprise, henceforth privatized, was charged with public service obligations with a clarified but reduced field, obligations that it could no longer finance, a development which leads to a graveyard spiral.

However, also the public authorities came under pressure. Indeed, it appeared that the market did not provide some of the former public services, as they were simply not lucrative enough for the competitors. Also, it became increasingly difficult to impose the traditional public service obligation to the historical enterprise, as this risked to make it disadvantages in the competition with entrants, and even to go bankrupt. Furthermore, it was inconceivable to simply get rid of the public service as reform would not have been accepted by the population. While this is a general problem for all governments undergoing liberalization processes, the case of Europe appears to be particularly interesting, warranting particular attention in this chapter. Indeed, facing this apparently insurmountable dilemma, the European Commission has proposed an original solution in the concept of “Universal Service”, inspired by the concept running in the Telecoms and Postal service in the USA since the beginning of the XX^o century and modernized at the moment of the Telecoms liberalization (Mueller, M., 1993). While the Universal Service is no longer a traditional public service, it is nevertheless a means to protect the weakest citizens from market liberalization. But, while this evolution tends to reduce the field of public services, evolution of social values which in particular has been reflected in the rise of environmental protection as a key social norm, has enriched the field of public services in the electricity and gas sectors, besides the universal service obligation *stricto sensu*.

But this transformation of public service in universal service obligation (USO) meets two limits. First besides USO *stricto sensu*, public service objectives, old ones (social protection, affordability, reliability) as well as new ones (environmental protection, sustainable development in energy and water) remain high in the political agenda, while they belong to the remit of the universal service field. Second results of post-reforms experiences in Europe as well as in other regions, show that in the different network industries, higher standards of quality of service, the enlargement of the supply offer, and lower prices are not systematically by-products of competition and private sector participation, with the exception of telecoms where innovative activities under competition pressures have multiplied products and services.

This chapter is thus structured as follows. In the second section, we present the public service norm before the liberalization and its evolution towards universal serviced norm, by focusing on the European context and the EU’s role in this evolution. In a third section, we present in an economic perspective the different ways to designing universal

service obligation in particular the ways to attribute and fund these USOs. In the last section, we will then explore the possible future of public service in the age of liberalization. In particular, we will argue that there is a need for public services even after liberalization and that the concept of universal service will never address all this need.

2. The evolution from public service to universal service

In this section, we will present first public service in the network industries before the liberalization process and in its different national configurations, stemming from the different public policy traditions such as the Latin tradition, the Anglo-Saxon tradition, the German tradition or the Scandinavian tradition. In the second sub-section, we will highlight how the liberalization of the infrastructures has concretely affected the public services in the different sectors. In the third sub-section we present how, in the particular case of Europe, the European Union has created, beside the concept of Universal Service focused on the protection of the most vulnerable consumers from the risks of liberalization, the new concept of Service of General Interest for covering the other objectives of public services escaping to the coverage of USO

a. “Public service” before liberalization

There is no sharp definition of what “public service” really is. The French legal tradition is probably the most developed in this matter. There public service is an activity of public interest, which the private sector or private initiatives are not capable of guaranteeing completely (Duguit, 1928). More precisely, “public service” is defined by principles which are related to its attributes: 1) equal treatment of users, 2) continuity of public service and 3) the responsiveness of the public service with respect to consumers changing needs and technology. There is also the notion of “general interest”, which does not have a precise legal definition, make it thus quite dependent upon on political considerations of the day. It thus more appropriate to speak of the very underlying idea of public service, rather than of precise legal definitions. In order to do that, let us first outline the different dimensions public service actually covers to then outline the different politico-administrative traditions which define the ways by which public services are generally assumed.

The very idea of public services stems from related public policies. Traditionally, public policies – as related to infrastructures – can pertain to social development, such as for example the reduction of inequities, national and regional development, national security, employment, support of national industries or more recently environmental protection, as well as others more. Governments want to further such public policy objectives and have, in the past, often used their own, public enterprises to do so. More precisely, national governments have ordered their own enterprises for example to offer their services at nationally uniform prices (equity), as well as at affordable prices (sometimes below production costs. They have also ordered them to offer certain services, which a commercial enterprise would otherwise not offer (e.g., public transport services in remote areas). Some public enterprises had to offer particular services for national security

purposes (e.g., air traffic control, military postal services), which were generally not retributed. Other public enterprises had to make particular efforts to employ people, to create positions for apprentices or to make particular efforts in matters of environmental protection, things which private enterprises would otherwise not do. Sometimes, they were ordered to source nationally, i.e., for example to support the national labor force among the suppliers or to buy their equipment (e.g., railways, electricity) with the national suppliers. In extreme cases, and depending on particular political circumstances, public enterprises were forced to locate production facilities in particular regions of a given country, so as to create employment there or otherwise support a particular region. All these different obligations, which public enterprises were asked to do for reasons of public policy, make up of what is called public services. One can say that these are services which the public enterprises offer because they are publicly owned and/or because they were explicitly mandated by politics to do so. Often, however, they were not even mandated, as public service was simply part of their DNA, i.e., so-to-speak part of their *raison d'être*. It is thus not astonishing that, especially in the Latin tradition, public enterprises were often equated, in the past, with public services. In France it often still happens that SNCF or the postal service are called “a public service”.

However, there are big differences between countries and especially between politico-administrative traditions as to what public service really is.

- As a matter of fact, public service is a concept that mainly stems from the *Latin tradition* (France, Spain, Italy, Portugal, Greece, Latin America, former French colonies worldwide). Here, public service is defined at a national level as a service that the government via its public enterprises and its public administration provides to all citizens, regardless of geographical location, gender, origin, social status, etc. Public service is an integral part of what governments do for their citizens. The provision of such public services is mainly done by way of the public administration or the public enterprises and covers all public policy areas. Overall, public service is a political science and a legal concept.
- In the *Anglo-Saxon tradition* (UK, US, British colonies) there is no public service per se. Here, the main concept is the so-called “public interest”. The public interest as an even more fuzzy concept than public service. It stems from an economic and not from a legal or political science tradition. In this economic tradition, public interest is more or less equated to public welfare, which means that the public interest is not something that is addressed to the citizens (as individuals) but rather to society as a collective. In this sense, the term is also rather defined negatively: by definition, what the State does (especially in economic matters) is in the general interest. Therefore, one has to prove that something is NOT in the general interest, rather than the other way round.
- There is thirdly the *German tradition* of so-called “soziale Marktwirtschaft”. While in principle very close to the anglo-saxon tradition of a free market working in the public interest at the macro level, there is a slight difference however at the micro-level. Indeed, the German tradition stresses a much stronger social responsibility of firms than this is the case in the anglo-saxon tradition. Unlike the liberal and even neo-liberal anglo-saxon tradition, “soziale

Marktwirtschaft” considers that firms do have a social responsibility, not only vis-à-vis their employees, but also vis-à-vis the society within which they operate, an idea that reemerges today around the concept of corporate social responsibility. However, unlike in the French tradition have no public service obligations.

- There is fourthly the *Scandinavian tradition* of municipal social services. Unlike the other three traditions where public service is defined in relationship to the nation-state, the Scandinavian tradition sees public service mainly at the local level, where municipal companies offer infrastructure services to the inhabitants of the regions they serve. Such infrastructure services comprise energy, public transport, water, and sometimes others more. This idea of municipal public services can also be found in German, Austria, and Switzerland.

The challenge – in particular for the European Commission – is to come up with a compromise among these four traditions, namely a compromise that is not tilted towards one or the other tradition, as neither tradition alone would be acceptable to another tradition. But before presenting the European Commission’s re-definition of public services, below, let us first illustrate what happens to the public services as a result of liberalization.

b. How liberalization affects the public service?

This idea of the state or the public enterprises offering public services has been challenged in the network industries by several factors. Among these, one must mention technological advances, criticisms made regarding the effectiveness of firms operating as public service monopolies with respect to their ability to adapt to innovations and the changing needs of users, as well as European integration resulting from the single market process and focusing on suppression on public services monopolies seen as barriers to trade. Technological advances for instance tend to create substitutes to public service offers: in postal services (i.e. internet), in telecoms with infrastructure competition (wire, cables, radiowaves, glass fiber, etc.) and in electricity with decentralized power generation and smart distribution grids, etc. Globalization also disqualifies “instrumentation” of public utilities for leveraging industrial policies, via public procurement, in telecoms, energy, railways, etc.

It is noteworthy that competition in and of itself does not contradict *a priori* the general interest and public service. It opens the range of technological opportunities to be seized by private competitors and which public service monopolies would have ignored. In railways and postal service, market opening in freight and express mail opens ways to new offers and adaptation to the needs of customers with new bespoke offers. These could converge with the general interest. For example, the development of competition in freight allows the shift of highway traffic onto rail transportation and contributes to environmental protection and congestion alleviation; in electricity innovative offers can include certified green electricity; etc. But this discussion needs more precisions: indeed at its core the dynamics of the market inherently contradict social equity and universal geographical coverage. In particular non-profitable markets would not be served without a universal service obligation.

Without going into an in-depth analysis of the very reasons which have led to the liberalization of the infrastructures (Ménard, C. & M. Ghertman eds., 2009) , one can state that liberalization puts a substantial part of traditional public services into question. Indeed, as a result of liberalization, firms which previously enjoyed national, regional or local monopolies from where they could cross-subsidize non-lucrative public services, are now faced with competition. Moreover, competitors do what is commonly called cream-skimming or cherry-picking, i.e., take the attack the most lucrative markets, i.e., precisely these markets which are vital to the enterprises providing public services. As a result of this evolution, the financial basis of the public services is missing and such public services are no longer affordable, unless the subsidies come directly from the state.

- *Differences between sectors*

Of course, the public services of each of the infrastructure sectors are affected differently by liberalization. We will thus briefly describe what liberalization means for the public service of each of the main sectors (Bolhöf, 2005; Künneke, Groenewegen, Auger eds., 2009) :

- It is in the *postal sector* where the public services have probably been most extensive, liberalization is also having the biggest effect, not only on the public services, but on the sector as a whole. Traditionally postal operators had a monopoly protection in order to finance the public services, which basically means the collection and delivery of postal items generally everyday everywhere in a given country. Especially the delivery in remote regions is very costly and cannot be financed without some form of subsidy, i.e., monopoly protection. As the monopoly in the postal sector is gradually being reduced to zero, the only possibility for postal operators is to reduce the quality of the public service accordingly, generally by reducing the collection points (post offices) but also by reducing everyday delivery of mail and parcels. This is not always easy as politics seeks to conserve the traditional definition of public postal services while at the same time not subsidizing any longer.
- In the *telecommunications sector*, the situation was originally identical as in Post, both being part of the so-called PTT. However, the telecommunications sector being very dynamic in nature, telecommunications services have evolved beyond the traditional public services (mainly fixed line telephone connections), the later not being particularly costly to deliver. Liberalization has thus not really affected the public service in the telecommunications sector.
- In the *electricity sector*, public service is generally defined as the reliable delivery of electricity to the household at affordable prices and in equal conditions of treatment. Overall, liberalization makes actually the delivery of electricity less reliable as before; it makes it also more expensive for the consumers, generating especially price volatility. It is generally the local electricity distributors that are to deliver the public service, even though they are not responsible for the price of the electricity in a free market. Liberalization thus creates a serious problem for public service in the electricity sector, as the operator which has the contact with the customer is not really responsible for the service, while the one responsible for the service is a free market player.

- In the *railway sector*, public service takes the form of national, regional, and local transport services provided along a certain timetable as well as affordably. Most of these transport services being subsidized anyway, the question simply is whether the government continues to subsidize these a services or not in a liberalized market.
- In the *drinking water sector*, public service means the regular delivery of potable water at a certain sanitary quality at an affordable cost. Liberalization in the water sector takes a particular form, namely the tendering of water services at regular intervals. The consequence of this for public service is that water quality goes generally up, but that prices do as well, while simultaneously the extension of the network slows down or is even halted.

Overall, it appears clearly that liberalization negatively affects the public services, at least the services as they were defined traditionally. It is also clear that Europe, with its, at least partial tradition of public service, could not simply accept the reduction of such public services as a result of liberalization.

c. The European Union and the institutionalization of universal service

As a result of this challenge – the pressure on the public services on the one hand and the different European traditions of public service on the other – the European Commission had to clarify the concepts and come up with a definition of its own, namely the idea of a Universal Service. In this section, we will highlight first this conceptual clarification of the European Commission distinguishing between services of general interest, services of general economic interest and universal services. The rest of the section will then focus on the Universal Service only and outline its definition by the European Commission and in the different sectors, the way financing is conceived, as well as its criticism.

• Clarification of the concepts

In the European Union perspective that we adopt here, these issues require that the central role of public services in Europe be recognised and also the definition and clarification of the specific legal concepts that arise from this situation. This has only been the case following a *communication* on Services of General Interest (SGI) in 1996 and since the Treaty of Amsterdam (1997), which legitimized, if necessary, the placing of restrictions on competition in order to accomplish missions of general (public) interest. This enables States to go beyond their obligations of universal service. However, there is still an ongoing discussion on the desirability of a framework directive and a charter clarifying the legal status of the -not very operative- notion of SGI thereby permitting to resolve the conflicts that arise between free competition and public service obligations (and defining precisely the status of State aid, the public sector and the remaining public service objectives rooted in public values).

In this context the European Commission (EC) has insisted, particularly for “industrial and commercial services” on the need for clarification, regarding not only the services that make up the SGI, but also their costs and/or their pricing models, their financing (tax

and / or revenue collected from users), their operation, evaluation and the sharing of responsibilities between the different players involved. This led to the appearance in 2004 in the texts and in particular the Protocol annexed –at the last minute- to the late Treaty of Lisbon of the concept of “service of general economic interest”, which is a much broader concept when compared to that of “universal service”. Complementing the “modernization” of network public service industries via their liberalization, precisely defined universal service obligations have been diluted following the strengthening of private sector participation and effective competition in the relevant sectors. Competition is seen in the liberalization process, as a double spring of universal service: on the one hand, it allows, regardless of any intervention to achieve lower prices, increase supply and stimulate innovation, and on the other hand it can be used to assign to the best performing companies the universal service obligations.

It is for this reason that the EC (2004) prefers the notion of “Service of General Economic Interest” and more generally “Service of General Interest” (SGI) (which extends the concept to non-market services) i.e. services subject to “specific obligations imposed by public authorities to a service provider to ensure the achievement of certain objectives of public interest” (p.23), without taking into account the public or private nature of the provider. Finally, in 1987 the concept of “universal service” appears for the first time in Europe in the Green Paper on the liberalization of telecommunications becoming one aspect of SGI. The concept defines a set of principles and common requirements for EU countries by establishing, in several sectors, the need for a basic service available to all at an affordable price. It has a geographical component (serving unprofitable areas) and a social component (at affordable prices). Its appearance is supposed to solve part of the problems related to the co-existence of public services and market forces. But it does not mean that the concept of public service disappears from European law. In some directives such as the electricity market directives (EC, 2003), public service objectives related to social protection and environmental protection are recognized as such, being one major element of general interest; then member states have competences to define the perimeters of these “public service obligations”, providing that they respect certain principles defined by the directives.

- *Universal service obligation in the different sectors*

So USOs are disconnected from public service objectives which are covered by the concept of services of general interests. USO are precisely defined around two concepts: the geographic obligation of ubiquity (all consumers should be connected, whatever their location) and the obligation of equality of treatment (uniform pricing between non-profitable and profitable markets). General interest cover issues of affordability, service access in remote areas, protection of the poor and protection of collective goods (energy security, environmental protection, sustainable development).

In telecoms it is thus that the universal telecommunications service includes: fixed telephony, directory and information services, telephone booths and the specific conditions related to the provision of certain services and/or populations (social tariffs). It is thus a part of the telecommunications public service. It includes also mandatory

services for which prices are freely set by the operator and the general interest missions in the areas of: defence and national security, public research and higher education. In the field of electricity, the public service concept incorporates the notion of universal service (supply at affordable easily accessible prices which are comparable and transparent to all residential customers), the protection of vulnerable or geographically isolated customers, and measures related to environmental protection and security of supply¹. In the field of postal service, it includes delays of distribution in any areas, tariff equalization, and in its public service aspect, access to banking services and the preservation of a reserved market (i.e. packages weighing less than 20 gr) (Chambers, 2007).

Table 1. Universal service obligations and public service objectives in selected network industries

	Telecoms	Electricity	Postal service	Railways
Universal service obligations	1. Ubiquity Geographical coverage of classical network(vocal)	1.Geographical coverage 2.Continuity of service (reliability)	1.Maintenance of distribution in rural areas	Services under “public service contract” (Regional link traffic funding by grants (maintenance, rolling stock))
	2. Non discrimination Equality of tariffs whatever the location	3.Non discrimination Equality of tariffs in remote areas for small consumers	2.Equality of tariffs on reserved markets	
Public service objectives 1.Social equity	Social tariffs for vulnerable customers	Social tariffs Rules of disconnections	Access to banking services	Social tariffs (family tariff, old population, etc)
2. Others	Obligatory service duties 1.Geographical coverage of new networks, Mobile phone, Digital network/Internet 2. Reserved networks for national defence 3. Access for education	Environmental protection 1. Promotion of renewables & cogeneration 2. Promotion of energy efficiency in consumption	Reserved markets (less than 20g. etc.)	

¹ Article 3 alinea 2 of the 2003 directive on electricity markets (2003/54/EC) specifies “Having full regard to the relevant provisions of the Treaty, in particular Article 86 thereof, Member States may impose on undertakings operating in the electricity sector, in the general economic interest, public service obligations which may relate to security, including security of supply, regularity, quality and price of supplies and environmental protection, including energy efficiency and climate protection. Such obligations shall be clearly defined, transparent, non discriminatory, verifiable and shall guarantee equality of access for EU electricity companies to national consumers.”

The poorest and vulnerable customers have received particular attention from law-makers. The problems raised by market liberalisation in this field of equity are magnified due to the *essential good* character of the service or good in question. This is the case for electricity and water (Hall & Lobina, 2008). In comparison to other consumers they may be excluded from the benefits derived from competition. First, they are less prone to switch as they are less informed than other customers. Symmetrically from the suppliers' point of view, they are less attractive and less likely to receive attractive competing offers. Second, they are the most vulnerable to price increases, given the weight of their energy bills in their budgets. So beside USOs, the protection of vulnerable populations is the main public service objective, which may take different forms: social tariffs in electricity, telecoms, railways; protective rules regarding disconnections; targeting of "energy efficiency obligations" imposed to electricity and gas suppliers (e.g. in UK); access to banking services via the incumbent postal company.

3.Designing universal service obligations

In order to be able to maintain a public service following a liberalization process with the USOs, the law-maker must establish mechanisms subsidising the USOs, mechanisms which combine two characters: the attribution of universal service obligations to some operators and the methods for funding the mechanisms..²

- *Attributing the USOs in market regime*

In the former utility monopoly model, public service obligations attributed to utilities or public firms had their costs funded by cross-subsidies. When legal monopoly was attributed to private companies, it was in exchange of public service obligations (extension of networks, obligation to serve, affordability). As an implicit compromise, the costs of obligations were passed-through via tariffs by means of cost-of-service regulation. Cross-subsidisation encompassed advantages in its simplicity. But cross-subsidies were quite opaque because costs assessment and costs allocation to different market segments were not codified in the regulation. Moreover lack of information of stakeholders on costs of obligations lead to lack of incentives to be efficient.

In the market regime, cross-subsidisation internal to historic operators is no more possible and desirable. USO could be classically attributed to the historic operator as an extension of its former public utility duties, as it is in the restricted entry system. But

² All of which may interfere with social efficiency and imperfect competition issues. The quite abundant economic literature on USO attribution and funding (for instance Crew and Kleindorfer, 2000; Laffont and Tirole, 2001; Valletti, Heirig and Barros, 2002; Choné, Flochel and Perrot, 2002; Armstrong, 2001) shows that, compared to unconstrained competition between networks and services providers, universal service obligations induce distortions on the competitive entry process and on the equilibrium market structure. Rules of funding have effects on the demand on profitable markets, given the productivity effect on the historic operator which sells both on the reserved and regulated markets, the possible price effect, the possibility for the historic operator to use the uplift to cross subsidize the USO which is incurred on himself by the access right. Those distortions generate both social benefits and social costs.

competition opens the field: attribution could be opened to historic operators or to all the market players in order to not give commercial advantages to the historic operator. We identify four main systems of attribution:

The “restricted-entry” system: In this system entrants are not allowed to serve high cost consumers. It means that USO are attributed and assumed by the historic operator considering that it is the best for assuming the US/PS obligation. But it implies strict supervision by the regulator in order to avoid undue competitive advantages (for instance in electricity suppliers, the last resort supply obligation appears to be a real commercial advantage to keep a large sticky consumer core business) as well as cross-subsidies when USO costs are calculated. It is not clear if the advantages gained from the responsibility of some USO (such as some scope economies) would not have to be subtracted from the USO costs.

Imposing USO to every competitor: General commissioning of USO and more widely general interest obligations to every competitor on service markets in each network industry allows to overcome the difficulty of allocation and funding US/UP obligation. In fact this solution must be feasible, i.e. if we are able to precisely define it and if it does not alter competition between entrants and incumbents. In postal services the generalisation of geographical USO would oblige all the operators to be active on the totality of national areas. For geographic reasons this solution would hinder every entry of private operators. In Finland where this principle is applied, there is only one operator, the historic one, while the postal services market is supposed to be completely opened. In telecoms and electricity, it is unfeasible to let competition around non-profitable markets to be the way to regulate USO for the same geographical reasons, and it is completely ineffective when it concerns the supply of services to vulnerable customers.

The “pay-or-play” selection: The operator chooses to pay a tax or to assume public service missions pro-rata to its activities. The revenues from this payment help to compensate US/PS obligations costs. The *pay-or-play* regulation is applied in Australia in telecoms.

Auctions: This market based selection mechanism helps to encourage competition to develop on a long term basis and to incite the reduction of USO costs, provided that objectives of performances are reached. The USO is allocated on the basis of the best bid in terms of asked subsidy for compensation with respect to the terms of reference and requirements. USOs are auctioned for the postal service in Germany or for telecommunications in the USA and more recently in Germany and Austria. In electricity it is starting to be used for the extension of electrification in rural areas in some developing countries. This procedure could have limitations in situations where there are few potential candidates. As this creates collusion risks on the bid price (Klemperer, 2002).

- *Funding the USOs*

Funding the USOs is a necessity in order to preserve equity between market players in competition. Some defend the principle of self-funding. The basic rationale is the qualitative appreciation that the USO gives as much commercial advantages to the operator as the costs that the obligation makes him bear. This perspective concerns telecoms and postal services. It also concerns electricity and gas suppliers when they have to support an obligation of last resort supplier. But the conclusions from these debates is not clear cut yet. In postal services many European operators insist that maintaining an equivalent USO on incumbent operators without newfunding mechanisms forced them to scale down access to services (Sweden) or to compromise their financial equilibrium (UK). However, others retort that incumbents can cover the cost of the USO relatively easily, by increasing the single-piece price of mail delivery, by restructuring to become more commercially oriented, or by taking advantage of economies of scale and scope by using the same network to offer a larger number of more competitive products (such as financial services, etc).

Anyway, generally speaking, public funding is necessary in most of the cases. USO costs must be assigned in a more or less complex way to the State and/or to all operators. The regulator has first to assess USO costs. The issue of USO cost assessment is not neutral at all. Methods of assessment of USO costs are strategic for those who are or will be in charge of them.³ Historic operators in telecoms who for a long time will benefit from the monopoly of attribution of USO tend to overestimate its costs in order to have large compensation. Secondly the regulator has to choose between three ways of funding, depending upon the type of USO/PSO and their mode of attribution: public funding, funding by customers via an uplift; and finally funding by competitors in relation to their market shares or their turnover,

Public budget. Public funding from State, regional jurisdictions or local communities finance directly non-profitable services: regional lines in railways, airways, or services in low dense, remote or isolated regions (railways, postal services, electricity distribution, fixed telephone, etc.) and social support for the supply of essential goods (energy, water) to vulnerable consumers. They compensate the operator in charge of USOs with a lump-

³ Different methods compete for the estimation of universal service cost and their allocation between products in telecoms and postal services (OXERA, 2005). In the method of incremental costs, the price increment on a service or business line makes no contribution to the business line costs: it is the increase in costs associated with a specified increment of the output relating to the USO. In the “stand alone costs” method, all the indirect costs are allocated to that service. But, given the large difference between the two options, regulators invent an intermediary method to allocate USO costs, the so-called equi-proportionate mark-up or “EPMU” method, which allocates USO costs to products in the same proportion as that of the products’ share of total long run marginal costs.

It is noteworthy that the methods of compensation (uplift, public fund fed by all competitors, “*pay-or-play*” system) are more information costly because they require PSO cost assessments. This presents advantages and drawbacks: it sheds light on the cost of the PS/US obligation but it exposes the system to recursive disagreement and critics. In this respect the “*pay-or-play*” method is the less prone to disagreements because it lets entrants to choose.

sum transfer. To avoid inefficiency, granting of the protected position for USO or public service objective within the market could be done by market mechanisms (auctions or competitive tendering). It allows for costs to be revealed and ultimately the awarding of the contract to those operators demanding the lowest level of subsidy. Another advantage is that it establishes credibility to the public commitment of subsidization in the long run because it forces the setting up of a long term contract with the national or regional government.

An uplift for public funds. It is a way to make USO costs funded by all consumers. In sectors in which there is an essential facility necessarily used by every competitor to reach consumers, financing PSO could be done via an uplift element on access charges. Consumers pay for the obligation costs on an equal footing.⁴

A public fund financed by every competitor. This way is in fact an externalisation of cross subsidization. New entrants and historic operators finance a public fund in proportion to their market shares on the profitable segment, or a *pro-rata* of their profits (or turnover). Even the player(s) in charge of the obligation have to contribute to the fund, given its presence in competitive activities. The fund then compensates those players in charge of public service obligations.

A compensation fund financed by new entrants. If the historic operator has to assume universal service obligation, it would be sufficient to compensate it by considering contributions to be paid by each entrant. It is in fact another aspect of the “Pay or Play” mechanism. But this option is difficult to implement.⁵ How to calculate the cost of the PSO or USO and the entrants’ contribution? Are contributions to be calculated on the basis of entrants’ and incumbent’s market shares, or on the basis of entrants’ benefits, or with a lump sum? Moreover to limit entry barriers, minimal thresholds should have to be defined to let small competitors to enter into the profitable market segments.

It is noteworthy that the costs of public service objectives are not funded in the same way as USOs are. A first example is regional and suburban links in railways which are financed by regional and local governments which are the main stakeholders. A second example is the social equity objective. In some countries, rather than funding local providers for social action focused on vulnerable citizens for electricity, gas, water supplies, local and national governments traditionally directly managed and financed groups in poverty themselves. It could be for instance in electricity supply with coupon

⁴ In the postal services in which there is no essential facility, private operators which are obliged to use some infrastructures of the historic operator should pay access to these infrastructures, this toll being used to compensate it for the USO.

⁵ Given the proximity of the future total liberalisation of postal services on January 1, 2011 in the EU countries, the debate is hot in the postal services in Europe in 2008 on this issue. France would be in favour of this compensation fund.

delivery in conjunction with the local providers.⁶ It is the case with municipalities in Germany and with the state jurisdictions in the USA, while in France it is financed by the general public service fund for electricity and gas.

4. Criticism: the universal service, a weakening of the public service

Market liberalization in the areas of industrial and commercial public services and the introduction of the concept of universal service have helped clarify the concept of public service missions and the roles of each of the different players. However, whilst “universal service” is a dynamic and flexible concept [that can] be redefined periodically in order to adapt it to the social, economic and technological context” (European Commission 2004, p.8) this redefinition gives rise to issues that may cause a weakening of public services. If this concept is in some respects a step forward, it is nonetheless, in others, a step backwards in terms of the concept of public service. This step backwards results from three reasons: the intrinsic difference between universal service and public service, the limits of the liberalization process which rebound on the public service objectives (no advantage for mass consumers, long term inefficiency...), and the precariousness of public services which may result from the introduction of a universal service.

It must be repeated that competition was seen in the liberalization process, as one of the main springs of universal service because it allows, regardless of any intervention to achieve lower prices, increase supply and stimulate innovation. But in practice as in theory, due to the persistence of market failures, this view of the competitive model deserves to be questioned. Indeed even when the focus has been placed on forcing the development of effective competition (that could be for instance by means of asymmetric regulation that may impose specific obligations on incumbents), Markets have almost always ended up re-concentrating as it can be observed in the telecoms, electricity & gas, airways, etc industries. In this context, expectations regarding the desired effects of competition are not guaranteed to be met and it is unlikely that the process of liberalization (and privatization) will really provide all or part of universal service without the use of specific interventions. This concerns the evolution of prices, the protection of the consumers and quality of service, the level of investment in infrastructure and the deployment of new technologies.⁷

- *The distance between universal service and extended public service objectives*

Some approaches, for example, developing, through industrial policies, national champions or advanced technologies, can be as (or more) effective than the search for

⁶ Some complementary rules could help the direct financing of poor consumers' expenses in electricity or water such as prepayment metering because it eases distribution of cards by the social services of local communities for example.

⁷ In the telecommunications sector, the degree of success of the liberalisation process is measured by amongst other indicators: the price level of basic services, the quality of service (number of complaints), the geographical extension of new services (such as ADSL or optical fiber) or the level of investment.

competition at all costs if an effective national champion is a source of innovation or lower costs. The rationale of such an industrial policy based on public procurement is the dynamic externalities generated by such a policy, via the innovation and industrialisation process and it made sense in the context of industrial development based on national markets protection in the post-war decades, as said above. In this case, the concept of universal service is less relevant because the public service is built into a more “extensive” concept, which includes issues such as research, investment, widened range of marketized services. Even if new conditions of international competition and globalization of markets partly disqualify this industrial model where public utilities are instruments of industrial and technological policies by means of public procurement, different opportunities in new technological fields such as green technologies remain to act as such (see below).

- *Weak advantages for consumers in some sectors*

First competition in telecoms, electricity, gas, postal services and railways is supposed to benefit every industrial customer and household by allowing them to switch to the best offers. Actual experience of retail competition backs up the belief that retail competition is not something consumers can use to their advantage for informational and behavioural reasons. In telecoms complexities of different offers makes comparisons difficult and consumers choices not always rational; and the multiplication of new offers tends to create artificial demand (Thomas, 2008). In the electricity sector mass-market consumers are concerned by retail competition drawbacks. They are less likely to benefit from retail competition than larger consumers in industry and commercial market segments for different reasons: higher prices for the energy component compared to industrial consumers, high cost of switching (with high marketing and registration costs); unethical selling practices; logistical problems for consumers trying to switch; and at the end inability of small consumers to identify the cheapest supplier (Thomas, 2008, Waddams Price, 2008).⁸ Moreover it has been seen above that the protection of vulnerable consumers cannot be achieved with voluntary programmes and that a mandatory program of social tariffs on the competitors (or on the historic suppliers) is desirable.

Second in the electricity sector, the situation appears still more questionable than in the telecoms sector in which price offers of voice service (fixed telephone, mobile) have dramatically decreased. Former regulated tariffs were aligned on annualized average costs while after liberalization retail prices are aligned on average prices based in turn on hourly electricity markets which are very volatile because of their correspondence to bid-offers on these hourly markets. On the whole retail prices are volatile, very sensitive to fuel prices changes, and higher than what would be tariffs aligned on average costs as before the market reforms were introduced. Generally regulators define a last resort tariff to be offered by historic suppliers, the function of this tariff being to smooth the wholesale price variation. But this regulated tariffs is calculated by alignment on

⁸ In a detailed UK behavioural study, Waddams-Price (2004) found that, amongst a sample of about 400 consumers who switched supplier, 42 per cent of those switching ended up paying more, 14 per cent were paying the same, while only 44 per cent actually made savings.

averaged wholesale prices and does not reflect annual average costs, but prices on wholesale markets which are determined by increasing and volatile fuel costs of marginal equipments on successive hourly markets.

- *A long term efficiency to be questioned*

We have also to discuss the impacts in the mid to long-term of the difficulties in planning heavy private investment over long periods in these infrastructure industries. This is particularly true as the players competition for the provision of universal service does not necessarily guarantee the results. In a number of liberalised network industries – telephone, electricity, gas, railways – which rely on fixed infrastructures, the timely development of infrastructures related to the services' demand growth and improvement of existing installations becomes an issue because market gaming between decentralized players could alter security of service supply.

Incumbent's investment in new infrastructures capacity can be reduced by bad incentives being built into access charge regulation. For instance in telecoms when charges only allow the recovery of incremental costs and the competitor's has the option to withdraw this raises the incumbent's risk. With access charges too low, the incentives of entrants to invest in infrastructures may also be reduced, leading to a dominance of service over competition by infrastructure (Cave and Prosperetti, 2001). The unbundling of network services (for instance passenger transport, or electricity transport for consumers) from the infrastructure (the railways system or the transmission, distribution networks) creates a problem of coordination for two reasons. Second is that it separates the function of infrastructure planning from that of the provision of providing the service over the infrastructure, (taking also into account the geographical dispersion of production and load demand location in the case of electricity). Third, unbundling in capital intensive industries generates the risk that fragmented responsibility might encourage opportunistic, even strategic behaviour following unbundling (D.Hall, 2008). The inefficiencies arising from unbundling services can be seen in industries where the scope for benefits from competition is limited by fixed and sunk costs and vertical integration economies. It is particularly clear in the railway sector experiences in Britain and in the USA (Pittman 2005, Finger and Kunneke, 2006).

- *Precariousness of public service*

The goal of profitability that characterizes the newly liberalized sectors gives greater *de facto* responsibility to politicians with respect to the public policy choice of preserving the scope of "universal service". We observe that it has not evolved much in sectors as dynamic as the telecommunications sectors, excluding mobile and broadband Internet in the European Union. As the world becomes more connected to ICTs, universal service must be technologically neutral and should include Internet access. There are trends in triple play for the use of broadband as a platform for convergence. Universal service relating to voice only becomes less relevant as voice is delivered in combination with other services. Voice over Internet Protocol (VoIP) can help reach more remote areas and IP networks are increasingly used to redistribute TV and radio services. Universal service

must be adapted to reflect a broadband- IP-converged world, but where consumer protection is more complex. Consumers would most probably benefit from enhanced competition, with many new players and a broader choice of new services which may address bottlenecks.

So it appears that the affirmation of the concept of universal service, removing the public service out of the vagueness surrounding its contours, offers less guarantees of seeing this service grow “naturally”. The outline of these tasks, under a liberal influence, tends to reduce itself in order to interfere as little as possible at the sector level, on the free formation of prices by the market. They tend to be replaced by a more direct redistribution policy usually through the tax and welfare system, as is the case for financing regional links in railways and the treatment of fuel poverty in several countries. This is not without risks in terms of equity...

So, to conclude on the limits of the universal service concept, at the same time that this concept has helped to circumscribe the notion of public service in an accurate and complete manner, there are limits to the ambitions of the notion of universal service, limiting the market and preventing it from addressing the more general issues that concern public service.

5. As a conclusion: The future of public service in the age of liberalization

Universal service, with its geographical and social elements, constitutes an essential element of any service of general interest beyond what is currently established in the “public service” norm. Its definition has been a step forward in some respects (transparency of roles, costs, funding, responsibilities ...). But there is one problem. The “public service norm” gives the public more space for public intervention than the “universal service norm”. If universal service must be an effective and dynamic concept, it must integrate within its scope the technical and societal developments without which it would, indeed, lose its full meaning like it is the case in telecoms. Moreover we observe that *de facto* there is a come back to public service objectives in some network industries for reasons of collective goods preservation in the case of capital intensive sectors which need long-term planning, strong coordination and risk mitigation for private investors as is the case in energy and railways.

Under the pressures of necessity and changes in political priorities there has been in some cases an adaptation towards a more public service oriented regulation. In fields like railways where liberalization by de-integration and unbundling fails in relation to public goods such as safety and security of supply, and in fields such as the electricity and gas industries which are implicitly strategic because of their impact on sustainable development, public service regime has come through the back door. Programming procedures, long term contractual arrangements, new responsibilities of collective interest have to be defined and attributed to an agent when market price signals are not sufficiently efficient to orient in an optimal way the decision making process of private actors in order to reach a long term social optimum in terms of security and sustainable

development. Recent European directives, the so-called third package on energy and climate (EC, 2009), organize more broadly the possibility for exemptions from market rules and the opportunities for States to assign obligations in terms of “public services”. They allow for the existence of policies in support of the development of technologies that entail heavy investments and the technical progress on new technologies with long lead times to achieve commercial maturity.

- *Corrections of market-reform failures*

National and European legislators have identified the problems of security of supply and safety created by players’ decentralisation and unbundling as a new matter of general economic interest. It is a collective good to be guaranteed results from the requirement of delivering a service in the best safety conditions as in railways, or social obligation of service continuity when the network delivers an essential good (electricity systems). National laws and directives allow temporary exemptions in the application of competition principles, in particular coordination between market players, when such issues are at stake in a critical way. Unbundling does not impede the designation of a technical coordinator who has the legal responsibility to guarantee the safety or the reliability of the system, i.e. to offer a collective good the cost of which being paid by any consumer. But going further, this wisdom has often been painfully acquired after the industry was unbundled. The problems with the UK rail sector, for example, are now well known, including safety issues, and the economic failure of Railtrack, which led to adaptation comes in the sense of coordination with development of regulatory and long term commercial contracts, and in fact a *de facto* renationalisation (Pitman, 2008).

- *Sustainable development, a multifunctional priority*

Energy network industries are mainly concerned by objectives related to negative externalities and collective goods. Treatment of environmental externalities can rely on conventional instruments of public economics theory, taxation or tradable permits quotas, instead of regulation by standard. Price signals on environmental goods can provoke substitution between generation technologies in a way compatible with the well functioning of electricity markets. In fact there are still market barriers to substitution towards renewables-based production and efficient consumption equipments. The internalisation of environmental externalities of polluting energy technologies is not sufficient to foster the development of efficient equipments (via electricity price increase) and the replacement of fossil fuels generation with renewable or other non-carbon technologies. There is no guarantee that even a high price of CO₂ emissions will trigger such substitution because of barriers to entry faced by non-carbon electricity technologies (Jaffe *et al.* 2002, Stern Review, 2007).⁹

⁹ Technologies at an early stage of development and commercial deployment might be expensive now, but their costs are likely to fall as and when they gain commercial maturity by learning effects in manufacturing and administrative costs. But the prospect of cost decreases by cumulated learning effects and by increasing returns of adoption are difficult to anticipate, meanwhile the dominant technologies continue to progress. Another entry barrier stems from constraints and costs of integrating decentralised,

In the example of the EU, (but we could find similar cases in the American jurisdictions in the regulation of electricity sector) sustainable development and environmental protection have been recognized as general interest objectives in the European legislation. This means that due to market failures, exemptions to competition policy principles can be allowed for developing instruments which will boost demand for green and efficient electricity technologies. Policies will consist of placing renewable energy sources (RES-E) outside the electricity markets by imposing obligations to electricity suppliers to purchase green electricity of high regulated price over a long period of time (10-15 years), covering the economic lifespan of the equipment (Finon and Perez, 2007). The funding of suppliers' cost is financed directly by consumers by a fund fed by an uplift.

To conclude, in the age of liberalization, there is a need for public services and the concept of universal service will never address all this need. Public service objectives could be served by specific obligations, as well as by adjustment of reforms to complement market games.

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