

Lessons from the Postal Sector to Telecommunications and Vice Versa

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1 Introduction

The arrival and diffusion of the commercial Internet has been one of the main causes of change in the postal sector in the last two decades. Its impact has been rapid and it has gone straight to the core of postal operators' (POs') activities: the mail business. Electronic communications, especially email, available at zero marginal cost and relatively high quality, have quickly changed consumers' and businesses' communicating habits, leading to substitution away from traditional physical mails. Although substantial postal volumes remain, for reasons that will later be discussed, it has certainly hit the sector's volume and profitability dramatically.

At the same time, with the development of Internet services and e-commerce and the increased trust that consumers and businesses place on making economic transactions online, there has been a rising demand for parcel delivery, mostly in the Business-to-Consumer (B2C, henceforth) and Consumer-to-Consumer (C2C, henceforth) segments. This growth of demand gave an opportunity to POs to, at least partially, make up for their losses in the mail segment. Technological developments have also brought innovations within the traditional postal services, like hybrid mail, e-government, the electronic mailbox, the tracking of packages.

Besides these market changes, a concurrent challenge for the postal sector comes from evolution of the regulatory framework. The postal service has historically been provided by state-owned monopolies, mainly because of its importance to a country's national cohesion and social inclusion, translated in legal terms as the

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Universal Service Obligation (USO) and the extensive use of price ceilings. In the last two decades, a liberalization of the postal sector has been launched in many countries around the world. There is considerable heterogeneity between countries regarding the timing and the extent to which the postal sector has been liberalized. Such a process is still at a rather early stage in most countries when compared against other, once state-owned, networked sectors, such as telecommunications.

A parallel can be drawn between the postal sector and telecommunications, since both have been heavily impacted upon by the Internet's disruptive force and both have been subject to liberalization in the last two decades. An interesting difference can be noticed among this similarity: in most cases, the Internet's disruptive effect preceded the liberalization process for the postal sector, while the process was inverted for telecommunications, where liberalization had already been achieved when the heaviest phase of Internet disruption arrived.

The following analysis will attempt to exploit this inter-temporal shift in the two sectors' epochal changes so as to derive policy and business lessons from the postal sector for telecommunications, and vice versa. Does the POs' reaction has something to teach the telecommunications operators regarding the way to react to the Internet challenge? Does telecommunications regulation have something to say about how to tackle the current regulatory issues in the postal sector? In the remainder of the paper, Sect. 2 will look at the impact of Internet diffusion; Sect. 3 will analyze liberalization as a disruptive factor for network markets. Conclusions will follow.

2 How the Internet Changed the Postal Sector and then Telecommunications

2.1 The Decline of the Core Postal Business

Around the mid '90s, the commercial Internet started its incredibly rapid growth, thanks to the HTTP protocol and HTML versatile coding language as well as improvements in computing and the speed and capacity of broadband networks. From 0.4 % of the world population in 1995, Internet penetration reached 45 % of world population in 2015, notwithstanding the profound digital divides existing between the more economically developed and the less developed countries, and within countries between rural and metropolitan areas and different socio-demographic groups.

Nowadays, the Internet offers a wide range of services, impacting upon many markets. At the start, browsing the web and exchanging emails were the main reasons why people used the Internet, affecting the postal business before many other areas. The growth of Internet adoption and the possibility of switching to electronic means of written communication had already brought about a noticeable fall in mail volumes in the US and in some European countries in the early 2000s.

In the US, where the Internet was developed, the volume of first-class mail reached its peak at 103.7 billion pieces in 2001, then began to drop. In 2015, the volume was 62 billion, same as in 1982 (USPS). The total mail volume, instead, reached its peak in 2006 with 213.1 billion pieces, then it steadily went down, getting to 154.2 billion in 2015. In Europe, the decline in mail volumes started relatively later, around 2006, but was equally strong and sustained. The total volume of domestic letter post in EU-27 reached its peak at 95.7 billion in 2006, then started to drop. In 2011 it was 82.2 billion, 9.8 % lower than 4 years before, and it has continued to decrease since then (WIK Consult 2013).

Two main motivations explain the decline in mail volumes. First is the 2008 financial crisis, which became an economic recession, and the pro-cyclical characteristic of demand for mail. The second is the negative effect that the Internet had on the letter post business.

The Internet affected letter post activity in both direct and indirect ways. The direct effect was “e-substitution”: the substitution for mail of email for private and business correspondence (including online bill payment) and for advertising purposes. The indirect effect was the declining demand for delivery of magazines and newspapers, as consumers tend to read the online version of media outlets more and more frequently.

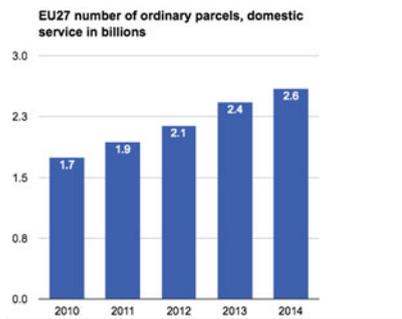
Email, in fact, constitutes an almost perfect substitute for physical mail, of higher quality in many respects, thanks to its intrinsic ubiquity; the extremely elevated speed of transmission; value-added services; and, last but not least, its essentially zero cost once one is connected to the Internet. These incontestable advantages have fostered an ever increasing level of e-substitution. The worldwide number of email accounts in 1998 was about 77 million, with a total of about 25 million emails sent per day. In 2015, the worldwide number of email accounts was about 4.3 billion, with a total of over 205 billion emails sent per day. Moreover, the growth in the number of emails sent relates mostly to the business segment, which is the most profitable for POs (The Radicati Group Inc. 2015).

Even if the current trend indicates that physical mail is in a race to the bottom, it is not easy to predict how fast mail volume will continue to decline. The speed of e-substitution is highly heterogeneous among different countries, depending on several factors: the level of broadband penetration; the degree of a society’s technological openness; the perceived reliability of the online service; its convenience; and its value-added features (WIK Consult and ITA Consulting 2009). Moreover, as some have argued, physical mail also has some unrivalled advantages when compared to email, for instance, its lower level of intrusiveness, its physical interface, the fact that it is considered somewhat more formal in specific circumstances (Jaag and Trinkner 2011). These features may be sufficient for physical mail not to be doomed, but it is difficult to make exact predictions.

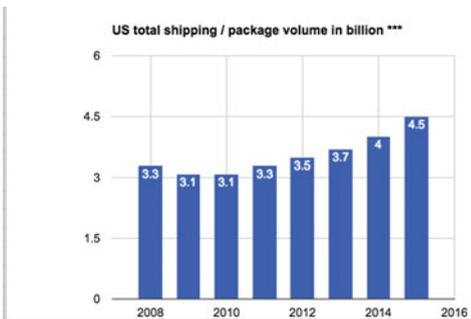
2.2 *Pars Construens: Increasing Parcel and Express Volumes*

While letter volumes have fallen substantially over recent years, parcel deliveries have trended upward, notwithstanding the recession. This unusual counter-cyclical tendency is due to the fast growth of e-commerce in its earlier phase of development, which impacted on the B2C/C2C segments.

The two charts below show data on parcels and express package volumes in the US and in EU27.¹ In 2008, the year when the financial crisis began, there was a drop in parcel and express volume in the US and in EU27 (WIK Consult 2013), although this latter is not included in the chart. Since 2009 there has been a sustained growth in parcel delivery.



SOURCE: UPU (2014), AUTHORS' ELABORATION



SOURCE: US POSTAL SERVICE (2016), AUTHORS' ELABORATION

***Includes Priority Mail, Priority Mail Express, First-Class Packages, Package Services, Parcel Return Service and Parcel Select

According to the analysis by WIK Consult (2013), in the EU28 area, the overall economic activity of the postal service shrank from 94 billion euros to 91 billion euros between 2007 and 2011. However, the relative contributions of revenue from letter post compared to parcels and express mail together changed from a prevalence of letter post (54 % letter post, 46 % parcels and express) in 2007, to a prevalence of parcels and express mail in 2011 (48 % letter post, 52 % parcels and express). This change constitutes a structural historic turning point for the postal sector, since e-commerce continues to grow.

The Digital Agenda Scoreboard (2015a) reported that about 50 % of European citizens shopped online in 2014, a percentage that increases year by year, but in a

¹Since there is no common definition of the parcel and express market in terms of size, weight and service characteristics, the charts shown can be used to comment on relative growth and not to compare the exact figures.

heterogeneous way in different countries. The main reasons why people shop online are: convenience, variety, value-added features, and prices.

There are also obstacles to the growth of e-commerce. Main concerns include data protection, payment security and shipment/delivery. The last can be considered to be one of the main explanations for the gap between national and cross-border e-commerce. In EU28, while 44 % of citizens shopped online nationally, only 15 % bought online from sellers across borders in 2014 (Digital Agenda Scoreboard 2015a). Consumers and smaller companies are the most worried about delivery times, costs, and uncertainty about the applicable laws for receiving and returning goods.

In the parcel and express market, which was historically more open to competition, about half of EU28 universal service providers (USP henceforth) had a market share below 20 % in 2011 (WIK Consult 2013). However, in the B2C segment, USPs have a competitive advantage due to their nationwide delivery network and possibly economies of scope in the delivery of mail and parcels in less densely populated areas. Luckily for USPs, this is the segment that has gained most from the growth of e-commerce. USPs have also benefited from a shift from B2B to B2C as producers increasingly sell directly to consumers, bypassing wholesalers and retailers. Several commercial B2B operators are planning to enter the B2C business (WIK Consult 2013).

2.3 How the Postal Sector Reinvented Itself

Faced with structural changes in demand due to the Internet, increasing competition due to liberalization, and adverse general economic trends, POs had to add a few strings to their bows by readapting their core business and opening new businesses. The response from POs in different countries has been highly heterogeneous, mainly owing to the different regulatory frameworks.

2.3.1 Innovation and Digitalization in Traditional Postal Services

One of the main reactions from the POs has been innovation of their core activities, including improvements in service reliability, more customer orientation, rationalization of existing assets and procedures, investment in more efficient sorting and delivery operations (e.g., more automation), and the adoption of technologically advanced retail services. In the letter post and the parcel segments, POs have made increasing use of digitalization and Internet-based applications at several points of the value chain. In the letter post segment, POs have created electronic delivery services, such as electronic mailboxes and so-called hybrid mail. In the parcel and express market, many USPs have adopted technological innovations in order to retain and reinforce their advantageous market position in B2C parcel delivery. Such innovations include tracking and tracing techniques, notification services about the status of shipments, flexible delivery points, parcel lockers, expansion toward logistics with all-in-one solutions. Many national POs are also trying to facilitate the return of parcels, particularly with regard to cross-border B2C parcels, where the returns procedure is known to be a major worry for online shoppers.

An additional area in which advanced technologies that are coupled with POs' expertise became an opportunity for innovation is cyber-security. Given the long history of the experience of POs in protecting information transmission, some have identified cyber-security as an important and future-proof route for development through research.

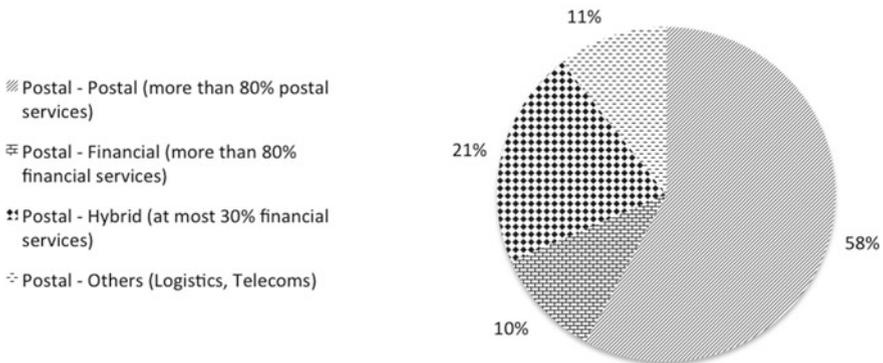
Several of the incumbent POs have tried to decrease costs by developing their post office network in various potential directions. One method is decreasing the number of post offices, where this is unrestricted by the USO. Another is replacing some post offices with postal agencies, where basic postal services are outsourced to third parties (e.g., retail outlets, grocery stores). In some cases, instead, the densely distributed postal infrastructure has been used as a competitive advantage with which to enter new markets.

2.3.2 Business Diversification

Aside from innovating in their core postal activities, several USPs have chosen to diversify their businesses by leveraging existing assets, such as infrastructure, customer base, reputation and distinctive competencies. USP business expansion has taken different directions, mostly going towards retail financial services, but also to telecommunications services (e.g., entering the mobile market as virtual network operators) and logistics.

Different USPs can be grouped into 3 main categories of business model according to their level of diversification: postal-postal; postal-financial; postal-hybrid. The chart below shows the frequency of each of the 3 categories (plus a residual one, "other business models") across 20 different USPs worldwide.

International comparison: postal operators revenue source by type of service



Postal–Postal

The majority of USPs did not enter new markets, but remained exclusively active in traditional postal business, with over 80 % of their total revenues, representing 57.9 % of the total industry's revenues coming from mail and parcel services. Half of this group's USPs earn 100 % of their revenues from postal services (Australia, Austria, Canada, UK, Norway). Belgium and Portugal have been included in this category even though they have diversified their business a little, earning less than 10 % of their revenue from financial services. A further distinction into national operators that are active exclusively (Ireland), or almost exclusively (Spain, US, Netherlands, Belgium, Portugal), in the mail business, earning at least 75 % of revenues from the mail segment, and those earning similar revenue shares from parcel and mail (UK, Norway, Austria, Canada, Australia) can be made.

Postal–Financial

The red slice of the pie chart represents the Italian and the Japanese USPs which earn over 80 % of their revenues from financial services, like retail banking, life insurance, pension funds, investment plans, and mortgages. Core postal services have become a minor economic activity for them. These operators used assets such as ubiquity across the national territory, economies of scope with other financial services (e.g., paying bills), the trust that people place on POs due to their historical obligation to offer reliable and convenient services and their State support, ICT competencies in managing sensible information and large databases, as leverage.

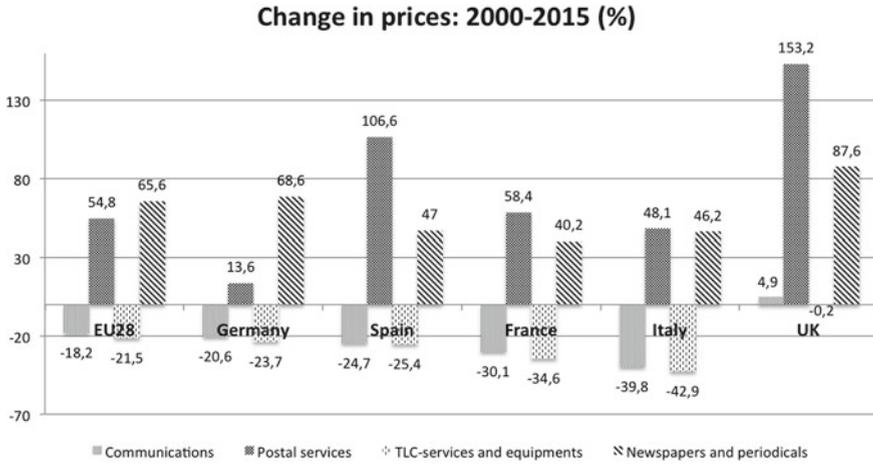
Postal–Hybrid

This third category includes USPs that have diversified their business by expanding into retail financial services, but not to a large degree. This group includes France, Russia, Switzerland and New Zealand. Financial services range from 22 % (France) to 35 % (Russia, New Zealand, Switzerland) of the total USP's revenue, the remainder comes from traditional postal services.

Other Business Models

Germany and Luxembourg are outliers in this group of 20. In Germany, the USP is particularly strong in the logistics segment, earning 50 % of its revenue there and 30 % from parcel and express. In Luxembourg, the USP instead earns 75 % of its revenue from telecommunications services, and the rest from mail services.

Another reaction from several USPs was to increase letter post prices. This has been made possible by the weak level of competition and the recent deregulation of USO obligations. The following chart shows a comparison between the percentage change in the prices of postal services, telecommunications equipment, communications, and newspapers and periodicals, in EU28 as a whole and in a few selected European countries, between 2000 and 2015. From this comparison is interesting to derive insights on the relationship between the degree of competition in these sectors and their price reaction, in a phase of crisis due to the Internet and the recession.



In more competitive regulated sectors such as the telecommunications, prices declined substantially.² In the newspapers sector, prices went up as result of rather inelastic demand and specific business strategies (aside from the consolidation process). Prices for postal services have increased as well. There is a considerable heterogeneity in the increases in the prices of postal services. On average, they increased by 54.8 % in EU28 over this time period. Compared to the other countries, the UK and Spain have had a relatively larger increase in the price of postal services. Both countries are in the postal-postal category, with Spain relying heavily on mail.

There seems to be a positive correlation between countries with a postal–postal business model and a higher growth in postal service prices, together with a decrease in the frequency of delivery and a decrease in the number of post offices and/or their substitution by postal agencies. In other words, when POs did not diversify, as a result of an autonomous business choice or, as is more likely of a regulatory imposition, they had to overcome the decrease in mail volume and the related revenue within the core postal business by cutting costs, decreasing quality standards and increasing the prices for their service. To avoid additional e-substitution that might follow, USPs have added technological and online features, as mentioned in the previous paragraph, to their core postal services. POs' revenue in this category have remained either stable or decreased from 2000 to 2006 (Jaag et al. 2015). Those relying strongly on letter mail have performed relatively worse.

In countries where POs have been able to diversify their business, the infrastructure network has, in most cases, been maintained and used along with other new

²The UK telecommunications' prices appear to decline less than in other EU countries only because the liberalization process was started before, therefore a part of the price decline happened before the year 2000.

services (financial, telecommunications, logistics). POs that focus their strategic efforts more on financial services risk leaving the core postal service behind. Both Japan and Italy haven't been able to keep up with the opportunity coming from the increasing demand for B2C parcels, which is mostly served by other commercial parcel operators. The revenue of postal-financial and postal-hybrid operators has, though, increased more of compared with operators in the postal-postal category (Jaag et al. 2015).

2.4 Lessons for the Telecommunications Industry

The postal business has been the first network industry to be heavily impacted upon by the Internet. Since then, POs have been competing in intermodal competition with rival services that are offered through the Internet by the so-called Over-The-Top operators (OTT henceforth).

OTT operators have developed several services which are similar to those offered by other network operators, but that can be supplied over the web without a specific physical infrastructure. Sending an email, sending a text message via instant messaging applications, making a VoIP call, are all examples of products offered by OTTs that, in part, substitute for those offered by traditional network operators in their respective areas.

Traditional telephone companies (telcos henceforth) have seen revenues from voice and SMS decline due to Internet-based services competition. At the same time, the telecoms network has become the main infrastructure used to offer dial-up and broadband Internet connection, so the increase in Internet penetration and adoption has raised their revenues from Internet connection subscriptions. As with the postal sector, telcos have been deprived of the safe harbor part of their revenues, but they have also gained in other areas.

In telecommunications, the Internet's disruptive impact arrived at a point when the market had already been largely liberalized (and privatized) and years of pro-competitive regulation had succeeded in reaching a good level of competition. This marks a difference from the postal sector, where the Internet wave arrived prior to, if not along with, with deregulation and liberalization, which is still in process, particularly in the mail segment. A general fear that is expressed by most incumbent telcos is that they will become mere commodities. Their role seems to move from one of being the suppliers of retail services to one of being network owners whose main activity is selling Internet access, with not much to say about the content that is offered over it.

In part, this may happen also to POs as the liberalization expands. POs may be required to give access to their network to rival operators, under fair and non-discriminatory conditions. However, POs may find providing network access attractive because of very high scale economies in those networks that might otherwise be lost due to the decline in demand for their own services. Secondly, their market shares in the mail and parcel segment must become comparable to those of rival operators (even those that are active on other technological

platforms). In that hypothetical case, even POs may risk becoming mere providers of access products.

Telecoms operators' have reacted to the growth of the Internet. Their core business reaction has consisted of developing new offers that encompass the tendency towards the convergence of different communications platforms, such as triple-play offers that include Internet, TV and voice. They are expanding into adjacent markets, in particular, the content market, such as Telefonica in Spain or Vivendi with Mediaset in Italy. They are also calling for the ability to compete under the same conditions as OTTs and a deregulation of their role as Internet Service Providers (ISP henceforth).

The lesson for the postal sector is that successful reaction strategies are primarily based on exploiting and re-adapting existing strong assets. Telecoms operators can count on several distinctive valuable assets including infrastructures, a large customer base, the availability of big data; and, technological know-how. Similarly to the USPs that must ride on the e-commerce wave by strengthening their advantageous position in B2C delivery, it is essential for telcos to maintain their prominent role as ISPs, which is threatened by other competing technological platforms (e.g., cable) and by other network companies that are interested in investing in new fiber-networks (e.g., the energy incumbent in Italy). Investments in existing network upgrades and in rolling-out new fiber-networks are thus essential. Entry into the adjacent content market also seems to be a natural route to take for telecommunications providers, just as POs have with financial and telecommunications services. Some telecommunications operators did indeed enter the audio-visual content industry, for instance, by offering their own TV channels (e.g., Telefonica in Spain).

3 How Liberalization Changed the Telecommunications and then the Postal Sector

3.1 *Liberalization as Disruption*

The table below lists the main regulatory challenges in liberalized network markets. The focus of the analysis will be on the first three that appear the most important with reference to the postal sector.

Universal service obligation

For universal service sectors, less profitable areas may not be served without public subsidies, which, however, may distort competition if not properly defined

Access regulation

Access to the incumbent operator's network must be guaranteed under fair, cost-based and non-discriminatory conditions

(continued)

(continued)

Technological neutrality

Regulation should follow the principle of the same regulation for similar services offered across different technological platforms

Termination regulation

In case of two-way access and competitive bottlenecks, termination charges for interconnection must be kept at a cost-based level

Notice that termination regulation is more typical of the telecommunications industries, where those who make and those who receive a phone call are customers of different operators. This is not an issue for railways, energy and gas, and only partially relates to the postal service in the case of cross-border roaming, so it will not be further analyzed here

Liberalization disrupts the industries involved. The equilibrium created by public monopolies is replaced with open competition, more often than not by means of sectorial pro-competitive regulation. One important change facing both telecommunications and postal services is the need to compete with rivals who are not necessarily active on exactly the same technological platform. This evolution may lead to deregulating services for which there are several alternatives or regulating in the same way similar services that are offered via different technological platforms.

3.1.1 The Scope of the USO

Postal infrastructures are somewhat different from other network infrastructures in that much of the transmission is made up of common means of transportation, with no dedicated physical infrastructure. For this reason, the risk of market failure due to the presence of an essential facility, and the consequent need for access regulation in order to make competition viable, is less serious. At the same time, though, it is more costly to deliver the service in respect to other network industries, where a dedicated grid reaches every customer's home at a negligible marginal cost. This makes the universal service obligation more stringent in respect to other liberalized network industries.

While the concept of universal service has always existed as a duty of legacy monopolists, it has been maintained but became a complex regulatory issue after liberalization (Finger and Finon 2011). A USO of sorts has been defined for telecommunications, electricity, railways and postal services. In each of these sectors the obligation takes different forms, but is always inspired by two aims: ubiquity, meaning that the service has to be available to everyone regardless of location; and affordability with equality of treatment, meaning that everyone should pay the same affordable price regardless of the cost of serving them. In the postal sector, the USO is defined around three main dimensions: the range of products covered, the number of postal offices, their price (with price caps and price uniformity obligation), and quality in terms of number of postal offices and the frequency of delivery.

The USO is designed to be a flexible concept, periodically modifiable to account for evolving social, economic and technological contexts. If a market failure no

longer exists because alternative services are available, there is no reason to impose restrictions relating to the way a certain service is offered. In that case, the USO should be softened by including alternative services, possibly from other technological platforms also, or by simply restricting its scope, liberating the relative services from obligation. In the context of a liberalized service, the USO should be implemented in a way that does not privilege or penalize the historical operator over the new entrants. Cross-subsidization that is internal to incumbent operators between more profitable and less profitable services should no longer be allowed.

One of the major current debates regards whether the scope of the USO in the postal sector should be updated in view of the market dynamics (Crew and Kleindorfer 2004). As similar alternative services become available to more and more consumers, thanks to the Internet, the USO on traditional postal services becomes less important. The Internet is not yet truly ubiquitous, so it will not be enough to satisfy the USO, but, nonetheless, the USO standards could be updated to encompass the role of ICTs. As more households use the Internet rather than postal services for their communications, a technologically neutral USO should include Internet access.

The same can be said for telecommunications, where the USO has gradually lost its importance because it was defined on voice services only, and particularly on fixed telephony. As alternative services have become more prominent, broadband Internet should be included in the scope of the telecommunications USO. The EU and Member countries' financial efforts to provide all European citizens with a broadband connection is not openly labeled as being a USO issue, but has such a flavor. A few countries have already expanded the telecommunications USO to include broadband service obligation: Switzerland (600 Kbits), Spain, Finland (both 1 Mbit) and the UK (10 Mbits to be reached in 2020). It would be advisable to define a unified technologically neutral USO for communications, encompassing telecommunications, postal services and Internet access.

In the EU, there is a widespread VAT exemption in favor of USPs. This should be maintained only when insufficient commercial alternatives are available to customers. In a survey carried out by WIK Consult (2013), there was a general consensus between 16 European NRAs that a VAT exemption can be justified only when the provision of the universal service cannot rely on market forces. In all European countries, except for Norway, Sweden and Switzerland, though, a VAT exemption is present for basic letter and parcel posts. For other services, such as bulk letters, bulk parcels, direct mail and non-priority letter post, the VAT exemption is present only in a few countries. This may cause an unjustified barrier to entry for new operators, which would have to undercut the incumbent operator's price by the amount of the VAT.

3.1.2 Access Regulation

Post-liberalization regulation is mostly asymmetric. Incumbent operators, due to network ownership, face obligations that new entrants do not face. Most salient is

the obligation to offer access to the network at cost-oriented prices. Given the inefficient duplication of the high fixed costs entailed in building a new network, access regulation is an essential tool for opening up the sector to competition.

In the areas of parcel and express mail, which were liberalized early on in Europe in the late '90s, the market functions on a normal competitive basis. In the mail segment, though, opening up to competition is proving to be a slow process, with a tendency to delay adoption of the necessary measures and evidence of anti-competitive behavior on behalf of some USP's (European Commission 2015b). Furthermore, the disruptive impact of liberalization reinforces that of the Internet, with further erosion of the incumbent PO's revenue, making the universal service mission more difficult. Also, there may be an incentive to delay the implementation of the necessary access regulation provisions since PO's still in the process to be privatized would lose market value.

The Third Postal Directive identifies several elements of the postal network that should be subject to access obligations: postcodes, an address database, post office boxes, delivery boxes, and redirection and return services. According to latest comprehensive study on the developments of the implementation of the Third Postal Directive in the EU, WIK Consult (2013), by 2012 only a few European countries had made decisive steps in providing access to the listed elements of the USP's infrastructure, while the majority had ensured access to only a few of the elements indicated in the Directive. In the most recent years the economic crisis and, in some case, the intention to privatize more profitable companies appear to have further slowed down the process.

3.2 Lesson from Telecommunications Regulation

As a consequence of radical changes in technology, the telecommunications sector felt the wave of liberalizations earlier than did other network sectors. By the late '90s, the EU had taken decisive steps were made in this direction, with the liberalization of voice and telephony in the EU in 1998, coming shortly after the Telecommunications Act in the US in 1996. In the EU electricity and gas markets the liberalization process started in 1996 culminating with the second liberalization directive in 2003 and the railways' liberalization process started with the First Railway Package in 2001. Postal services' liberalization was gradually introduced with the 2002 and 2008 amendments to the first 1997 postal directive. Still today, in many European countries, the state plays a major role in the operation of incumbent energy, gas and postal service providers, even after they were transformed into private companies. The telecommunications sector, instead, has been fully privatized and the State no longer holds shares in incumbent operators' companies.

The regulation of telecommunications is a success story (Parcu and Silvestri 2014). The main regulatory provision at the European level for telecommunications is the so-called "Telecommunications Framework Directive", adopted in 2002 (2002/21/EC). Eighteen markets were identified that needed ex-ante regulation due

to a lack of workable competition. Successive revisions in 2007 and in 2014 cut this number to seven and then to four, as those areas that were once raising competitive concerns have been judged to be sufficiently competitive.

It is possible to derive some lessons for the postal sector from telecommunications regulation. One difference is that liberalization greatly affected the services that are covered by the USO. This did not really happen with telecommunications, where the services under its USO were surpassed by other newer services, making the USO less important. This is only true, however, to the extent that the USO is not updated to include those services that can also substitute for traditional public services (i.e., email for mail, VoIP for calls).

A general lesson from the telecommunications experience is that the regulatory framework should have an economic-oriented rationale. Even when there appear to be other important targets (e.g., social inclusion, redistribution), the question for regulation should always be whether there exists a market failure. Therefore, regulatory rules should not be designed to provide rigid normative pictures of the market, but rather they should be applied when necessary and according to a case-by-case economic analysis. The prominent example of this kind of approach is the Significant Market Power (SMP) analysis, which is inspired by the antitrust legal concept of dominant position. The SMP analysis implies that a certain regulatory rule should be applied to a certain service, depending on whether its provider has a significant market power. Access regulation in postal services should be based on a similar concept.

The USO definition should also be made more flexible so it can be aligned with the economic context in which a certain service is offered. Just as fixed telephony was eventually completely lifted from ex-ante regulatory intervention in telecommunication regulation, universal postal services that no longer require a single USP should be provided under equal conditions by all market operators. This is the only way to reap all the benefits from increased competition. Moreover, having an incumbent continue to be the only firm that has to fund and meet the USO speeds up the path of e-substitution in a vicious circle.

As for telecommunications after liberalization, access regulation makes the incumbent operator the provider of a facility (the network), essentially a commodity, aside from a retail service supplier. It is most important in this phase that, instead of being attached to the past, incumbent operators recognize their comparative advantage as network owners. For USPs, delivery seems to be the area of true comparative advantage in respect of new entrants. Ensuring access for new entrants to the delivery network at fair prices can be an optimal strategy for POs so that they can sustain their declining revenues in the mail segment by increasing the volumes handled. Mail delivery does have a high cost, if compared to the delivery of electricity or the delivery of a phone call, and therefore reaching adequate economies of scale is of strategic importance to POs.

Furthermore, POs should consider big postal data as an opportunity. Uncovering customer needs with the analysis of big postal data could empower POs with new services and innovative ideas. Another area connected with the use of data, that potentially overlaps both the telecommunications and postal sectors, is

cyber-security. The postal sector has a competitive advantage in respect of data security. These sectors are in a position to invest in developing research programs and cutting-edge encryption techniques for the future of digital communications and financial transactions.

4 Conclusions

The postal and telecommunications sectors have been affected by principally by two disruptive forces in the last two decades: the Internet and market liberalization. Liberalization of the postal sector started after the structural market changes caused by the Internet and is still ongoing in several of its aspects. For the telecommunications industry, the most dramatic impact of the Internet came after the markets were already fully privatized and had been subject to years of pro-competitive regulation. Exploiting this difference, the postal sector can teach something to telecommunications in relation to how to react to the Internet challenge. At the same time, it can draw several lessons from telecommunications' regulatory experience to solve typical post-liberalization competitive issues.

The postal sector reacted to the Internet challenge by adopting different business models that can be grouped into 3 different types: postal–postal, postal–financial, postal–hybrid. Due to regulatory restrictions, most historic POs are in the postal–postal group, with a business model that is almost exclusively based on traditional postal services. Those who were able to diversify their business did it in different ways and to different degrees. In the postal–financial group, there are POs who are now earning more than 80 % of their revenue from financial services. In the postal–hybrid group, there are POs who earn comparable revenue shares from traditional postal and financial services. Two outliers, Germany and Luxembourg, mainly rely on logistics and telecommunications, respectively. Operators belonging to the first group have had more difficulties in countering the decline in mail revenue by innovating the core services and rationalizing operations. On the other hand, operators who have diversified their businesses have been able to successfully increase their revenue to a noticeable extent, even if sometimes at the expense of traditional postal services' importance in their business plans.

Telecommunications operators are living a phase of challenge due to the replacement of analog voice and SMS services by Internet delivered services, just as with the e-substitution of mail by email. The lesson to take away from POs' experience is to try to innovate core services and, more importantly, to enhance the existing valuable assets. Successful business reactions are those that are able to identify and exploit comparative advantages in a creative way.

For traditional telephone operators, this implies not only to expanding into an adjacent market (e.g., content), but also by retaining their prominent position as ISPs, as companies coming from other network industries (e.g., the incumbent electricity company in Italy) or rival operators from other technological platforms (e.g., cable) may try to gain greater shares in the market for Internet connection. It is

important to invest in the network so that it does not become obsolete. Becoming a commodity may seem to be a step backwards in respect of the past, but it cannot be dismissed as a fundamental opportunity.

The same can be said about incumbent POs in respect of their duty to give access to postal network facilities and information resources. POs should recognize their advantageous position in the delivery of mail and parcels and offer rival operators convenient access conditions in order to continue to enjoy economies of scale.

As regards postal sector regulation, a general lesson that can be learned from the telecommunications success story is that regulation should be economically-oriented and not rigidly defined. In this respect, it would be necessary to update the USO definition so as to align it with the economic context and to include Internet services, if they are close substitute services under USO. The USP should not be assigned privileges, such as VAT exemption, when the satisfaction of the USO can rely on market forces. Furthermore, the increasing convergence between postal services and OTT applications calls for a co-evolution of postal and telecommunications regulation. It would be advisable in the future to define a unified technologically neutral USO for communications, encompassing telecommunications, postal services and Internet access.

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