Comparative Working Methods for Considering Efficiency of Postal Operators

2016

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EXECUTIVE SUMMARY

Following the ERGP Work Program for 2016[1], this report contributes to the understanding of how future cost movements could be estimated. Without questioning the operational adjustments that the USPs are able to put in place and the legitimacy of their endeavour to focus on the traditional mail volumes, by one hand, and the instruments available to the NRAs to adjust the obligations related to the universal service provision, by the other hand, the report includes an analysis of the methods put in place in order to estimate efficiency and the circumstances in which these are applied.

The document is structured into 6 sections:

1. The introductory part aims to present the scope of the report, the market data necessary to put into context the work we have undertaken and the relevant most recent public reports

2. The legal environment depicts the powers of the NRAs with respect to the assessment of efficiency in relation to the designated USP / the incumbent

3. The practice of the NRAs section looks beyond the legal framework and analyses the circumstances, the types and the scope of the efficiency as identified and/or implemented by the national regulatory authorities

4. The approaches to assessing efficiency adopted by the NRAs section introduces a higher level of detail, including the methodologies and the parameters adopted in the NRAs' practice

5. Country cases of the approaches adopted present the legal and regulatory framework for a few relevant and diverse cases

6. Efficiency related activities, incentives and strategies analyse the framework put in place by exogenous factors or by the NRAs

[1] http://ec.europa.eu/DocsRoom/documents/15883/attachments/1/translations/en/renditions/pdf

Section 1 – Introduction

The ongoing decline in letter-volumes and the trends in e-commerce (e-substitution on the one hand, growth in the parcel market on the other hand) challenge the sustainability of Postal Operators across Europe. Facing this situation, there is a discussion in the sector about the scope of Universal Services and how Postal Operators as well as NRAs can react to these developments in line with the 3rd Postal Directive.

Besides the discussion regarding the scope of the USO, there is also an ongoing discussion about how postal operators can achieve better efficiency to counteract the effects of the declining volumes in the letter market.

In this work – in the context of volume decline, as recently experienced by almost all Member States – we identify how future cost movements could be estimated. Efficiency consideration has many implications for NRAs, for instance in the context of multi-year price-cap regulation, and for the NRAs' duties regarding the financeability and the provision of the universal service. Efficiency is not only relevant for cost forecasts but also for different regulatory assessments (e.g. the net cost of the USO).

In our report, we consider the various approaches to efficiency assessment that have been identified as current practices in the postal sector. Our work will include a discussion of:

- what approaches are available in theory and which ones appear to be the most relevant to the postal sector today; and
- what approaches have recently been adopted by the postal regulators (a general overview followed by the most instructive case studies).

The work builds on the cost standards used by NRAs. We consider how the approaches to efficiency assessment and their results are adapted and applied for different regulatory purposes. We also identify whether there is any correlation between different efficiency assessments in various circumstances. In this work, we also contemplate specific aspects of the postal industry that may interfere with efficiency improvements (e.g. large proportions of fixed costs, USO etc.).

In this report, efficiency stands for cost efficiency (the relationship between the output and the level of cost). Other elements of economic efficiency, like common welfare, are not part of this report.

For the purpose of this report, a questionnaire was answered by 27 NRAs.

Considerations and conclusions made by the European Commission, the government of the USA and studies from WIK and Copenhagen Economics related to efficiency are summarized on the next pages.

1.1 European context

Report from the Commission to the European Parliament and the Council on the application of the Postal Services Directive[2]

In the report to the EP, the Commission acknowledges the progress of universal service providers in increasing their efficiency by restructuring their operations to reduce their costs (p 4). Partially these efficiency improvements come from a higher average time for mail delivery (p 33[3]).
The Annex to the Commission's staff working document (p 83) highlights the importance of efficiency in the context of net cost calculation of the USO:

"*2. Relevant Elements for the calculation of the net cost of the postal Universal Service Obligation*

Part B of Annex I of the Postal Services Directive sets out a series of relevant elements that the calculation of the net costs of the universal service obligation takes into account, namely:

(a) intangible and market benefits, which accrue to a designated universal service provider,
(b) the entitlement to a reasonable profit and
(c) *incentives for cost efficiency*"

The net cost calculation should, as much as possible, reflect costs corresponding to the efficient delivery of the universal postal service. While from a State aid viewpoint, efficiency is not a prerequisite for compensation, when calculating the net costs of the universal service obligation, designated universal service provider(s) should effectively demonstrate that they have included in their calculations sufficient efficiency incentives."
The footnote 368 in the document defines efficient costs as *"the costs incurred by a typical well run operator if it was to adequately provide the universal service in a competitive market."*

[2] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015SC0207&from=EN
[3] "*Intra-EU post is measured by the International Postal Cooperation (IPC), whose measurement is compliant with CEN EN 13850. In 2014 the average time for mail delivery in Europe was 2.4 days, with 90.6% delivered within the three days of posting and 97.8% within five days, exceeding, for the 17th year, the respective targets of 85% and 97%.140 Even allowing for a change in the measurement standards which caused an estimated 1% reduction in performance, an adjusted D+3 performance of 91.6% (rather than 90.6%) was nevertheless the lowest performance since 1999 (90.7%). The fall can be explained in part by operators seeking to make efficiency improvements to compensate for falling mail volumes. By way of comparison in 2013 D+ 3 performance was 92.5% and D+5 98.2% and since 2008 D+3 performance has ranged varied between 90.6% (2014, unadjusted) and 94.6% (2008)."*

1.2 Market Data

The decline in letter-volumes as shown in many studies can also be observed in the latest data published by DG Growth[4].

Table 1-1 - Domestic postal traffic, by USP and non-USP - letter mail (Thousands)

	2012	2013	2014	2013 to 2012	2014 to 2013	**2014 to 2012**
Total (Countries below)	**59,812,768**	**57,352,514**	**55,393,055**	**-4.1%**	**-3.4%**	**-7.4%**
Belgium	2,331,613	2,236,847	2,169,315	-4.1%	-3.0%	**-7.0%**
Bulgaria	29,491	28,739	26,866	-2.5%	-6.5%	**-8.9%**
Croatia	311,413	301,372	299,141	-3.2%	-0.7%	**-3.9%**
Cyprus*	54,661	47,957	48,036	-12.3%	0.2%	**-12.1%**
Denmark	766,560	810,256	696,824	5.7%	-14.0%	**-9.1%**
Estonia	100,445	97,851	92,653	-2.6%	-5.3%	**-7.8%**
Former Yugoslav Republic of Macedonia	47,174	43,656	39,606	-7.5%	-9.3%	**-16.0%**
France	15,299,455	14,253,053	13,571,730	-6.8%	-4.8%	**-11.3%**
Germany	14,970,000	14,770,000	14,587,000	-1.3%	-1.2%	**-2.6%**
Greece	401,274	345,336	370,735	-13.9%	7.4%	**-7.6%**
Hungary	697,592	694,260	651,778	-0.5%	-6.1%	**-6.6%**
Iceland	36,053	33,722	30,893	-6.5%	-8.4%	**-14.3%**
Italy	5,096,773	4,597,454	4,178,657	-9.8%	-9.1%	**-18.0%**
Latvia	65,503	62,018	65,747	-5.3%	6.0%	**0.4%**
Lithuania	73,849	74,800	74,564	1.3%	-0.3%	**1.0%**
Luxembourg	150,277	154,026	152,624	2.5%	-0.9%	**1.6%**
Malta	33,127	33,020	31,780	-0.3%	-3.8%	**-4.1%**
Poland	1,819,767	1,801,101	1,663,599	-1.0%	-7.6%	**-8.6%**
Portugal	913,474	850,926	803,575	-6.8%	-5.6%	**-12.0%**
Romania	464,717	492,863	518,726	6.1%	5.2%	**11.6%**
Serbia	305,513	299,111	252,211	-2.1%	-15.7%	**-17.4%**
Sweden	2,645,039	2,545,146	2,432,997	-3.8%	-4.4%	**-8.0%**
United Kingdom	13,199,000	12,779,000	12,634,000	-3.2%	-1.1%	**-4.3%**

* revised according to the latest data

[4] http://ec.europa.eu/eurostat/tgm_grow/table.do?tab=table&init=1&plugin=1&language=en&pcode=post_dtr_1

These data show a decline of 7.4% in letter-volumes in 2014 compared to 2012 (only countries with data for the years 2012, 2013, and 2014 were taken into account).

At the same time, USPs reduced headcounts, in order to cope with the reduction in volumes. This fact could be seen as an indication of improvement in efficiency. The following table will show a comparison of volumes in different countries. Data were not available for all countries, which is why the following table shows a limited number of countries. Furthermore, the "domestic letter-volume by USP and non-USP" was chosen as data was available for more countries. As the competition in the letter market rarely exists in most countries for letters, the choice of the figure seems to be still meaningful and the results are only slightly overestimated. The "number of headcounts" is from USPs only but refers to all services.

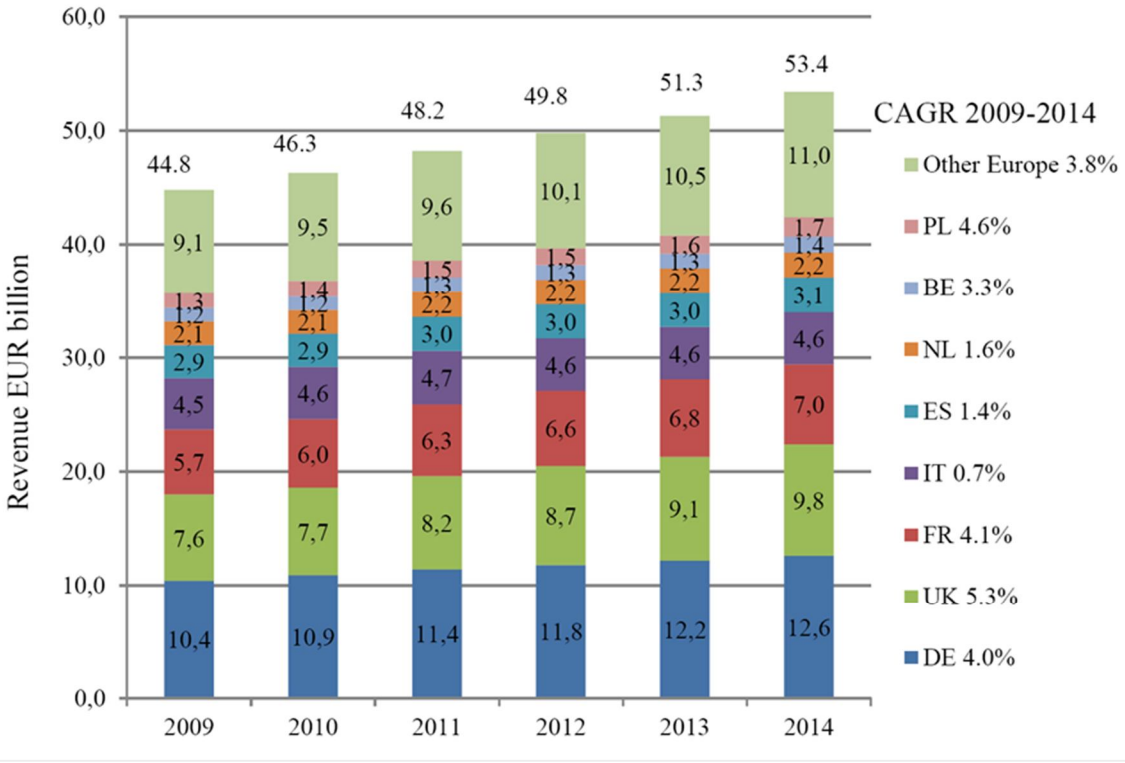
Table 1-2 - Domestic postal traffic, by USP and non-USP - letter mail (Thousands) per Headcount

	2012	2013	2014	2013 to 2012	2014 to 2013	2014 to 2012
Total (Countries below)	**55**	**56**	**57**	**2.8%**	**1.1%**	**3.9%**
Belgium	78	78	79	-0.1%	1.5%	**1.3%**
Bulgaria	3	3	2	-0.3%	-3.6%	**-3.9%**
Croatia	38	41	42	6.5%	3.6%	**10.4%**
Cyprus*	65	57	57	-12.3%	0.0%	**-12.3%**
Denmark	57	64	58	11.2%	-9.1%	**1.1%**
Estonia	49	48	56	-3.1%	18.9%	**15.2%**
Former Yugoslav Republic of Macedonia	21	20	17	-4.5%	-12.8%	**-16.7%**
Greece	45	43	52	-4.7%	19.2%	**13.6%**
Hungary	22	27	27	22.0%	1.8%	**24.2%**
Iceland	33	32	31	-4.2%	-3.6%	**-7.7%**
Latvia	16	15	16	-2.5%	3.6%	**1.0%**
Lithuania	11	12	12	4.7%	3.9%	**8.7%**
Luxembourg	107	112	108	4.4%	-3.6%	**0.6%**
Poland	20	22	21	8.3%	-3.0%	**5.1%**
Portugal	78	77	75	-1.2%	-3.1%	**-4.3%**
Romania	14	18	19	27.1%	7.9%	**37.1%**
Serbia	20	20	17	-2.7%	-14.9%	**-17.2%**
Sweden	111	107	111	-3.0%	3.8%	**0.7%**
United Kingdom	88	86	87	-2.8%	1.6%	**-1.3%**

* revised according to the latest data

Regarding parcel service, data is incomplete on a European level. The Commission Report to the EP[5] states on p 58: *"There is no up-to-date comprehensive information or consensus about the size of the European parcel and express market."* Nevertheless, the report quotes on p 61 figures from Apex, which shows the increase in parcel market over 2009-2014 and the values for different European countries in terms of revenue:

Chart 1-1 - Development European Parcel Market



Source: Apex, *European Parcels: Market Insight Report 2015.* Key shows CAGR 2009-2014. Figures inside each column show revenue in EUR billion for that Member State (according to the key). Figures above each column show European parcels market size in EUR billion.

Another source to verify the growth of the parcel market is the 2015 IPC Global Postal Industry Report[6] (the report "*covers 45 postal operators from Europe, North America, Asia-Pacific and BRICS countries,*

[5] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015SC0207&from=EN

[6] https://www.ipc.be/en/reports%20library/publications/ipcreports_brochures/gpir2015-key-findings

representing around 90% of worldwide postal operating revenue"). IPC reports a growth from 2013 to 2014 in the parcel market of 8.9% in volume for Europe (p 7).

The decrease in letter volumes may lead to a loss of economy of scale. There is a challenge for operators providing letter services to be profitable as margins are usually higher than in the parcel markets where competition is stronger in most countries. Not all of the operators loosing volumes in the letter market will incur an increase in the parcel market. Due to competition, they may even lose volumes in the parcel market as well.

We now understand that the letter and the parcel markets are not clearly separated. New products like small packets have characteristics of both. On the other hand, usually letter services and parcel services use different infrastructures (e.g. sorting centres, delivery) with different cost structures.

At this time, it is unclear how the costs will develop for the different products and whether or not the increasing parcel volumes can compensate for the loss of letter volumes.

1.3 International context

New Postal Bill in the USA (proposal)

In the USA, postal reform for USPS[7] is being initiated to achieve financial sustainability for the company. Beside reforms regarding healthcare and the pension system, this bill should give USPS more flexibility in running their business and enable them to become more efficient. Under discussion are more flexibility regarding the organization of post offices (closings, consolidations and restructuring), door delivery (more delivery to cluster boxes and curbside delivery) and the organization of the company (closings and consolidations of mail processing facilities)[8].

1.4 Independent studies

WIK Study "Review of Postal Operator Efficiency"[9]

WIK-Consult conducted a study for Ofcom in 2013 which *"explains how postal operations are organized in selected foreign postal operators and how and to what extent these operators have improved their efficiency to ensure financial viability."*

The aim was to analyse operators comparable to Royal Mail. The operators should be similar regarding a combination of aspects, including size and structure, and be subject to comparable regulatory regimes.

[7] https://www.congress.gov/114/bills/hr5714/BILLS-114hr5714ih.pdf
[8] http://www.carper.senate.gov/public/_cache/files/9e2010fc-a878-4470-a7f9-ea93f3de5c4e/ipost-section-by-section.pdf
[9] http://stakeholders.ofcom.org.uk/binaries/post/postal-efficiency/wik.pdf

Postal operators from six countries were selected for this study:

1. Austrian Post - it has substantial private ownership and it is a listed company.
2. Post Danmark – it is very advanced and it faced the most significant challenges due to declining letter-volumes. (-30% since 2009)
3. La Poste - it is of similar size.
4. Deutsche Post - it is of similar size; it has substantial private ownership and faces competition in domestic letter market.
5. Post NL - it has a substantial private ownership and faces competition in domestic letter markets.
6. Posten - it has a substantial private ownership and faces competition in domestic letter markets.

Based on their research, WIK found that there is a common pattern regarding the steps of modernization among the postal operators. The actual sequence of the stylized phases, however, depends on the starting date of the modernization process. The operators which started this process earlier are expected to be at an advantage.

The exact "steps of modernization" for mail operations identified by WIK were:

1. Centralization of sortation
2. Automation
3. Sequence sorting (sorting of mail items in delivery order)
4. Optimization of delivery
5. Flexibility in delivery

1. Centralization of sortation

Centralization of sortation is the key condition for industrial mail sortation.
The reduction of network nodes reduces the number of transport routes between sorting facilities.
Two comparable postal operators, Austrian Post and La Poste, started the centralization process relatively late (after 2000).

2. Automation

Centralization goes hand in hand with the automation of sorting processes.
The use of sorting machines substantially improves the productivity and, generally, reduces the handling time of mail items.
Postal operators strive to minimize the share of rest mail (non-machinable mail) in their operations and look for machines that are able to process bulky mail items.

3. Sequence sorting

Sequence sorting of letters by machines is the process whereby mail is automatically sorted into the order of delivery. The machines are mostly located in the mail sorting centres.
Sequence sorting by machines further promotes the centralization of sorting activities in mail sorting centres and reduces the tasks to be managed in delivery offices.
Only Austrian Post has not introduced sequence sorting.

4. **Optimization of delivery**
   Sequence sorting by machines also affects delivery operations because the postal workers spend less time manually sorting.
   Generally, delivery is a very labour intensive activity and difficult to change because a high proportion of postal workers are affected by these changes.
   The optimization of delivery operations is accompanied by a reduced number of delivery offices and delivery routes.
   Delivery organization has changed from the "one postal worker – one route"-rule to more flexible teams of deliverers who change delivery routes depending on postal volumes.

5. **Flexibility in delivery**
   The most advanced postal operators have implemented new delivery models to increase flexibility in their delivery operations.
   Post Denmark and Post NL have already installed such programs.

Examples of new models of delivery are three days delivery for non-priority mail and the use of part-time deliverers.

There is a differentiation between mail and parcel operations because the parcel operations, as opposed to mail operations, are driven by growing parcel volumes and therefore require more sorting, transport and delivery capacities.

The common pattern for modernizing parcel operations is:

1. Centralization of sorting
2. Automation
3. Optimization of delivery

1. **Centralization of sorting**
   Centralization of sorting allows an increase in the number of parcels processed per location. All comparable operators run dedicated parcel sorting centres.

2. **Automation**
   Compared to letter sorters that are specifically developed for postal operations, the conveyor technology for parcel operation is widely used in other logistic operations (e.g. airports and warehouses). The life cycle of automatic conveyor belts appears to be longer than that of mail sorters.

3. **Optimization of delivery**
   Transportation and delivery costs are the most important cost elements in parcel operations. The postal operators seek to minimize these costs and therefore often outsource transportation and delivery or develop techniques to simplify and optimize the loading and unloading of trucks.

Finally, mail and parcels are jointly delivered by postal workers, mostly in rural and less populated areas, by all postal operators mentioned, except for Post NL.

The conclusion of the study was that all comparable postal operators were progressive in streamlining their network centralization using highly mechanized sorting processes located in mail sorting centres:

- All comparable operators had centralized their sorting operations.
- All operators used distinct sorting centres for processing mail and parcels.
- There were differences between the degrees of sorting. The proportion of mail sorted by machines, at least to delivery routes, was lower at Austrian Post and La Poste.
- Manual sequence sorting of rest mail and flats was located in the delivery offices. Only Post Danmark had centralized this manual process in the mail sorting centres.
- Delivery organization has changed from the "one postal worker –one route"-rule to more flexible teams of deliverers who change delivery routes depending on postal volumes. Post NL was the only comparable postal operator that completely transformed the former full-time postal workers into part-time workers.
- All comparable operators had parcel sorting centres in addition to mail sorting centres, which were used for both outbound and inbound sorting.
- All comparable operators, except for La Poste, usually delivered parcels the next workday.
- All comparable operators, except for Post NL, jointly delivered mail and parcels in less densely populated, rural areas, if these routes were served by car.
- Post Danmark and Post NL appeared to be the most advanced in rendering their delivery operations more flexible.

Copenhagen Economics Study Nov 2014

In the Study of Copenhagen Economics *"The consumer impact of competition in the UK postal market"*[10], competition (end to end or coming from e-substitution) was identified as one key driver for improvement in efficiency. In this context, the gain or loss of market shares influence efficiency. Private ownership was identified as another efficiency driver.

Copenhagen Economics identified some possible inefficiencies, concluding that the understanding of inefficiency will help to optimize efficiency.

"1. Using more inputs than necessary to produce a given level of output (a form of productive inefficiency)

2. Not using the optimal mix of inputs given prices of labour, capital and other inputs (a form of allocative inefficiency)

3. Furthermore, a firm exposed to ineffective competition may have insufficient incentives to pursue product or process innovation (a form of dynamic inefficiency)"

In the report, one important insight offered by Copenhagen Economics was that the management of delivery operations has the greatest potential to improve efficiency:

"1. The optimisation of delivery; and

2. Increasing flexibility in delivery"

10 https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/3/273/0/The%20consumer%20impact%20of%20competition%20in%20the%20UK%20postal%20market.pdf (p 18)

Section 2 – Legal environment

2.1 European legal environment

Directive 2008/6/EC[11] of the European parliament and of the council (3rd Postal Directive) mentions efficiency in the following sections:

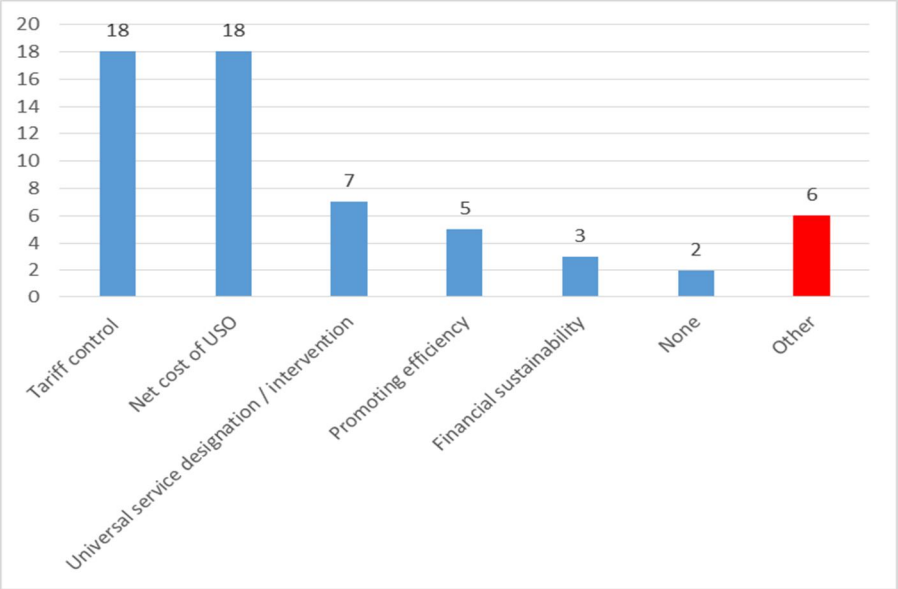
- Article 12: *"prices shall be cost-oriented and give incentives for an efficient universal service provision."*
- ANNEX I Guidance on calculating the net cost, if any, of universal service, Part B: Calculation of net cost, first paragraph: *"National regulatory authorities are to consider all means to ensure appropriate incentives for postal service providers (designated or not) to provide universal service obligations cost efficiently."*
- ANNEX I Guidance on calculating the net cost, if any, of universal service, Part B: Calculation of net cost, third paragraph: *"The calculation shall take into account all other relevant elements, including any intangible and market benefits which accrue to a postal service provider designated to provide universal service, the entitlement to a reasonable profit and incentives for cost efficiency."*

2.2 National legal environment

Almost all the NRAs that gave answers to the questionnaire have some sort of legal requirement in the national legislation to consider or assess efficiency. Only two NRAs (CH, LT) do not have any legal requirement regarding the assessment of the efficiency. The majority of NRAs answered that they have some sort of requirement within tariff control and calculating net cost of USO (see Chart 2-1 below).

[11] http://ec.europa.eu/internal_market/post/doc/legislation/2008-06_en.pdf

Chart 2-1: Legal requirement (instances)



The specific answers corresponding to 'Other' (besides the general mentioning in the legislation) relate to efficient management (IT), efficient operation in the context of the general supervision of the USO (LU) or with a view to take the decision whether to close the post offices or replace them with agencies (AT) and access to postal networks (PT and ES).
In most of the countries there is no definition of efficiency in the law, but its role (tariff control, net cost etc.) and sometimes its context (set as the maximum level of compensation; in the delivery assessment; to check for improvements; reaching conditions of economic equilibrium) are mentioned. One respondent stated that efficiency is defined as the lowest cost that is necessary for the provision of a postal service with specific quality characteristics/requirements of USP (EL).

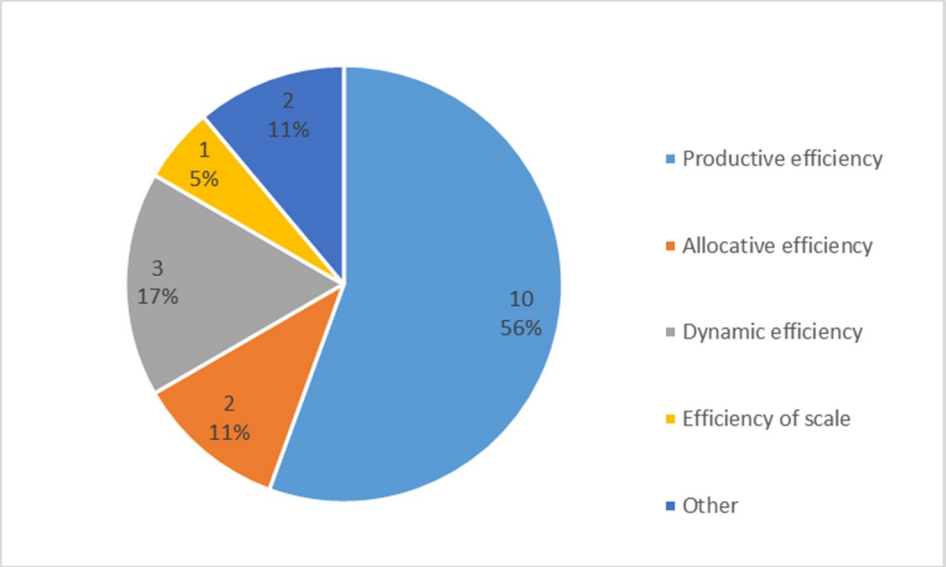
The report looks into four types of cost efficiency, commonly used in the economic literature[12]:

1. **Productive efficiency:** it is achieved when maximum number of services is produced with a given amount of inputs (at the lowest possible cost).
2. **Allocative efficiency**: it is achieved when the price of services is equal to their marginal cost.
3. **Dynamic efficiency**: it is achieved when the changing needs of the market are met over time through technological progress and innovation.
4. **Efficiency of scale:** it is achieved when the company benefits fully from the economy of scale.

[12] http://bookshop.europa.eu/en/pricing-behaviour-of-postal-operators-pbKM3213129/downloads/KM-32-13-129-EN-N/KM3213129ENN_002.pdf?FileName=KM3213129ENN_002.pdf&SKU=KM3213129ENN_PDF&CatalogueNumber=KM-32-13-129-EN-N

In most instances, there is no specific type of efficiency provided for in the law. Ten answers from 6 countries are that the law envisage productive efficiency. Two countries (IT and HU) consider allocative efficiency as a type of efficiency in their law and 2 countries (IT and ES) in 3 instances describe that in their law there is a requirement for dynamic efficiency and only one country (ES) mentions efficiency of scale. One country (AT) describes other types as efficiency, such as efficient management and economic efficiency (see Chart 2-2 below).

Chart 2-2: Types of efficiency (instances)



2.3 NRA examples of definitions of / references to efficiency

In the next table there are examples of efficiency definitions/references as described by the respondent NRAs from the countries within Europe that have definitions/ references to efficiency included in the law.

Table 2-1: Definitions/references

Country	Role	Definition of / Reference to the efficiency provided for in the law
Bulgaria	Net cost of USO	The Postal services act doesn`t contain efficiency requirements. They are defined in the secondary legislation - Methodology for the calculation of the net cost of the provision of the UPS (by using a coefficient)
Cyprus	Tariff control & Net cost of USO	The definition of efficiency is explicit in the secondary legislation (Orders 492/2014 and 493/2014). It is defined as the rational use of the resources of the USP so that the postal services are conducted and/or provided in the most efficient manner. The practical implementation of efficiency is done through OCECPR costing models.
Czech Republic	Tariff control	There is a definition of the cost oriented prices (price is cost oriented when it covers only effective cost and reasonable profit - §33(5) of Czech Postal Service Act).

Country	Role	Definition of / Reference to the efficiency provided for in the law
Greece	Tariff control & Net cost of USO	Efficiency is defined as the lowest cost that is necessary for the provision of a postal service with specific quality characteristics/ requirements of the USP.
Italy	Net cost of USO	In the Italian legislation, the article 10, par. 3, of the legislative decree no. 261/99 provides that "*The determination of the contribution, according to the principles of transparency, non-discrimination and proportionality, is carried out by the NRA on the basis of the costs of an efficient management of universal service*". Furthermore, the article 6, comma 4 of the "Program Contract 2015-2019" signed between the Italian Ministry of Economic Development and the USP, provides that "*the incentive to the efficiency of the universal service provider, according to the Annex I to the Directive 2008/6/EC, is ensured by the ex-ante determination of the maximum level of compensation paid through the state budget, that is defined in this Program Contract and is invariant with respect to both the increase of inflation rate and the structurally upward trend of net cost of universal service*."
Italy	Tariff control	The article 13, par. 2, of the legislative decree 261/1999 provides that "*the maximum rates of universal services are determined by the NRA taking into account the service costs and the improving efficiency*". In the decision no. 728/13/CONS, recently modified by the decision n. 396/15/CONS, the Italian NRA provided that the maximum price of the registered mail, up to 20 g, is equal to 5,4 €/piece and that the maximum price of ordinary mail, up to 20 g, is equal to 0,95 €/piece.
Italy	Financial sustainability	According to the article 3 of the Legislative decree no. 261/99, as modified by the law no. 190/2014 (2015 "Stability Law") "*The provider of universal service guarantees for at least 5 days a week: (..) a to-door delivery for every natural or legal person. In case of particular infrastructural or geographical situations in geographical areas with a density lower than 200 inhabitants / km² and in any case up to a maximum of one quarter of national population, the NRA can authorise the provision on alternate days*". In order to reduce the cost of the postal network, the Italian NRA has implemented the decision n. 395/15/CONS that provides for the delivery on alternate days in some areas up to 25% of population.
Italy	Universal service designation / intervention	The article 23, par. 2 of the legislative decree no. 261/99, provides that every five years the Ministry of economic development verifies, on the basis of an analysis carried out by the NRA, whether the universal service provided by Poste Italiane S.p.A. complies with the criteria referred to in subparagraphs a) to f) of paragraph 11 of Article 3 and that in carrying out the same record there is an improvement in efficiency, based on defined criteria and quantified by the indicators. The criteria mentioned are: *guarantee of the continuity of universal service provision in view of the role played by the USP in the economic and social cohesion, return on investment, organizational structure of the company, economic state of the company in the last three years, experience in the sector and any previous relations with the public administration in the postal sector, with positive results.* In case of a negative outcome of the verification referred to in the previous period, the Ministry of Economic Development has the reliance revocation.

Country	Role	Definition of / Reference to the efficiency provided for in the law
Italy	Other	Article 2, comma 5 of the Program contract 2015-2019 provides that "*the USP sends to the NRA, at the beginning of every reference year, the list of post offices and delivery structures, to be updated annually, which do not guarantee conditions of economic equilibrium in the universal postal service, with the intervention plan and criteria adopted for the progressive rationalization of their management*". (...) "*The USP provides to the local concerned Authority and the Ministry of Economic Development detailed information of interventions, also including those interventions addressed to substitute the current way of postal services provisioning, by using information and digital technologies*".
Latvia	Tariff control	The Regulator shall determine the obligations of the universal postal service. In order to stimulate efficient provision of the universal postal service, the obligations of the universal postal service shall provide for at least the following conditions: 1) the quality requirements in relation to the clearance, sorting, transport and delivery of postal items (frequency, speed and regularity); 2) the quality requirements in relation to the layout and number of places where postal services are provided and of postal network access points; 3) the requirement to ensure that all users of postal services have the opportunity of using the postal services in the list of the universal postal service for a unified tariff throughout the territory of the Republic of Latvia; 4) the requirement to provide the universal postal service in the most economically advantageous manner.
Norway	Tariff control	Nkom can impose specific methods of price regulation, including price cap scheme to ensure that offers of universal service occurs on open, objective and non-discriminatory terms, at cost-oriented and affordable tariffs.
Poland	Tariff control	In the case of tariff control, there is no definition of the efficiency in the Polish law. However, the designated operator shall submit to the President of UKE draft universal service tariffs specifying the respective cost components for each universal service provided. The NRA may, by decision, raise an objection to this draft. Moreover, model price-cap (provided for but not applied in practice) includes work productivity of the USP.
Poland	Net cost of USO	According to the Polish postal law, net cost calculation should encourage the increase in cost efficiency. There is no definition of the efficiency in the Polish law, but the definition of inefficiency. The net cost calculation takes into account the adjustment for the ineffectiveness of the designated operator.
Poland	Universal service designation / intervention	The USP is designated as result of the procedure initiated by the President of UKE. The NRA may withdraw the designation (e.g. in case of extremely high net cost). Moreover, the calculation of forward-looking fully allocated costs includes an adjustment for the inefficiency of the designated operator.
Portugal	Tariff control	**N.º 1 of article 14 of Law no. 17/2012 of 26 April** Tariffs of postal services forming part of the universal service comply with the following principles: a) Accessibility to all users; b) Cost-orientation, giving incentives for an efficient universal service provision; c) Transparency and non-discrimination.

Country	Role	Definition of / Reference to the efficiency provided for in the law
Portugal	Promoting efficiency	**N.º 1 of article 2 of Law no. 17/2012 of 26 April** 1 - This law aims to: a) Define the conditions for provision of postal services under a full competition regime; b) Ensure a sustainable and efficient provision of a universal postal service; and c) Establish the rights and interests of users, especially of consumers.
Portugal	Financial sustainability	**N.º 2 of article 2 of Law no. 17/2012 of 26 April** In order to achieve the objectives established in this law the following principles must be observed: a) To ensure the existence, availability, accessibility and quality of the universal service provision; b) To ensure the economic and financial sustainability and viability of the universal service provision; c) To guarantee the enforcement of and compliance with the essential requirements provided for in article 7; d) To ensure the protection of users in their dealings with postal service providers, namely the handing and resolution of complaints; e) To ensure equality in the access to the market.
Portugal	Net cost of USO	**N.º 3 of article 19 of Law no. 17/2012 of 26 April** The calculation of the net cost shall take into account the following elements: a) Benefits, including both tangible and intangible benefits, which accrue to the respective universal service provider; b) The entitlement of the universal service provider to a reasonable profit, represented by the cost of capital related to investments required to provide the universal service, which must reflect the risk incurred; c) Appropriate incentives for the respective postal service provider to provide universal service obligations cost efficiently.
Portugal	Other	**N.º 4 of article 38 of Law no. 17/2012 of 26 April** ANACOM may determine the terms and conditions for access, including prices, where necessary to ensure an effective competition or interests of users, and where the following requirements are met: a) Where elements of the postal infrastructure are concerned and the lack of access thereto hinders the entry into the market of the postal service provider concerned; b) Where the access is without prejudice to the security, efficiency and integrity of the network or to the provision of the universal service
Portugal	Universal service designation / intervention	**N.º 1 and 2 of article 17 of Law no. 17/2012 of 26 April** Once the US designation expires, the universal service provision may be ensured through the following mechanisms: a) Efficient market operation, under an individual license regime; b) Designation of one or more postal service operators to provide different elements of the universal service or to cover different parts of the territory. The mechanisms adopted shall be the most efficient and appropriate so as to guarantee the availability of the universal service throughout the national territory

Country	Role	Definition of / Reference to the efficiency provided for in the law
Slovenia	Tariff control	Universal service operators must provide the services falling within the scope of the universal service at prices that shall be: - affordable and must be such that all users, regardless of their geographical location, have access to the services provided; - cost-oriented and provide incentives for efficient universal service provision; - identical for identical services throughout the territory of the Republic of Slovenia
Slovenia	Universal service designation / intervention	The Agency shall be entitled to change the decision ex officio: 1. if this is necessary in order to ensure the effective provision of universal services; 2. if this is required by international legal acts in force in the Republic of Slovenia.

2.4 Conclusion

The answers are not straightforward and there are different perceptions of the efficiency of the postal operators among the states in the EU. In spite of the fact that the majority of states have some sort of legal requirement in the national legislation regarding efficiency, most of the NRAs answered that in the national law there is no definition of efficiency.

Section 3 - Practice of the NRAs

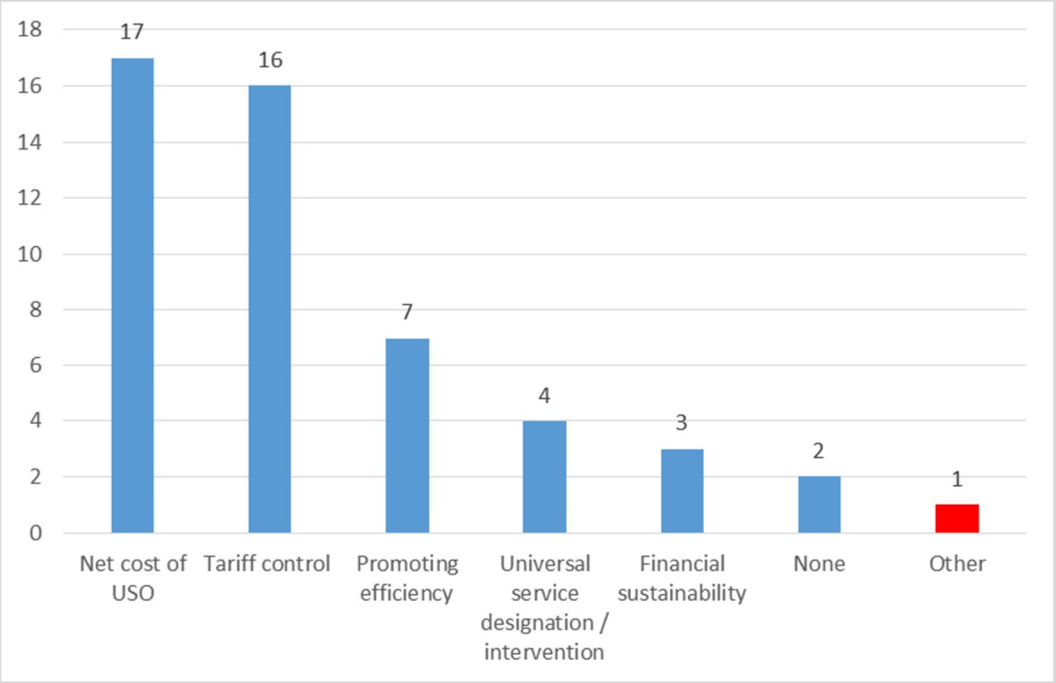
This section analyses the role played by efficiency in the regulatory practice, the type of efficiency applied by the NRAs and the context in which the efficiency is usually assessed.

The analysis undertaken in this section is showing a different perspective from the one regarding the legal environment. In most instances, there is an overlap between the legal requirements and the practical approach concerning efficiency. There are a few cases where the efficiency is not emphasized in the overall assessments undertaken by the NRAs or there was no need to exercise the evaluation or cases where the analysis complements the legal provisions.

3.1 Efficiency role

The role of the efficiency is emphasized in instances such as tariff control and net cost calculation. Out of the 27 respondent NRAs, only two (LT and SE) stated that the efficiency plays no role in the regulatory practice, one of them (LT) as a consequence of the legal provisions. In one instance, the efficiency assessment has a direct impact on the operational structure of the operator, by deciding the closing of the post offices owned by the USP or their transformation into agencies (AT).

Chart 3-1 – Role of efficiency (instances)



Either as a result of specifically following the definitions provided for in the law, or given the flexibility provided for in the law, NRAs seldom use a specific definition in their public or internal documents when the role of efficiency is taken into account.

Nevertheless, some of the features identified as appropriate in the efficiency assessment are:

- Personal benefits above certain threshold (CZ)
- Deficits and damages (CZ)
- Cost of representation (CZ)
- Sanctions and penalties (CZ)
- The lowest cost that is necessary for the provision of a postal service with specific quality characteristics (EL)
- Costs not incurred by universal service provision (EE)
- Incentives for efficient market entry, while allowing an adequate rate of return (MT)
- Costs that can be avoided without a decrease in quality and volume (PL)
- Losses incurred due to operational inefficiency (RO)
- Excessive values of certain cost categories not explained by US provision (RO)
- The extent to which output is produced for minimum cost (UK)

Sometimes a wider guidance is used, such as that the efficiency should be based on economic principles (CH) or that the price-cap mechanism incentivizes the USP to gain efficiency by reducing its costs in order to increase its margin or to keep it stable in the context of the decline in mail volumes (FR, PT).

3.2 Types of efficiency

In terms of the types of efficiency actually applied, the majority of NRAs do not use a straightforward definition, 7 NRAs use productive efficiency, one NRA uses dynamic efficiency and 4 NRAs apply other types of efficiency (such as assessing whether there is an adequate rate of return, undertaking an efficiency analysis or setting the prices in line with CPI).

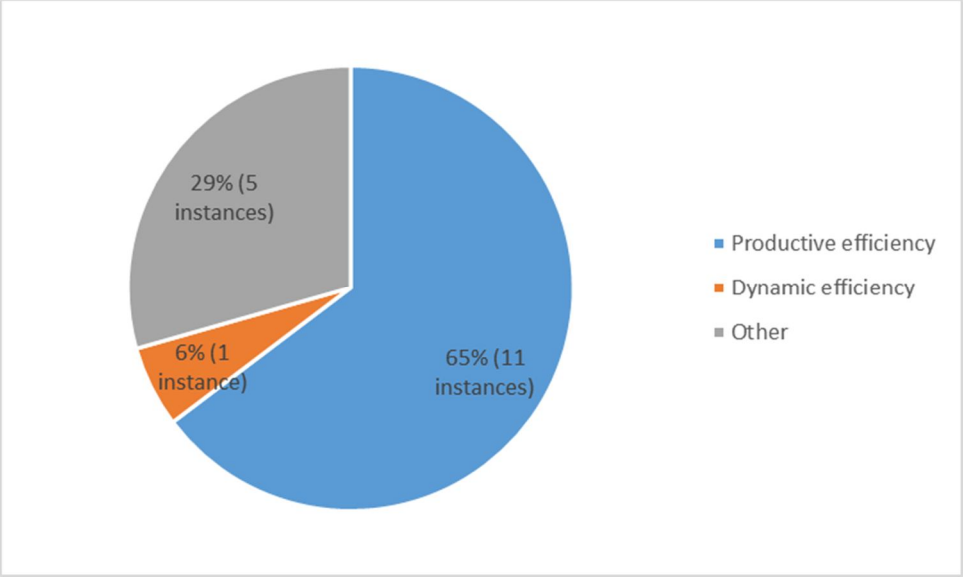
As mentioned in the previous chapter, the productive efficiency is achieved when maximum number of services is produced with a given amount of inputs (at the lowest possible cost). This is also restated by the respondents to the questionnaire who emphasize cost savings in line with causality principle (DE).

Other expression of the productive efficiency is the comparison of the data from production level to data from costs levels and the determination of the cost-output relationship for the efficient unit - costs centres (that is, the one from the sample that produces output at a minimum cost) and then the estimation of the inefficiency of the other units by quantifying the difference in terms of costs between them and the expected average statistical costs (BG).

The productive efficiency is also expressed by using profitability cost approach in the net cost calculation (IE).

Even when there is no efficiency assessment as such, the alternative is to measure potential productivity gains (FR). One NRA undertakes a specific analysis of relevant productivity factors (e.g. revenue/FTE, cost/FTE, revenue/m² etc) (AT).

Chart 3-2 – Types of efficiency (out of the 17 answers in which a definition is pointing towards a type of efficiency)



In general, there is a match between the legal provisions and the practical approach to efficiency in terms of the types of efficiency to be used /actually used. In few instances, an intuitive higher level of detail in the interpretation of the efficiency than the guidance in the law is noticed.

In most cases for tariff control, net cost calculation and promoting efficiency, there is no specific definition, while productive efficiency is the most used category in cases where efficiency is defined.

The popularity of the productive efficiency, especially when dealing with the net cost calculation, may reside in the straightforward application and in the controllability of the results, while for other types of efficiency the tools to implement them and the degree of control are more prohibitive (e.g. the determination of the marginal costs requires additional tools with results in a limited range in case of allocative efficiency; the innovation can only be stimulated and not imposed by NRAs in case of dynamic efficiency; the economies of scale are under the control of the USPs when they are able to stimulate the volumes).

3.3 How efficiency is taken into account

When assessing the efficiency in relation to the tariffs, the NRAs usually take into account setting caps with the purpose to either limit the inefficiency or to stimulate efficient provision of the services.

During the price-cap exercices, the NRAs examine potential process related cost savings as result of optimization and innovation of operational procedures with subsequent setting of X-factor (DE, PT) and take into account the impact of volume decline in costs (FR, PT).

In some instances, the NRAs identified the largest cost centres (e.g. collection and delivery which form, not by coincidence, the largest labour cost category) and made them the primary focus of the assessment to set an efficiency target for the price cap control of the universal postal service (IE).

Accounting separation takes into account efficiency either specifically or embeded in the calculation. As one of the underlying data used to set the tariffs for the universal services, accounting separation sometimes already deals with efficiency (CZ). Complemented by affordability, cost orientation addresses efficiency by ensurring that prices are not set too high (PL). Some NRAs ensure the efficiency by auditing the cost allocation keys (e.g. standard times) (SI). One NRA uses fully allocated current costs to account for the efficient service provision (LV).

One NRA estimates the Total Derived Efficiency Ratio taking into account the relationship between the percentage change of the total volume of universal services and the percentage change of the operating expenses of the universal services. The percentage change takes into account the costs for the timeframe under consideration (forecast period) and the actual costs of the timeframe. The result of the ratio must be positive in order that the NRA approves the USP pricing list (EL).

Another NRA ensures efficiency is taken into account when prices for the sum of all US products do not rise more than the CPI (AT).

There are also wider approaches to ensuring efficiency, such as that the tariffs for the services provided as part of the postal universal service, set by the universal service provider, shall be based on economic principles (CH).

There is a case where the NRA set the efficiency framework for wider considerations, taking into account several regulatory principles while using the same model (CY).

In the context of net cost calculation or evaluation, NRAs' approches focus on the practical sides, linked to the USPs' operations. A lot of emphasis is placed, as it is intuitive, on mirroring the levels of efficiency in both the base case and the reference scenario.

As part of the aspects analysed, these are identified in relation to the net cost calculation:

- The costs determined as a result of a bottom-up model, scorched node method via average incremental cost (BE)
- The correlation between the volume (posted items) and the total costs of the cost centres. The resulting regression statistic indicate that there is a linear relation between the costs and the volumes of items. There are positive deviations of the actual costs of some cost centres expected

to average statistical ones, which is an indication of inefficiency. The amount of the net costs is reduced with the total amount of the inefficiency (estimated by comparing the cost-output relationship of the most efficient unit and the other units and then quantifying the distance in terms of costs between them and the efficient one). (BG)

- Relationship between costs and revenues on one hand and volumes on the other hand (CZ)
- Ensure that by the bottom-up calculation or by market benchmarks the impact of inefficiency is eliminated (EL)
- The part of the net costs which has arisen due to the application of the special tariffs in case of services included in the universal postal service should not be compensated (LV)
- Remedial measures plan (in order to avoid expected loss on universal service provision) (PL)
- Efficiency adjustments for employment capacity in order to have the same level of efficiency in both the base case scenario and the commercial scenario (RO)
- Historical Comparison – Total Productivity Factor used for the purpose of assessment of the percentage/ level of "inefficiency". The unit costs of the postal services in the base year corresponding to the reserved area period when the maximum number of items was incurred is compared to the unit costs of the postal services in the reference year. The Index of Cost Efficiency = Costs in Constant Prices / Number of Items. As result of this comparison, the total net costs were reduced by the % of inefficiency (SK).

When assessing financial sustainability, the NRAs base their assessment of efficiency on audited cost oriented information (SI), as well as on internal monitoring reports and public annual reports (UK).

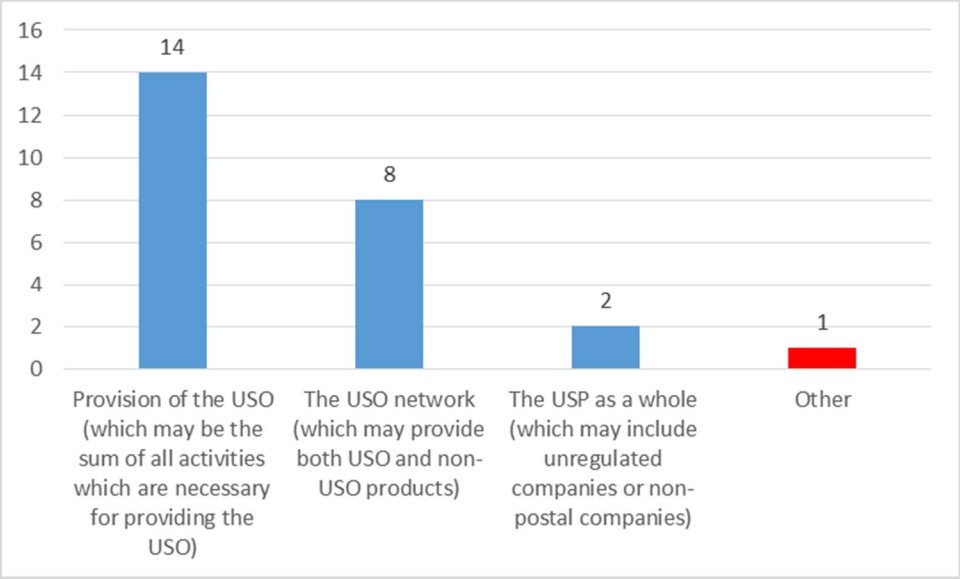
In cases where the regulatory practice is to promote efficiency, this is evaluated based on benchmarking and analysis of cost documents of the provider (DE), the analysis of the network (SI) and on internal monitoring reports and public annual reports (UK). It is also manifested by opening the market or the restriction of tariffs discounts (LV).

The NRAs take into account efficiency in the universal service designation and intervention in different manners. One respondent states that the NRA may withdraw the USO designation in case of extremely high net cost (PL). In another country, the result may be the decrease of the postal network if quality requirements are fulfilled (LV). One NRA checks the efficiency as part of the auditing process (SI).

3.4 Scope of efficiency consideration

The majority of NRAs consider efficiency in terms of USO provision only, exercising the regulatory powers in terms of tariff control and net cost.

Chart 3-3 – Scope of efficiency consideration (NRAs)



Other NRAs have an extended scope for efficiency consideration, including the USO network in its capacity to provide both USO and non-USO products. This is undertaken:

- in order to take into account the fact that the costs are shared between services,
- in order to accommodate the adjustments in the reference scenario in the net cost calculation/assessment, including the fact that the analysis is done for network elements rather than services
- as result of the fact that the regulatory statements provide information on a wider basis.

In two cases (AT, LT) the NRAs look at the efficiency for the whole company, in order to encourage the efficient provision as a practice and in the circumstances that the impact of the analysis is directly influencing the whole company structure respectively.

One NRA explaines that the efficiency is out of the regulatory area and another one did not undertake an efficiency exercise to date.

3.5 Separation of costs

While the percentage of the USO costs in total costs can start from 17% and go up to 90%, the percentage of non-USO postal services are in the range 0 to 64% and the percentage of other non-postal services can go from 0 to 57%, this can be usually traced down in the regulatory accounts. In most of the cases, the NRAs are able to undertake the assessment based on the FDC ABC systems that provide detailed

information at least on the USO and in most instances also at the unit cost level. One NRA is using an LRIC bottom-up model to determine the costs of the USO products.

When the impact of efficiency is identified and allocated, this is done mostly in the cost allocation system, irrespective if it is FDC or bottom-up. One NRA states that the incentives are traced down on the costs that are allocated to the universal service (IT) and another NRA that they are identified within the USO network (UK). In one case, the NRA states that they monitor whether the USP takes actions to reduce the costs of the unprofitable post offices (CZ). Another NRA states that although the audit covers only the USO services, the efficiency analysis includes both USO and non-USO (SI). One NRA states that the uniformity of the method of allocation of costs on all the categories of services results in the fact that the benefits coming from improved efficiency are allocated to all the services (AT).

Section 4 - Approaches to assessing efficiency adopted by the NRAs

The measurement of efficiency in the postal sector, predominantly in the universal service segment, constitutes a central step in promoting the Provider's[13] efficiency improvement. The validity and explanatory power of such investigations largely depends on the applied methodology in relation to the efficiency parameters and the availability of empirical data that allows efficiency ranking of postal operators. This section presents detailed information on different approaches for assessing the provider´s efficiency which have been undertaken by the NRAs.

The following section focuses on the methodologies and metrics including the parameters used by the NRAs when assessing the provider´s efficiency performance. Such investigations are carried out mostly in the context of net cost calculation, price regulation or for examining the sustainability of the universal service. Indeed, the methodologies and the metrics used for the measurement are different from one country to another, so that a one-size-fits-all approach is not appropriate.

A review of the NRA's responses to the questionnaire reveals that the majority of the NRAs do not rely on a single approach for evaluating the efficiency. In many cases, the NRAs explain that they merge the different approaches for efficiency assessment. In general, the methodologies adopted and their application depend on whether the assessments are conducted for price regulation, for net cost calculation or in the context of sustainability issues.

4.1 Applied methodologies for assessing the efficiency performance

As a whole, 21 NRAs indicate that they apply methodologies for measuring the provider´s performance. The methodologies the NRAs use for evaluating the efficiency comprise the following:

- time series analysis;
- statistical and econometric techniques;
- expert-review as a qualitative tool; and
- different kinds of benchmarking.

The table below shows the relevance of the applied methodologies for assessing the efficiency performance.

[13] By 'Provider' this report refers to the designated universal service provider or to the incumbent

Table 4-1 – Efficiency assessment methodologies by country

Country	Time series analysis using efficiency metrics	Econometric or statistical techniques	Expert review of cost reduction plans and activities	Benchmarking to other postal operators or other companies	Other
Austria	✓				✓
Bulgaria		✓			
Cyprus			✓		
Czech Republic			✓		✓
Estonia			✓		
France			✓		
Germany	✓	✓		✓	
Greece		✓			✓
Hungary					✓
Italy				✓	
Latvia		✓			
Lithuania					✓
Malta					✓
Norway		✓			
Poland			✓		✓
Portugal			✓		✓
Romania			✓		
Slovakia	✓				
Slovenia		✓		✓	✓
Switzerland				✓	
UK	✓	✓	✓	✓	

The following table gives an overview of the various applications of the methodologies. Overall, it appears that expert review and econometric reviews play a pivotal role for efficiency assessments of various NRAs. Such investigations are conducted for tariff control as well as for the USO net cost calculation.

Table 4-2 - Efficiency assessment methodologies by NRA objective

Objective / Methodology	Time series	Econometric	Expert review	Benchmarking	Other
Tariff control		4	4	1	3
Net cost of USO	1	1	4	1	4
Financial sustainability	1		1		1
Promoting efficiency	1		1	1	1
USO					1
Other	1	2	1	3	1

4.1.1 Time series analysis

Assessing historical efficiency performance, either the one of the provider or in comparable industries, can provide quantitative evidence about the scope of potential efficiency improvements in the future. Accordingly, such a tool can provide an indication of the potential efficiency and/or productivity targets.

4 NRAs (AT, DE, SK and UK) state that they conducted time series analysis using efficiency metrics to examine historic efficiency performance.

4.1.2 Econometric analysis

As a supplementary tool, 7 NRAs (BG, DE, EL, LV, NO, SI and UK) conducted econometric analysis to assess the provider´s level of efficiency. Such an evaluation gives a snapshot estimate of the current performance and provides information about the deficits and the scope of potential improvement. Econometric analyses are often based on a dataset of the provider or similar firms operating either domestically or in other countries which involves correlation and regression analysis, based on modelling, controlling for social-demographic external factors.

The methodology applied for the econometric measurements differ among the NRAs. Such assessments are carried out in the context of tariff control (DE, EL, LV and NO). One NRA explains that this exercise is relevant for determining the USO net costs (BG).

To evaluate efficiency performance, the German and Slovenian NRA used econometric analysis taking into account the national and international specific socio-demographic circumstances. The German NRA established a model including parameters such as urbanization, population density – differentiated between high and poorly density areas, average labour costs and number of locations. A similar approach was taken by the Slovenian NRA, where the econometric model was based on various parameters such as number of employees, number of inhabitants, coverage area, number of letters, number of inhabitants per employee, added value per employee, number of express services per inhabitant, number of online service.

In order to provide an estimate for the expected growth rate as a parameter for efficiency targets, the German NRA used a number of variables including various sociodemographic factors such as mail

characteristics, as well as data from financial and regulatory accounting systems, to calibrate a cost-volume function.

Ofcom in the UK also used econometric methods to examine the provider's efficiency. The econometric methodology adopted by the UK compared the provider's performance across delivery offices and also by mail centres (i.e. sorting centres). This provided estimates of potential future efficiencies in each areas in terms of both hours and costs based on its own performance and controlling for external factors outside the provider's control e.g. geography.

4.1.3 Expert qualitative reviews

The provider´s business plan can provide information as to the potential for efficiency improvements. In such reviews, representatives from the NRA together with the provider´s experts evaluate and review existing efficiency performance aiming at specifying efficiency targets and pace of efficiency improvement, as well as identifying initiatives that could determine further improvements and operational and organizational adjustments. The reviews vary in their scope and focus, ranging from broad evaluation of operational procedures and best practices to a more focused analysis of the efficient costs for determining the cost baseline.

8 NRAs explained that they predominantly use expert reviews for analysing the provider's cost reduction plans. 4 NRAs conduct expert reviews for tariff regulation issues (CY[14], CZ, FR and PL), 4 NRAs apply expert reviews for assessing the USO net costs (CY, EE, PL and RO) and only 2 NRAs for evaluating financial sustainability of the provision of the USO (PT and UK).

The NRAs reviewed elements of the business plans on a number of occasions. The expert reviews aimed at identifying the potential of automation and rationalization of operational procedures. The NRAs conducted expert reviews also to determine the potential cost savings from network restructuring. In some cases, the efforts have led to adjustments and subsequent optimization of the operational structure.

France, Germany, Portugal and the UK reviewed the provider´s business plans and efficiency initiatives in some detail. Within these reviews, the NRAs evaluated the provider´s principal operational processes on the basis of site visits, requests of information and supporting analysis of external consultants and experts. The reviews included detailed assessments concerning the delivery target times and the scope of upgrading the automation equipment and automated walk sequencing. In these reviews, the German NRA identified various opportunities for efficiency improvements in areas such as last mile delivery services and operational management structure including the evaluation of the existing delivery methods. Both in Germany and the UK the review process exhibits large scale cost savings.

[14] The expert reviews have been employed initially in designing the costing models that have been used in assessing efficiency.

4.1.4 Benchmarking studies

The benchmarking techniques involve a comparison of the provider against other operators. Such an assessment can be carried out for particular processes. Within the framework of process benchmarking, particular processes are compared with the performance of a peer or of the industry. In the absence of appropriate domestic comparators, benchmarking could be conducted on the basis of an international peer group. The measurement of the provider´s efficiency performance can be compared against the performance of other USPs in Europe or with the situation in other sectors. The benchmark studies can be based on national sector specific data.

According to the review of the responses to our questionnaire, only 5 NRAs evaluated the provider´s efficiency efforts via benchmarking techniques (CH, DE, IT, SI and UK). Concerning the comparators for benchmarking, 3 NRAs use both national and international data (IT, DE and CH). The NRA in Switzerland relies exclusively on international data. The choice of comparators for Ofcom in the UK depends on the purpose of benchmarking. While rates are benchmarked on the basis of UK sector-specific data, for efficiency initiatives Ofcom uses international comparators.

To evaluate efficiency performance, the NRAs used different forms of national and international benchmark. These NRAs examined evidence from a range of different benchmarking methodologies, involving quantitative and qualitative as well as national and international techniques.

The objectives of benchmarking vary. For example, only in Switzerland the results of benchmarking studies play a significant role for tariff control, while in the UK the results from benchmarking are relevant for issues of financial sustainability and in Italy for the USO net cost calculation. 2 NRAs employ benchmarking techniques as a complementary tool to the expert reviews (DE and the UK). Looking at the criteria for selecting peers, 2 NRAs explain that they exclusively compare USPs, while 2 other NRAs include Non-USP into the peer group.

4.2 Types of parameters

Looking at the types of the parameters used for benchmarking or analytical purposes it appears that these are used to different extents by the NRAs. In **15** instances, the NRAs compare costs as relevant data, in **10** instances the NRAs replied that they benchmark and analyse volume-related data (number of postal items). In **18** instances, the NRAs compare labour-related parameters such as headcount, hours, FTE, workload (calculated to be volumes weighted by the theoretical time required to work the volume - in UK's case - and the average daily volumes delivered by a postman to each street number – in Italy's case). In 5 instances the NRAs used prices in their analysis.

These parameters are used to compare the provider´s performance against that of its peers or in a time series analysis where the provider´s efficiency and/or productivity are measured over time. A more in-depth review of the NRAs using cost data reveals that such metrics use either payroll costs (CY, EL and UK), non-payroll (BG and SK) or both payroll and non-payroll costs combined (EE, FR, PL and UK).

Table 4-3 – Parameters used by the NRAs

Country	Costs	Number of postal items	Hours	Headcount	Workload	Prices	FTE	Other
Austria						✓		✓
Bulgaria	✓	✓						
Cyprus		✓	✓	✓				
Estonia	✓							
France	✓	✓						
Germany								✓
Greece	✓	✓						
Italy					✓		✓	
Latvia	✓	✓				✓		
Lithuania								✓
Malta		✓				✓		
Poland	✓							
Romania				✓				
Slovakia	✓							
Sweden								✓
Switzerland						✓		
UK	✓	✓	✓	✓	✓		✓	

Chart 4-1 – Parameters used by NRAs in efficiency assessments (no. of instances)

4.3 Types of metrics for assessment

Regarding the metrics, the responses to the questionnaire revealed that the approaches are based on various metrics ranging from productivity to real unit cost (the majority), including cost variance analysis.

4 NRAs stated that they mainly use the headcounts and/or full time equivalent ('FTE') changes as metrics for measuring the provider´s efficiency performance, followed by assessments with reliance on cost reduction variance analysis (3 NRAs).

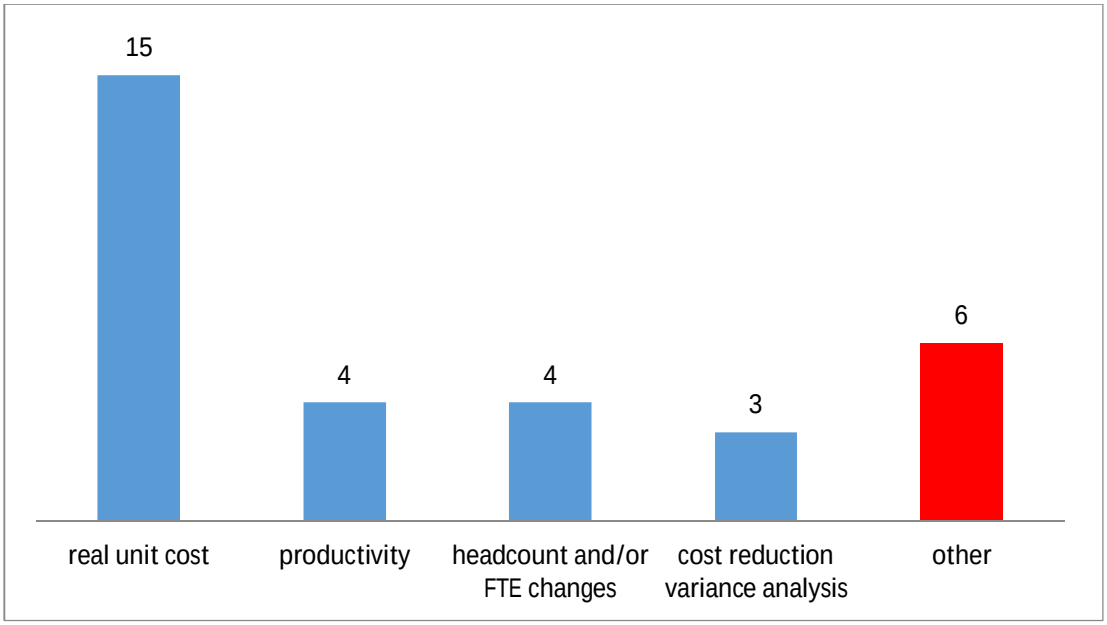
The Lithuanian NRA uses profit as a metric for efficiency assessments. The French and the UK NRAs however employ a more sophisticated approach, which is based on a combination of the cost reduction parameters that take into account the changes in the number of postal items (letters and parcels).

NRAs relying on price figures compare the prices of the providers with other USP taking into account sociodemographic factors and differences in the purchasing power. The Maltese NRA uses the volume forecasts as metric for the assessment.

Table 4-4 – Metrics used by the NRAs

Country	Real unit cost	Productivity	Headcount and/or FTE changes	Cost reduction variance analysis	Other
Austria	✓	✓	✓		
Bulgaria	✓				
Cyprus	✓	✓			
Czech Republic	✓				
Estonia	✓				
France					✓
Germany	✓				✓
Greece				✓	
Italy			✓		
Latvia	✓			✓	
Lithuania					✓
Malta					✓
Poland	✓				
Romania					✓
Slovakia	✓				
Slovenia	✓	✓	✓		
Sweden					✓
Switzerland	✓				
UK	✓	✓	✓	✓	

Chart 4-2 – Metrics used by NRAs in efficiency assessments (no. of instances)



4.4 Types of cost

To measure the provider´s efficiency performance, the majority of NRAs make use of two classes of cost standards: incremental or marginal costs, for example long run incremental costs ('LRIC') and fully allocated costs ('FAC'). The main difference between an FAC approach and LRIC lies in the cost allocation rules. Setting aside the considerations regarding common costs allocation (which could incur in both methods), the LRIC includes only the incremental costs of certain service/s (and in the widest consideration total services – in case of TSLRIC) provided by an operator, while the FAC approach allocates all costs to all relevant services (irrespective of the scope of the calculation). Both FAC and LRIC approaches can serve as a cost standard for measuring productivity.

The overwhelming majority of NRAs indicate that they place significant emphasis on FAC derived from historical data. The low application of LRIC results from the complexity of calculation. The German NRA´s evaluation of efficiency performance is mainly based on the historical and forecast cost, volume and revenue data that are used as input for determining the annual labour productivity growth and the annual total factor productivity. The Belgian NRA exclusively relies on incremental costs derived from historical data.

FAC is the prevalent cost standard used, while incremental or marginal costs are used only in two instances.

4.5 Forecast vs historical costs

Most NRAs rely either on forecast or historical costs for their analysis, while some NRAs use a combination of historical and forecast costs (CZ, DE, FR, PT and UK). The use of forecast data ensures the models capture how costs are likely to evolve over time. By contrast, the use of historical data is likely to result in more robust models as it anchors the analysis to actual data.

As shown in the table 4-5 below, historical data is prevalently used by the NRAs to measure efficiency performance and forecast data is used to a lesser extent. There are cases where both historical and forecast data are used for the same purpose.

Table 4-5 – Types of costs used by the NRAs

Country	Historical	Forecast
Austria	✓	
Bulgaria	✓	
Cyprus	✓	
Czech Republic	✓	✓
Estonia	✓	
France	✓	✓
Germany	✓	✓
Greece	✓	
Italy	✓	
Latvia		✓
Lithuania	✓	
Malta	✓	
Poland		✓
Portugal	✓	✓
Romania	✓	
Slovakia	✓	
Slovenia	✓	
Switzerland	✓	
UK	✓	✓

4.6 Top-down vs bottom-up modelling

Top-down modelling, which relies on data derived from the provider´s accounting system, represents the main tool for NRAs in conducting efficiency assessments. Bottom-up models are based on hypothetical structures presuming an optimized network topology. Based on the assumptions concerning the network structure and the operational processes, this approach facilitates the estimation of efficiency targets.

According to the answers to the questionnaire, top-down calculations are typically adopted to evaluate efficiency performance (14 instances). Bottom-up models however, are only relevant for **3** NRAs (BE, CY and DE) as a tool in the context of efficiency measurement.

Table 4-6 – Types of models (number of instances for each NRA)

Country	Top-down	Bottom-up
Austria	2	
Belgium		1
Cyprus		1
Czech Republic	2	
France	1	
Germany		1
Greece	1	
Malta	1	
Portugal	3	
Romania	1	
Slovenia	1	
UK	2	
Total	14	3

To determine the expected productivity growth rate as a proxy for efficiency targets, the German NRA conducted a bottom-up calculation. The evaluation considers primarily the changes in process related costs of letter conveyance, using the ABC approach[15]. The existing postal network, including the delivery organization, was the basis for the calculation. For its modelling, the German regulator used disaggregated information from the provider´s financial and regulatory accounts.

The NRA of Cyprus has taken a similar approach.

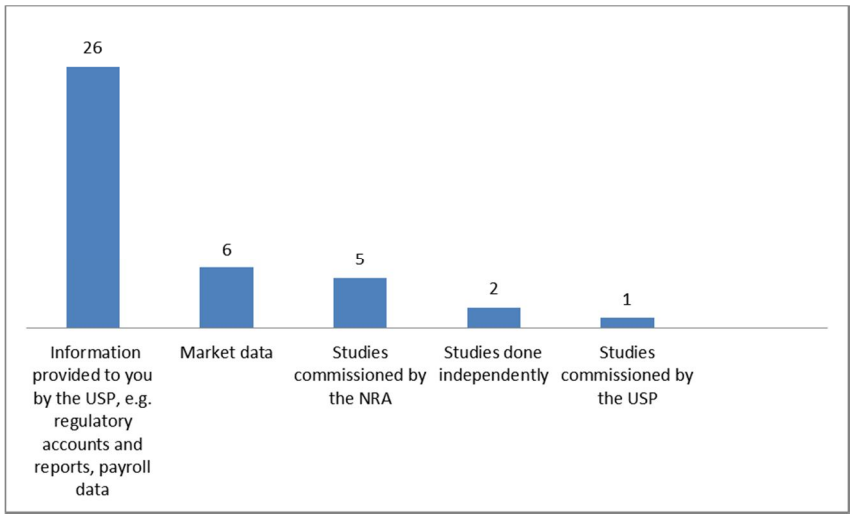
4.7 Data source of assessment

The Chart below shows the data source for the efficiency evaluation. In the majority of cases (26) the responding NRAs measure efficiency targets and performance by using information provided by the provider. NRAs rely on cost, volume and revenue based data derived from financial as well as regulatory accounts for benchmarking and econometric analysis. Market data is used in 6 cases. In other cases, the data source for the methodology includes studies done by external parties. In 2 cases these studies were

[15] Activity Based Costing - A methodology for allocating costs to services based on the extent to which the provision of each service requires a corresponding activity of the firm, determined by a cost driver.

commissioned by the NRA, in 1 case this study is done independently and in 1 case the study is commissioned by the provider.

Chart 4-3 – Sources of data used by NRAs in efficiency assessments (no. of instances)



Conclusion

Based on the responses to the questionnaire, it can be concluded that efficiency assessments are mostly carried out in the context of price regulation. The efficiency investigations also play an important role in calculating net cost of the USO and in examining the sustainability of the universal service.

The methodologies and the metrics used for measuring and assessing efficiency are different from one country to another. A review of the NRAs' responses to the questionnaire reveals that the majority of the NRAs do not rely on a single approach for evaluating the efficiency. The methodologies adopted and their application depends on whether the assessments are conducted for price regulation, net cost calculation or in the context of sustainability issues.

The responses to the questionnaire show that the NRAs predominantly rely on the historical cost accounting data in combination with fully allocated costs rather than forecast data and LRIC. The focus of the assessments tends to be the indicators linked to labour, such as payroll costs, hours, FTE etc. With regard to the cost modelling, it can be concluded that the NRAs tend to give top-down models priority over bottom-up modelling.

Section 5 - Country cases of the approaches adopted

5.1 Bulgaria

5.1.1 Legislation

The legal requirement to consider efficiency relates to the assessment of the net cost of the USO and is contained within secondary legislation. The primary legislation, Postal Service Act ('PSA') doesn't contain requirements for the efficiency of the provision of the Universal Postal Service ('UPS'). The PSA requires the NRA (CRC) to develop a methodology for the calculation of the net costs of the provision of the UPS (the 'Methodology'), which have to be adopted by the Council of Ministers (according to Article 15, point 11 of PSA). The current Methodology in force by Decree No 199 of 19 July of the Council of Ministers (http://www.crc.bg/files/_bg/Metodika_netn_rzx_UPU.pdf, available only in Bulgarian). The Methodology implements the requirements of Directive 2008/6/EU. The efficiency assessment is proposed as a part of the Methodology by CRC.

5.1.2 Bulgaria's Regulatory Framework

The net cost is calculated for the postal services within the US area as set out in Article 34 of PSA. According to Article 3 of the Methodology, the overall net cost of the US provision shall be calculated by the designated operator (i.e. Bulgarian Post) as a difference between the costs with and without the US obligation, taking into account all associated costs as well as relevant elements such as the intangible benefits and the promotion of cost efficiency. No double counting of costs is allowed.

The Methodology sets the stages of net cost calculation:

- developing a reference scenario setting the terms of the net cost calculation;
- calculation of net cost for the separate elements of the USO as comprised in the reference scenario;
- definition and calculation of the intangible benefits;
- definition and assessment of the cost efficiency;
- calculation of the overall net cost of US provision; and
- assessment of the unfair financial burden for the designated operator.

Efficiency assessment is done within the process of net cost calculation only for the purpose of determining the incentives for cost efficiency (i.e. their monetary equivalent). The designated USP submits an application for compensation of net cost to the CRC every year, if it believes the net cost from the provision of UPS represent an unfair financial burden (for the previous year). CRC then has the obligation to determine the amount of any compensation.

According to Article 10 of the Methodology, the efficiency assessment is done by calculating a coefficient of efficiency using the formula:

$$E_f = 1 - \left[\frac{C_1}{\frac{C_0(1+i)}{\frac{T_1}{T_0}}} \right]$$

Where:

E_f is the coefficient of efficiency;
C_1 is the value of the US provision costs for the period of the net cost calculation;
C_0 is the value of the US provision costs for the previous period;
T_1 is the total amount of the delivered postal items for the period of the net costs calculation;
T_0 is the total amount of the delivered postal items for the previous period;
i is the inflation rate, calculated on the basis of Consumer Price Index (CPI) for the one-year period of the net costs calculation.

Basically, the method assesses the correlation between changes in costs and number of items. In case of $E_f > 0$, the operator works efficiently and in case of $E_f < 0$ the operator works inefficiently.

The monetary equivalent of efficiency is calculated by multiplying the coefficient of efficiency by the overall value of variable costs of the US provision. In case the coefficient is positive, the monetary equivalent should be added to the amount of net cost and allowed for compensation.
In case the coefficient is negative, then its monetary equivalent should be subtracted from the amount of the net cost and not allowed for compensation.

The designated operator assesses the efficiency during the process of net cost calculation and all documents accompanying the net cost calculation are verified by an independent auditor appointed by CRC.

5.1.3 Implementation results and conclusions

There have been four assessments of the net cost of US provision, the results of which are as follows:

Year	**Coefficient of efficiency - Designated operator works efficiently/inefficiently**	**The amount of monetary equivalent of the efficiency/inefficiency (x1000 BGN)**
2011	-0.53	- 2,339
2012	-0.05	- 290
2013	-0.07	- 482
2014	+0.04	+ 444

4 years after adopting the Methodology, our assessment is that it has more cons than pros.
Perhaps the biggest downside is that it takes into account only the changes in the efficiency between two years (comparing the period of net cost calculation to the previous financial year) and it is not taking into account the base level of inefficiency of the company.

Hence, CRC is looking to implement a new approach to assess efficiency. The independent auditors also recommended this after the audit of the documents associated with the calculation of the net costs for the most recent financial years, 2013 and 2014.

5.1.4 Proposed changes in efficiency assessment

The new approach for efficiency assessment is based on the methodology "Relative to a benchmark"– Regression analysis – Deterministic Frontier Analysis, listed as one of the applicable methods for calculating efficiency in the publication of Frontier Economics "Study on the principles used to calculate the net costs of the postal USO"[16].

The proposed methodology uses statistical techniques (ordinary regression analysis) to compare data for production levels to data for costs levels deriving a relationship between them. This method allows for the determination of a cost-output relationship for the efficient units and then the estimation of the inefficiency of the other units by quantifying the difference in terms of costs between them and the expected average statistical costs. This approach takes into account the basic level of efficiency or inefficiency of the company.

By regression analysis we found a correlation between the volume (posted items) and the total costs by the cost centres, which reflects the average statistical costs related to the provision of UPS as a function of traffic (volume of posted items). The cost centres of the designated USP are the territorial postal units in the postal network. All postal offices belonging to 28 divisions are grouped into five categories, depending on common characteristics – number of employees, number of delivered items, etc. (for 2013 and 2014 the cost centres were 119, grouped into 28 territorially units).

There are positive deviations of the actual costs of some cost centres expected to average statistical ones, which is an indication of inefficiency. The resulting regression statistics for 2013 and 2014 are R^2=0.991 and R^2 = 0.967 respectively, indicating that there is a linear relation between the cost and the number of items.

Comparing the results from the two approaches, there is a significant difference in the amount of the calculated monetary equivalent of the efficiency.

[16] http://ec.europa.eu/internal_market/post/doc/studies/2012-net-costs-uso-postal_en.pdf

Year	Efficiency under current methodology (thousands BGN)	Efficiency under regression analyses DFA (thousands BGN)
2013	-482	-2,383
2014	+444	-2,965

CRC has developed a new version of the Methodology for efficiency assessment and submitted it to the Council of Ministers. According to the PSA, the Methodology has to be adopted by the Council of Ministers before it becomes legally binding. Whilst this is in progress, the calculations of the net cost for 2015 is being assessed under the existing methodology.

5.2 Cyprus

5.2.1 Legislation

According to the National Electronic Communications Regulation Law 112(I)/2004, the NRA must ensure that postal tariffs are cost oriented and provide the incentives for the efficient provision of the universal service.

Also the need for efficiency is covered by Postal Services Order regarding the Costing System of the USP (tariff control)[17] and Postal Services Order regarding the Calculation of Net Cost of the Universal Service[18]. Both orders state the USP obligation to develop a costing system that incorporates the principles of efficiency, non-discrimination, transparency, objectivity, significance and costs allocation. Also they state that OCECPR costing models must comply with the same principles.

5.2.2 The Cyprus' Regulatory Framework

The output of the cost accounting system of the Universal Service Provider for both the retail and wholesale services, based on a Historic Fully Allocated Cost (FAC), is compared with that of the OCECPR costing model, based on the average total cost methodology (ATC). ATC is calculated to be the average cost associated with the provision of all relevant postal services, taking into consideration efficiencies and a mark-up of relevant general and administrative costs.

The costs quantified in OCECPR model are those of an efficient universal service provider, calculated in terms of the resources employed to serve the actual demand and the existing network of the USP in Cyprus. For example, the network is dimensioned assuming a scorched node approach around the main network nodes (local offices, district offices, sorting centres). A uniform distribution is assumed for the

[17] http://www.ocecpr.org.cy/sites/default/files/PS_Order_CostingSystemsPost_KDP493-2014_Gr_11-11-2014_PH.pdf

[18] http://www.ocecpr.org.cy/sites/default/files/PS_Order_CalculationOfNetCostOfUniversalService_KDP492-2014_Gr_11-11-2014_PH_0.pdf

other network elements such as customer premises and letter boxes. Adjustments are made of the whole postal process. For collection, the adjustment is made on human resources needed, for sorting the adjustment is made also on human resources for the non-automated activities. For transportation, the adjustments are focused both on human resources and necessary vehicles and finally for delivery the adjustment is made on human resources.

If there is a significant difference between the results of the USP's models and OCECPR's models, then the efficient estimates (as calculated from OCECPR models) are used as retail and wholesale tariffs.

5.2.3 Summary

In summary, the efficiency of the universal service is an important consideration in the Cyprus regulatory regime. OCECPR promotes efficiency through the tariff control (using its own costing models) and by encouraging competition by opening the market access points.

5.3 France

5.3.1 Legislation

French legislation (*"Code des postes et des communications éléctroniques"*) states that USP prices should be cost-oriented and should encourage the USP to provide efficient services, while taking into account the characteristics of the markets in which they apply. However, the law does not provide a clear definition of efficiency or efficient services.

5.3.2 France's Regulatory Framework

Arcep applies price-caps to tariffs to incentivize the USP to gain efficiency by reducing its costs in order to increase its margin or to keep it stable in a context of decline in volumes. Efficiency is not clearly defined by the NRA, even though it plays a role in tariff control policy.

Arcep does not really assess efficiency itself but tries to measure potential productivity gains throughout the price-cap period. A multi-year CPI-X price cap is set, in which X is negative, because when defining the level of this factor the potential for the USP to lower its costs with the declining volumes is assessed. This assessment is based on studies, forecasts and models made by the USP. It is re-evaluated for every new price cap.

Arcep considers the provision of the USO for the price cap, with its margin supposed to remain almost constant in a context of expected significant decline in volumes over the 2015-2018 period. The costs and margins are provided by La Poste's regulatory accounting, which is detailed enough to provide an allocation of the costs by product and process.

This particular approach has been chosen because it uses exogenous incentives for efficiency such as declining volumes to make sure prices are globally cost-oriented and that the USP is encouraged to

provide efficient services. It also allows the USP to have visibility on a four-year period and thus engage cost-reduction strategies. La Poste's regulatory accounting and its strategic plan for the years 2014 to 2020, which is based on studies commissioned by the USP, allows Arcep to estimate the cost reduction and the volume decrease in order to assess efficiency during the period of the price-cap.

Full market opening made the USP seek efficiencies by reorganizing its mail operations drastically between 2004 and 2011. Since then, intensified electronic substitution have resulted in it stopping investment in its automation program but made it search for efficiency gains in declining volumes, such as restructuring. It has started optimizing delivery by equipping every postman with a smartphone (this equipment is supposed to facilitate current operations and to create new features in the services of proximity; three applications have already been experienced: one for the signature of tracked objects, one dedicated to proxy and a third to manage the redirections). It has also designed the delivery routes more flexible than before.

In July 2014, Arcep established a new price-cap for postal tariffs for 2015 to 2018. This scheme sets a price-cap that is equal to the CPI + 3.5% a year. The margin is supposed to remain almost constant thanks to the price increase and to productivity gains from the USP, in a context where USP volumes are expected to decline by 6.3% per year on average over the period. This implies a real cost reduction of approximately 2.8% each year. La Poste does not separate cost savings due to volume decline and efficiencies. The 2.8% is therefore the total capacity of La Poste to decrease its costs in the context of a volume decline of 6.3%.

It also includes mechanisms for adjustment to inflation and number of items, which allow for the maximum tariff set by the framework to be reviewed during the regulatory period, either on the Authority's initiative or at the request of La Poste. This price-cap also includes a mid-term evaluation (in 2016) of the results of the USP, including in terms of efficiency gains.

5.3.3 Summary

In summary, efficiency of the universal service is not a key consideration in France’s regulatory regime. Although it is stated in the law that USP prices should be cost-oriented and should encourage the USP to provide efficient services, efficiency is neither clearly defined nor precisely measured. Arcep does not really assess efficiency itself, a multi-year price cap is set considering the assessed potential for the USP to lower its costs with the declining volumes.

5.4 Germany

5.4.1 Legal framework

The German regulatory regime, including tariff control, is largely based on the criterion of efficient service provision. This fundamental principle is laid down in Article 20 of the German Postal Act.

Criteria Applicable to Rates Approval

(1) Rates subject to approval shall be based on the costs of efficient service provision and should comply with the requirements of (2) below. (2) Rates subject to approval may not 1. contain any surcharges prevailing solely as a result of the provider's dominant position in the market; 2. contain any discounts prejudicing in anti-competitive manner the competitive opportunities of other companies in a postal services market; 3. create any advantages for individual users in relation to other users of postal services of the same type unless a legal obligation or another objectively justifiable reason can be evidenced. Due regard shall be given in particular to the costs of observance of the basic working conditions common in the licensed sector as well as the costs of postal service provision throughout the Federal Republic of Germany and the costs incurred by staff pension payments ensuing from legal succession to Deutsche Bundespost.

5.4.2 Germany´s Regulatory Framework

Efficiency issues play a substantial role in the context of price-cap regulation. Efficiency is linked to increases of productivity, which represents the main benchmark for price setting.

When determining the productivity growth rate (X-factor), which can be regarded as an equivalent for efficiency, the Bundesnetzagentur ('BNetzA') carried an in-depth-analysis of the logistic system aiming at identifying the scope of optimization potential. The efficiency assessments resulted in the following X-factor as part of the price-cap:

Price-cap-regime from 2003 to 2007	X = 7.2% (2003); X = 1,8% (2004 -2007) p.a.
Price-cap-regime from 2008 to 2011	X = 1.8% p.a.
Price-cap-regime from 2012 to 2013	X = 0.6% p.a.
Price-cap-regime from 2014 to 2015	X = 0.2% p.a.
Price-cap regime from 2016 to 2018	X = -5.8% in total

The determination of the expected productivity growth rate was based on a comprehensive analysis of the incumbent´s cost situation and structure. For this purpose, the German regulator conducted an in-depth analysis of the cost data for the different postal segments. For this purpose, the incumbent submitted detailed process related data deriving from the activity based cost accounting system. The process related data for the letter segment was split into costs for clearance, sorting, transport and delivery. For each of these steps of the letter conveyance chain the incumbent indicated the key drivers.

The table below shows the model used in the price-cap proceeding in 2007 for the determination of the incumbent´s productivity:

Nature of Work	Cost-share	Comparable industries / sectors	Growth p.a. of Total Factor Productivity (1991-2005)
Network-allocation	40 %	Trade; Finance- and corporate services	- 0,5 %
Network-procedure-steps (BZA,BZE,ZSP)	30 %	Manufacturing industry	+ 2,85 %
Management	7 %	Electricity- / Water-industry	+ 3,43 %
Fleet	6 %	Transport-industry	+ 4,08 %
Logistics	7 %	Transport-industry / IT-sector	+ 3,29 %
IT	3%	Finance- and corporate services	- 1,24 %
Fixed assets	8 %	Building-industry	- 0,25 %
Overall result			**+ 1,31 %**

Within the framework of the price cap proceedings in 2011, the BNetzA evaluated the impact of volume changes on the cost of the conveyance chain. In particular, the BNetzA assessed the interdependences between the mail decline in the different letter segments and the cost for the letter delivery system. In conjunction with the volume related data, the results of the time series analysis aim at specifying the cost characteristics and at investigating the extent of cost sensitivity. Based on these findings, the BNetzA determined a cost-function which was used to adjust both historical and forecast costs.

A challenging task of the BNetzA in the latest price-cap procedures, 2013 and 2015, was to evaluate the more intensive effects of the volume decline on the provision of universal services as consequence of the so-called e-substitution and its impact on the productivity figures.

5.4.3 Metrics used for efficiency assessments

BNetzA´s efficiency measurements involve additional metrics such as productivity parameters focusing on input and/or output related working hours or wages per hour versus patterns of other providers in a competitive environment.

In particular, BNetzA places significant emphasis on aggregated labour and capital productivity trends in comparable logistics markets. For estimating the efficiency of the underlying logistical processes, the analysis was carried out for each step of the conveyance chain. To obtain a more objective picture of the efficiency targets, each step was compared with the figures of the benchmark industries.

In an iterative internal multi-sector consultation process, BNetzA discussed the appropriateness of the different parametric and non-parametric methodologies. A main outcome of this consultation was that metrics such as total productivity factor as well as labour productivity factor can be deemed as suitable metrics for calculating efficient costs.

The German regulator made also extensive use of time series analysis of costs and cost drivers derived from the DPAG´s Activity Based Costing accounting system. The review aimed at assessing the productivity trends over time. Such a time series analysis referred to the costs for the different steps of the postal pipeline and volumes. The findings of this review provided a database for determining the efficiency targets and for identifying specific cost areas for an in-depth bottom-up analysis.

In addition to the cost assessment, BNetzA benchmarked the prices for single letters against the prices of other European countries. To ensure that the data were comparable, BNetzA made a number of pre-modelling adjustments taking into account the differences of the purchasing power parities.

5.5 Greece

5.5.1 Legislation

The legal reasons to consider the assessment of efficiency include Tariff Control regulation, dated 2003 and the Net Cost of USO regulation, dated 2013.

5.5.2 Approaches and methodologies

For the assessment of Tariff Control, Greece used the Total Derived Efficiency Ratio ('TDE'). The calculation of the ratio is the difference between the percentage changes of the total number of universal services minus the percentage change of the operating expenses of the universal services. The percentage change takes into account the costs for the period under consideration (forecast period) and the actual period costs (in current prices i.e. taking into consideration the inflation). The result of the ratio must be positive in order that the NRA approves the USP pricing list.

$$\text{TDE ratio} = \frac{\text{Period under consideration Volume}}{\text{Previous Actual Period Volume}} - \frac{\text{Period under consideration Cost}}{\text{Previous Actual Period Cost}}$$

The ratio underlines the need that either cost must reduce at a higher level than volumes decline or if volumes increase, cost must increase at a lower rate.

TDE ratio is calculated at different levels - product/weight scale, product group, service category and Universal Service in total.

Regarding the Net Cost calculation, the counterfactual scenario must have same efficiency as the factual one (must represent the existing situation concerning the level of competition in the market, the same technology in use by the USP etc.)

During the verification process, EETT may recalculate cost elements using bottom up calculations or may use market benchmarks in order to make sure that the inefficiency of USP doesn't increase the net cost. The calculation and verification of the USO Net Cost hasn't been conducted by EETT yet.

5.5.3 Conclusion

Efficiency is a very complicated issue and very difficult to assess/measure using a single ratio. The Total Derived Efficiency Ratio used by Greek NRA is an indicator for monitoring the efficiency progress of the USP and a tool for providing the incentive to continually improve efficiency (i.e. achieve positive ratios) since they are linked to the US tariffs approval procedure.

As TDE ratio is calculated at different levels (product/weight scale, product family, service category and universal service in total) and this gives regulators a better, broader picture on the USP efficiency.

5.6 Slovakia

5.6.1 Legislation

SK legislation (The Act No. 324/2011 on Postal services) requires consideration of efficiency only for the purpose of net costs calculation:

> § 56 of the Postal Act:
>
> *"The calculation of net cost of the universal service also takes into account the cost effectiveness of provision of the universal service and revenues and the market advantage that the universal service provider would not have gained if he had not provided the universal service"*.

In the secondary legislation (Decree of Regulatory Office on the way of calculation and compensation for net cost of the universal service) there is the following provision:

When considering the cost effectiveness, the assessment of the cost effective provision of universal service is done in relation to quality requirements in the Postal Act, especially in the Postal License, taking into account the lowest costs, irrespective of the actual level of provision of the universal service. The costs which were not incurred in accordance with the cost effective provision of the universal service are not included in the net costs.

5.6.2 Slovak´s Regulatory Framework

The assessment of cost efficiency was done within the net cost calculation. To assess the percentage/level of "inefficiency", the method of "Historical Comparison – total Productivity Factor" was chosen[19]. Total Productivity Factor is based on comparing average unit costs of postal services of actual year with average unit costs of postal services of reference year. The application of the inefficiency level to the net costs calculation was carried out by using an ex-post method, e.g. the net cost quantified on the base of actual accounting data were adjusted by the percentage of inefficiency. The reason for choosing this method is its simplicity and low extent of subjective assumptions.

5.6.3 Estimation of cost effectiveness of the Slovak Post

The cost efficiency of the Slovak Post depends to a large extent on the number of collected, handled and delivered postal items. The falling number of items puts pressure on the company to optimise its processes and reduce its costs in order to compensate for the fall.

The level of inefficiency was applied to the net cost calculation by "ex-post efficiency adjustment", i.e. the net costs were reduced by a % of inefficiency. When assessing the inefficiency to reduce the net costs, the year 2008 was used as the basis year to provide a benchmark of efficient provision. This was the last year of postal reserved area when the USP had both a peak number of postal items and peak levels of network capacity utilization. This was assumed to be the year when it achieved its greatest efficiency levels.

The levels of efficiency were calculated using the equation:

Cost Efficiency = Costs in Constant Prices / Number of Items

Where "Cost efficiency" equates to the level of costs spent on clearance, sorting and delivery of one postal item.

It is assumed that if the provider works at an optimal level of efficiency, the rate of cost reduction should be equal to the rate of the decline in the number of items.

Costs in Constant Prices are total costs reduced by depreciation and created reserves due to years comparability.

5.6.4 Summary

Between 2009 and 2015, Slovak Post reduced the costs in response to the reduction in postal items. However, unit costs were higher than the assumed efficient level of 2008.

[19] Study of Frontier Economics: Study on principles used to calculate the net costs of the postal USO, January 2013

The rate of decline in efficiency is calculated as the percentage growth of the unit costs YOY. This percentage has been moving between 2.89% up to 6.76%. Each year, the net cost calculation is reduced by this percentage to account for inefficiency.

5.7 The UK

5.7.1 Legislation

UK legislation (The Postal Services Act 2011) enshrines the requirement for Ofcom to consider in its regulation the efficiency of the provision of the Universal Service as provided by Royal Mail. The Act requires Ofcom to:

"*carry out their functions in relation to postal services in a way that they consider will secure the provision of a universal postal service".*

In doing so it requires Ofcom to:

"have regard to the need for the provision of a universal postal service to be efficient before the end of a reasonable period and for its provision to continue to be efficient at all times"
This means that UK regulation of postal services and, in particular, steps to ensure the financial sustainability of the Universal Service, should be based on ensuring that cost savings are made i.e. that Royal Mail should not rely on price increases to achieve financial sustainability.

In addition, the Act makes reference to efficiency with regard to an assessment Ofcom might make of the costs of the Universal Service. It requires that in reviewing the costs of the USO, Ofcom consider the extent to which the provider is complying with its USO obligations in a cost efficient manner.

5.7.2 The UK's Regulatory Framework

To date, Ofcom's focus on efficiency has been with regard to the first part of the legislation i.e. having regard to the efficient provision of the USO. Ofcom has not conducted a formal review of the costs of the Universal Service.

With regard to this primary duty, Ofcom monitors Royal Mail's efficiency performance using a variety of metrics which provide an indication of cost movements and drivers.

The UK's monitoring consists of an annual publication which can be found here:
http://stakeholders.ofcom.org.uk/post/monitoring_reports/monitoring-report-14-15/

The report includes data on cost movements of the part of Royal Mail's business which provides the USO, split into the key drivers of inflation, volume, one-offs and efficiency. Efficiency is the residual once the

other movements have been accounted for. This analysis is referred to as PVEO analysis; price or inflation (P), volume (V), efficiency (E) and other (O).

Other metrics adopted include the ratio of People Costs to the number of employees (FTE) which is compared to the trend in ratio of Revenue to number of employees.

The report also refers to Royal Mail's own efficiency metric, productivity, which compares the theoretical hours required in delivery and processing versus those actually taken. This provides a picture of the efficiency of key frontline cost areas but does not take into account pay rates or the whole of the business.

In addition to public documents, the UK obtains through its formal powers additional information to enable more detailed metrics to be produced which can be used to monitor performance internally. These include the hours reductions (split by activity i.e. delivery or processing) and a comparison of costs against Royal Mail's budget to see whether it is achieving its own targets.

The UK's internal monitoring regime also includes consideration of the cost changes proposed within Royal Mail's business plan for its USO business, as well as the underlying drivers such as hours' reductions and proposed pay rates. In this way, future as well as past considerations are taken into account when assessing efficiency.

Earlier in 2016, Ofcom published a consultation reviewing the UK postal regulatory framework. A key part of this review was consideration of the efficiency of Royal Mail. The consultation offered that Royal Mail was making efficiency improvements but that these were at the low end of a reasonable range.

The efficiency assessment is included in the Annex of the consultation which can be found here: http://stakeholders.ofcom.org.uk/consultations/royal-mail-regulation-review/

This assessment considered inputs from stakeholders, monitoring data as described above and additional analysis of efficiency from work commissioned by Ofcom. This included:

- Econometric Benchmarking of each of Delivery Offices and Mail Centres. This estimated potential future efficiency in hours and costs by comparing Delivery Offices (or Mail Centres) and controlling for external factors which could influence costs but are not in Royal Mail's control e.g. geography.
- International Benchmarking against European Peers – in particular initiatives undertaken elsewhere in Europe were considered. This considered Royal Mail's recent reduction in the number of Mail Centres, its increase in automation and
- An assessment of how costs might be expected to vary with volume.

Consideration was also given to Royal Mail's own public statements on efficiency, and cost reduction and the views of market analysts.

The framework review also considered what incentives Royal Mail has to become efficient to see if the regulatory regime should be adjusted to further incentivise improvements.

Incentives for efficiency were identified to include competition which exists both in access and parcel delivery. The review is considering the impact of Whistl's withdrawal from the end to end delivery of letters.

A further incentive for efficiency was identified to be market pressure as Royal Mail is a newly privatized business.

5.7.3 Summary

In summary, efficiency of the Universal Service is a key consideration in the UK regulatory regime. The regime is currently under review and detail of the assessments of efficiency can be found in the documents highlighted above. Ofcom currently believes that Royal Mail's efficiency improvements are reasonable.

Section 6 - Efficiency related activities, incentives and strategies

This section presents the exogenous efficiency incentives that have been identified by the NRAs. It also highlights the operational strategies and activities for improving efficiency that have been put in place by the USPs, with a potential to impact costs. Finally, the section sets out the incentives for efficiency that have been provided by NRA intervention.

The exogenous incentives derived from the market are determined by various business related and socioeconomic factors. The continuous decline in volume of letters primarily due to electronic substitution (e-substitution) and the increasing competition from other operators mainly in the parcels sector are the main incentives for the USPs to improve efficiency of their operations. Also, where the provider is privatised, the privatisation process plays a part, for example, shareholders require explicit targets for return on equity and dividend pay-outs.

Table 6-1 summarises all the answers to the efficiency questionnaire.

Table 6-1: Exogenous incentives for efficiency identified by NRA

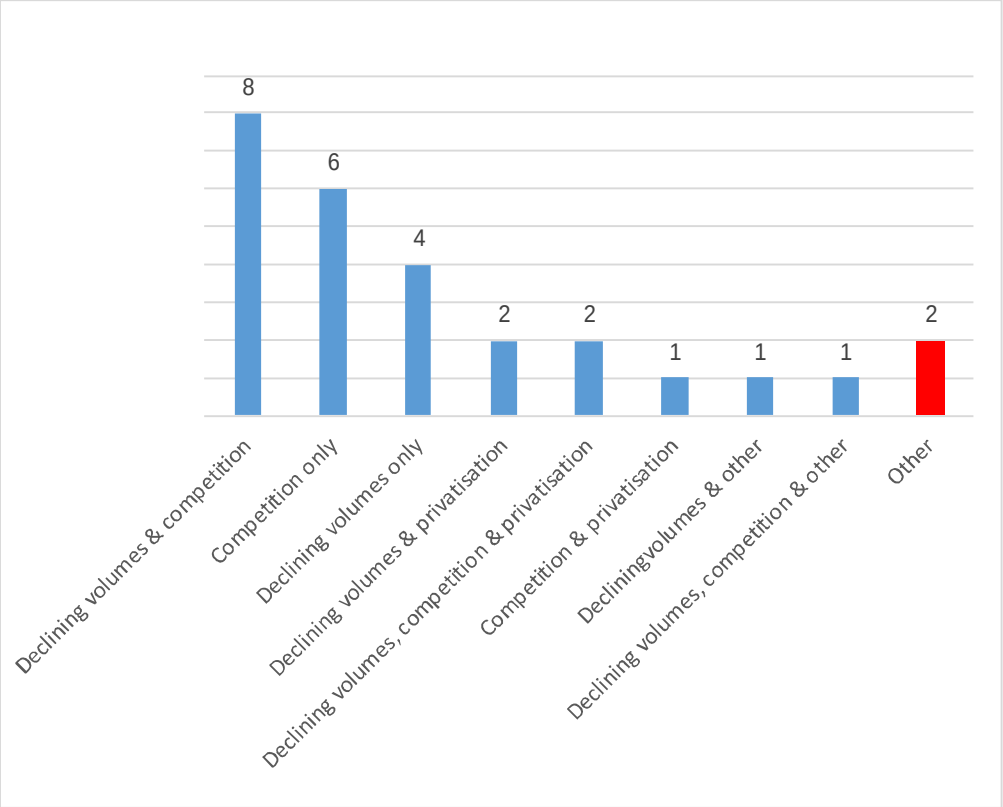
Incentive	No of responses	Countries*
Declining Volumes	16	AT,BE,CH,DE,EE,EL,FR,HR,IT,MT,NO,PL,PT, SE,SK,UK
Competition (parcels, letters, end-to-end, access)	18	AT,BE,CH,CY,CZ,DE,EL,ES,LT,LU,LV,NO,PL,PT, RO,SE,SK,UK
Privatisation of the USP and change in ownership	5	AT,MT,PT,RO,UK
Other	4	BE,BG,SE,SI

* See Appendix for country codes

This means 42% of the responses included competition as an incentive for USPs to improve efficiency, while declining volumes was identified as an incentive in 37% of the answers and 12% included the privatisation of the USP, equalling the number of countries where a privatisation process was undertaken recently.

Further analysis of the responses to the questionnaire is presented in Chart 6-1. The combination of declining volumes and competition formed the most common key driving forces for the USPs to find ways to be more efficient. Competition and declining volumes on their own rank second and third as the key drivers, while other factors seem to be less important in NRA's views.

Chart 6-1: Detailed analysis of responses about exogenous incentives



To face the challenges of declining volumes and increasing competition, USPs act in two directions. First, they take measures to reduce costs and second, they introduce new services while trying to improve the existing ones.

Based on the received responses, the key operational activities and strategies to reduce costs include the following:

- decreasing the size of the postal network including staff reduction; and
- optimisation of delivery.

Other operational activities identified in the costs reduction process are intergrading the letter and parcel deliveries, centralizing the logistical processes and distribution centres, automating the postal process (e.g. sorting) and introducing flexible delivery routes. Specific activities from various countries are presented below:

- replacement of own run offices by agencies (AT)

- changing the organizational structure (reducing nodes), modernization of sorting centres, utilization of postal offices (new services) (CZ).
- centralization of logistical processes, increasing integration of parcel and letter deliveries, extended introduction of final sequencing sorting machines (DE)
- conversion from post offices to postal services, as well as lower operating and administrative costs (NO)
- revision of means of transport, modification of the postal network centres, modification of the processes of sorting (PL)
- reduction of the number of sorting terminals, reduction of manual preparations to a minimum (SE)
- reducing the size of the postal network (collection) and optimizing home delivery (distribution and delivery), notably by reducing the number of delivery points and compelling addressees to bring their private letter-boxes into conformity with normative and regulatory requirements (CH)

In Portugal, the USP has been making efforts to improve operational efficiency by investing in mail automation and reduce costs by rationalization of resources of the entire production process, with particular emphasis on distribution. It has also been redefining the postmen's routes and has been reorganizing its postal network by reducing the number of total postal establishments, optimizing their operating times and by substituting owned post offices by postal agencies (managed by third parties).

Another example is found in the Royal Mail's case, the UK's USP, where activities to improve efficiency include: reducing headcount, modernising the network (e.g. automation of sorting, introducing vans and trolleys for delivery), adapting delivery network in order to share costs between letters and parcels and rationalising the network (e.g. reducing the number of mail centres, merging delivery offices, re-optimising routes).

Many USPs have been expanding and diversifying their services portfolio by providing new postal services and other non-postal related services such as financial and telecom services. In Cyprus for example, the USP started to offer local courier services and governmental services (i.e. issuing of various certificates, licences renewal etc.) by using the surplus capacity.

Besides the market driven incentives, most NRAs get involved in promoting efficiency mainly in the form of cost orientation and a price control mechanism. As it is shown in Table 6-2 and Diagram 6-2 below, the majority of NRAs impose either cost orientation requirements and/or ex ante price control for the efficient provision of the universal service. Promoting competition (e.g. mandating access to the postal network) is an incentive put in place by some NRAs.

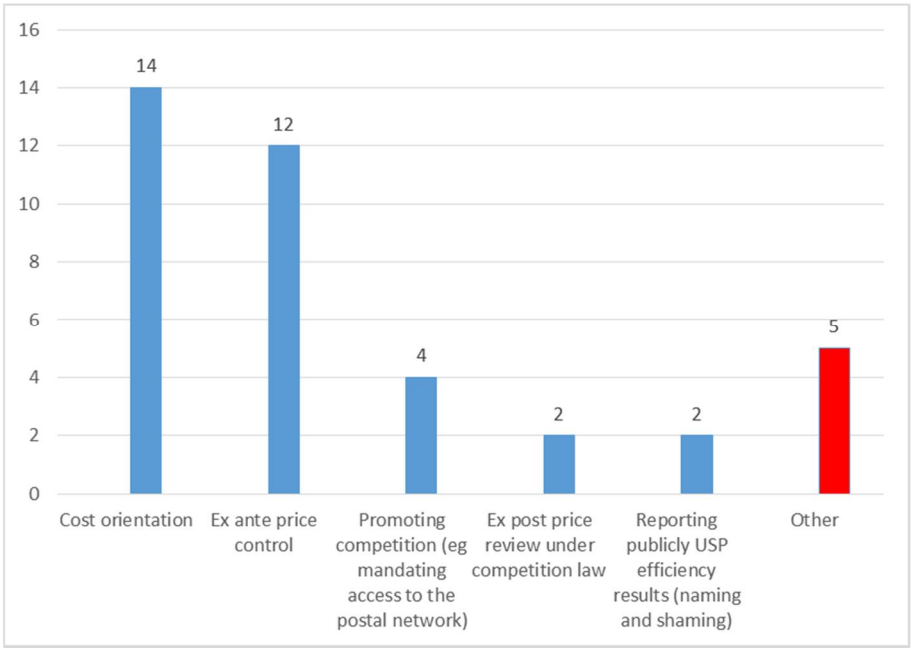
Table 6-2: Incentives for efficiency put in place by NRA intervention

Incentive	No of responses	Countries**
Ex ante price control	12	BE,CY,DE, EL,FR,HR,IE, LT,MT,PL, PT, SI
Ex post price review under competition law	2	EL,SI
Cost orientation	14	AT,BE,CY,CZ,EE,EL, IE*, LV,NO,PL,SE,SI,SK,UK
Promoting competition	4	CY,IT,SE,UK
Reporting publicly USP efficiency	2	LV,UK
Other	5	AT,ES,HU,MT,SI

* price cap in place which provides incentive for efficient provision of universal postal service, also Article 12 of Postal Services Directive requires prices shall be cost-oriented and give incentives for an efficient universal service provision.

** See Appendix for country codes

Chart 6-2: Analysis of responses for efficiency incentives put in place by NRA intervention



Conclusion

Changing market conditions, including the continuous decline in volume of letters as a result of e-substitution and increased competition, mainly in the parcel delivery sector, (due to the increasing volumes of e-commerce) all act as the main exogenous incentives for USPs to improve the efficiency of their operations. Their operational strategies are mainly concentrated on reducing costs and optimizing their operations covering both the universal service products and the products outside the universal service, together with offering new services. Where the NRAs get involved in the efficiency incentives, it is mostly done through cost orientation requirements and price control mechanisms.

Section 7 – Conclusions

This report sets out an overview of the process of estimating efficiency, from the legal provisions to the detailed approaches implemented by the NRAs. It surveys the methodologies and the parameters used by the NRAs in their assessments and the context in which these are undertaken.

Notwithstanding the high percentage of common costs and the fact that the postal sector is labour intensive, technological advances and service innovation can still play a role in postal services provision and can lead to greater economies of scale and scope. From an accounting perspective, costing and pricing can be regarded as both measurements and incentives for efficiency.

Declining volumes and increased competition are the most important incentives for efficiency identified by the NRAs. In addition, the NRAs put in place mechanisms to incentivise efficiency, especially through ex-ante price control and cost orientation requirements.

When assessing efficiency, NRAs apply a variety of approaches such as econometric techniques, time series analysis, expert reviews and benchmarking. The choice between them depends on the objectives and the scope of the evaluation and on the data available to the NRAs. As such, historical data is a prevalent source of data, although there are successful attempts to use forecasts. The Fully Allocated Costs (FAC) is by far more popular with the NRAs than marginal and incremental costing. The information provided by the USP is the key source of data in efficiency considerations, irrespective of the objectives.

The main methodologies in NRAs' hands for estimating or encouraging efficiency are cost efficiency and price cap. The measurement and incentivisation of efficiency with respect to the cost standard used - irrespective of the context in which it plays a role (tariff control, net cost calculation etc.) or the scope of its application (services under USO, services outside USO etc.) – vary according to the availability of the data and the purpose that is served by the efficiency assessment.

Appendix - Country codes for responding NRAs

AT – Austria
BE – Belgium
BG – Bulgaria
CH – Switzerland
CZ – Czech Republic
CY – Cyprus
DE – Germany
EE – Estonia
EL – Greece
ES – Spain
FR – France
HR – Croatia
HU – Hungary
IE – Ireland
IT – Italy
LT – Lithuania
LU – Luxembourg
LV – Latvia
MT – Malta
NO – Norway
PL – Poland
PT – Portugal
RO – Romania
SE – Sweden
SI – Slovenia
SK – Slovakia
UK – United Kingdom