

CO-INVESTMENT AND COMMERCIAL OFFERS



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Executive Summary

Background

European policy-makers agree that increased investment in very high capacity¹ (“VHC”) network infrastructure has broad economic benefits — to the telecoms sector and its consumers, and to national economies. Policy-makers view effective competition as the most effective spur for increasing such investment. Co-investment is therefore an attractive model of investment, insofar as it results in increased VHC network rollout and more effective competition.

On 14th September, the European Commission (“EC”) published its *Proposal for a Directive of the European Parliament and the Council establishing the European Electronic Communications Code* (“EECC proposal”, “the Code”). An amended version was subsequently published on 12th October 2016.²

The Code includes many changes to the regulatory framework for the sector, including an explicit regulatory treatment of co-investment which is intended to provide regulatory incentives to stimulate co-investment. This report analyses these proposals. In doing so, it draws upon both the experience of co-investment in Europe to date and economic and regulatory principles. We offer several recommendations that we believe will improve the Code in the area of co-investment.

We also consider the Code’s treatment of “commercial offers”³ — capacity and network sharing arrangements offered on an unregulated basis by operators with significant market power (“SMP”) — specifically considering the circumstances in which such commercial offers warrant a revision of existing regulatory requirements and their role in co-investment.

Lessons learned from current co-investment projects in Europe

Co-investment in Europe to date has followed a variety of different models. Some projects (e.g., Telecom Italia and Fast Web in Italy) have created a joint venture (“JV”) which sells fibre to the premise (“FTTP”) services primarily to the JV partners downstream. Others, such as operators in Spain and Portugal, have reciprocal access deals (e.g., swaps of network capacity in different territories) achieved through either passive or active access.

It is possible to distil from this range of examples some insights into factors that influence the likelihood of successful co-investment. Generally speaking, co-investment agreements between competitors are difficult to reach because of divergent commercial interests or strategic priorities. The simpler the project, the more likely it is to be agreed

¹ Defined by the EC as a “network which either consists wholly of optical fibre elements at least up to the distribution point at the serving location or which is capable of delivering under usual peak-time conditions similar network performance in terms of available down- and uplink bandwidth, resilience, error-related parameters, and latency and its variation”. EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, p124.

² This report discusses and references the amended version of the EECC proposal.

³ In this report, we use the terms “commercial offers” and “commercial agreements” interchangeably.

and implemented. Hence, bilateral agreements are more common than projects with multiple participants. Similarly, reciprocal access models of co-investment are more common than the JV model which involves more detailed management and governance arrangements.

The European experience suggests that regulation of co-investment can be complex. The regulatory approach to such projects should be aimed at ensuring – as far as possible – that co-investment materialises and leads to sustainable and effective competition. It also indicates caution in imposing overly prescriptive rules, such as access rules or rules that favour smaller operators and latecomers. Overly prescriptive regulatory requirements in regard to the structuring of a co-investment deal may ultimately prevent the deal from happening at all.

Co-investment and competition

Co-investment represents a new model of competition in the fixed market. By reducing costs and sharing of risk, it lowers barriers to entry for new players wishing to develop their market position as owners of fixed network infrastructure, especially in the last mile. This is potentially transformative for the fixed market as it would shift the model of competition from one that is based on wholesale access to SMP operators' networks to one of end-to-end competition between vertically integrated operators. Such network competition could also lead to a commercial wholesale market for fixed services as seen in the mobile industry.

However, co-investment projects are also agreements between competitors, and in the case of full-fledged JVs, may constitute “concentrations” or mergers. They would therefore potentially be of interest to competition regulatory authorities who would want to understand the implications of such agreements for competition.

The entry and expansion of new competitors into the fixed line market has implications for the way in which national regulatory authorities (“NRAs”) regulate the sector. To the extent that co-investment projects create networks that compete effectively with each other and with other players in the same market, they would have implications for SMP designations and the application of remedies. Competitive co-investment projects could therefore avoid being regulated themselves. Further, depending on the extent and symmetry of competitive constraints between the co-investment infrastructure and the regulated infrastructure, co-investment projects could ultimately lead to deregulation of other network infrastructure, following a market review process.

The current EECC proposal

The EECC proposal defines special treatment for co-investment undertaken by operators. The proposal provides a commitment that services provided by operators undertaking qualifying co-investment projects will not be regulated for the lifetime of the project. This is relevant for the SMP operator as it might otherwise find that the services it provided over a VHC network would be regulated. It is equally important for non-SMP operators considering a co-investment project, as they can undertake such investments with increased confidence that it will not be subject to *ex ante* obligations.

The qualifying criteria defined in the Code are based on the existence of an offer to potential partners to join a co-investment project. The offer needs to be open and non-discriminatory and remain available for the lifetime of the network that is built.

The regulatory framework should indeed provide appropriate incentives for companies to invest in new network infrastructure and should promote entry by competing networks. The Code aims to support co-investment as a way of facilitating this investment and competition in VHC network infrastructure. However, it has a number of significant limitations. These can be divided into two groups:

The overall approach is not targeted at the promotion of competition

The overall approach of the EECC proposal is one that “hard-wires” a regulatory treatment of co-investment projects if they meet the qualifying criteria. This puts the regulation of such networks outside the overall SMP-based regulatory framework and de-links the regulatory treatment of co-investment projects from their contribution to effective competition. It focuses on the existence of a co-investment offer rather than an actual project and it ties the hands of NRAs, limiting their flexibility to make regulatory decisions that are tailored to the specifics of the markets as they evolve.

It does not provide a sufficiently strong incentive for participants.

The Code only targets projects that contribute towards VHC networks rather than ones that result in the completion of VHC networks. It also attempts to insert safeguards for potential participants in co-investment deals through the use of restrictive criteria. These include a requirement that co-investment offers be open-ended and a focus on the co-investment offer rather than the project actually being implemented. Such restrictive criteria weaken the incentive for all operators to participate in co-investment projects.

Further, the proposal is for a commitment not to regulate which is limited in scope to the VHC network. In practice, NRAs often do not regulate the price of wholesale access to next generation access (“NGA”) networks built by SMP operators for a period of time in order to provide an incentive for them to invest. It is therefore unclear whether the regulatory incentive on SMP operators to participate in co-investment provided by the EECC proposal is significantly greater than the incentive for them to build VHC networks on their own.

Another aspect of the incentives facing an SMP operator considering a co-investment project is the regulatory treatment of its networks in the absence of such a project. For example, lower regulated wholesale access prices in the absence of co-investment (or, more generally, in the absence of end-to-end network competition) would further incentivise SMP operators to enter co-investment projects.

Recommendations for the co-investment provisions in the Code

The Code could be strengthened by making some changes to the way in which co-investment is treated.

Focusing the regulatory treatment of co-investment on competition

An SMP operator participating in a co-investment project may face competition from its co-investment partners, from other infrastructure operators, and at the retail level based on regulated access to its copper and hybrid copper/fibre network infrastructure. The regulatory treatment of services provided through co-investment projects should be linked to the effectiveness of competition in the market. Any specific commitment not to regulate VHC networks in the Code should therefore be limited to those that are built through co-investment schemes that lead to sustainable and effective competition.

Such regulatory treatment of co-investment projects should also be based on whether a project is actually or is reasonably expected to be implemented, rather than just the existence of a co-investment offer.

Co-investment projects are often sub-national in nature and, to the extent that such projects increase the effectiveness of competition, this level of competition is likely to vary significantly on a geographical basis. The Code should take this into consideration in the way that markets are defined and analysed.

Strengthening the incentives for participation in co-investment

Rather than linking the regulatory treatment of networks built through co-investment to an offer to co-investment partners, it would be better to link it to the actual establishment of a co-investment project. This would reduce the risk of SMP operators gaming the rules by, for instance, making a co-investment offer that is commercially unattractive to prospective partners or delaying the establishment of co-investment arrangements in order to benefit from the commitment not to regulate without actually having to support the entry of competitors into the market.

The EECC proposal only deals with the regulatory treatment of services provided over a VHC network that is built through a co-investment agreement. However, these services might be in the same economic market as services provided over hybrid copper/fibre networks (e.g., fibre to the cabinet (“FTTC”)) and potentially even services provided over “legacy”⁴ networks. Establishing competition on VHC networks through co-investment could therefore increasingly constrain the SMP operators’ wholesale products provided over its other networks. This creates the conditions under which effective competition could ultimately lead to deregulation of these products, following the usual process of market review.

In order to provide more regulatory certainty to all partners in co-investment projects, the Code could incorporate a set of “bright-lines”. These are criteria which help partners understand, in advance, whether the co-investment project will be considered competitive. If they are satisfied, the Code would require an NRA to presume that the project is effectively competitive unless there was evidence to the contrary. This enhances the prospect of investment by both SMP and non-SMP operators who would otherwise be concerned that their investment would automatically be subject to *ex ante* regulatory obligations.

⁴ In this report, the term “legacy” network is used to refer to pure copper networks.

Conversely, if an investment project failed to meet these bright-lines criteria, it would face the usual regulatory treatment. This might happen, for example, if an operator built a VHC network on its own or if the co-investment project was structured in a way that did not create effective competition. In these circumstances, an SMP operator might find its VHC services being regulated.

Commercial Offers

Commercial offers, in the context of this report, are wholesale transactions that take place in parallel to a product that is either regulated or prospectively regulated. They are typically related to the regulated offer but will differ in some of the terms and conditions (e.g., the term of the contract, provision of ancillary services, bulk or term discounts etc.).

In a competition analysis, commercial offers may be informative in two different ways:

- as an indication of competitive pressure; and
- as a source of competition.

In the first, commercial offers may warrant the relaxation of regulation. However, the emergence of commercial offers does not, by itself, indicate that there is sufficient competitive pressure to warrant the removal of a remedy. Competitive pressure of the sort that warrants a revision of current SMP remedies can only be diagnosed through analysing the likely outcomes in the absence of regulation.

In the second, the focus is on the ability of the commercial agreement to create sufficient incremental competition to warrant a revision of current SMP-based remedies.

Commercial offers in the form of long-term contracts such as indefeasible rights of use contracts (“IRUs”) also play an important role in co-investment. Such contracts offer many of the features that define co-investment projects for the purposes of regulatory evaluation. They may assign significant amounts of network capacity to another party, they may place no or limited constraints on what the network capacity is used for downstream and they provide long-term contractual assurance to the network owner that they will receive a stream of revenues in exchange for the provision of access. However, there may also be some circumstances in which IRU-based agreements that purport to be co-investment would, in practice, not increase the effectiveness of competition.

There is no simple way of defining ex-ante what types of commercial agreement would be pro-competitive and what would have the effect of restricting competition. It is preferable that the regulatory framework defines the principles which an NRA should apply in evaluating a co-investment deal. Commercial agreements can then be considered in this context.

1 Introduction and objectives

The EECC proposal, published on 14th September 2016, addresses many aspects of the regulatory framework for the sector. BRG has been commissioned by Vodafone to write a report on two of them: (a) co-investment and (b) commercial offers. It discusses the underlying drivers of co-investment and examines what effect the EECC proposal is likely to have on the rollout of new network infrastructure via co-investment vehicles. It then discusses how the Code could be strengthened in this regard. It also discusses the role of commercial offers in regulatory decisions about SMP and co-investment.

This report is based on an analysis of the EECC proposal and discussions with a wide range of stakeholders in the European telecommunications industry including challenger and incumbent operators, NRAs and individual experts. The analysis is focused on designing a regulatory treatment for co-investment that is based on the commercial reality of co-investment and how this is affected by regulatory decisions.

1.1 OBJECTIVES OF THE CODE

The European regulatory framework for the telecommunications sector was last updated in 2009.⁵ The review of the framework is an opportunity to reflect the considerable changes that have taken place in the market since then.

The Code is designed with the intention of contributing to the Digital Single Market (“DSM”) Strategy.⁶ Within this strategy are two major targets relevant to the subject of co-investment:

- incentivising investment in high-speed broadband networks; and
- ensuring a level playing field for the market players and consistent application of the rules.

These two objectives are targeted by the Code. The EC makes the end-goal more explicit by stating that ubiquitous VHC mobile and fixed infrastructure is a prerequisite to a fully functioning Digital Single Market.⁷

The EC views Europe as falling behind on fixed VHC investment compared to countries such as Japan and South Korea. In 2015, VHC networks represented around 70% of total fixed broadband connections in those two countries compared to Europe’s FTTP coverage of only 20.8% with penetration rates significantly lower (Figure 1).⁸

⁵ EC, 25th November 2009, Directive 2009/140/EC amending Directives 2002/21/EC, 2002/19/EC, 2002/20/EC, *Official Journal of the European Union*.

⁶ EC, 6th May 2015, A Digital Single Market Strategy for Europe COM(2015) 192.

⁷ EC, 14th September 2016, Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society – European Commission Staff Working Document SWD(2016) 300, p4.

⁸ Ibid, p4.

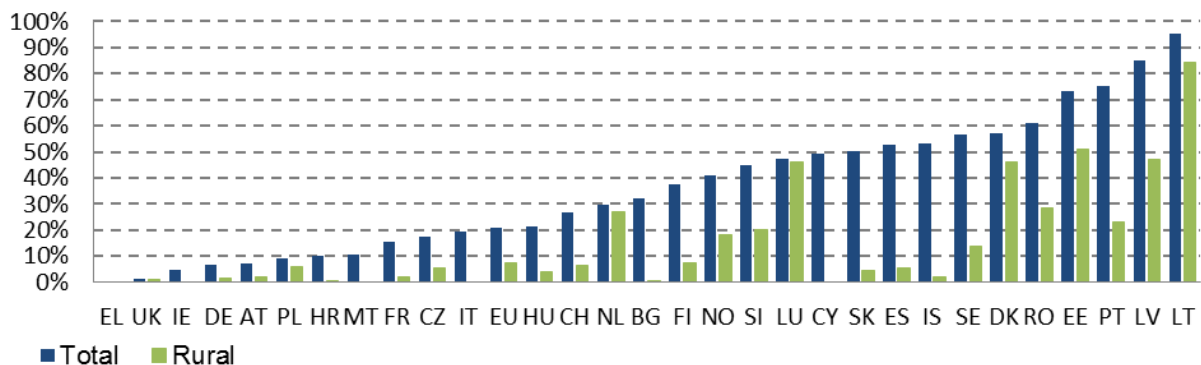


Figure 1: FTTP coverage, June 2015
 Source: EU Digital Progress Report 2016

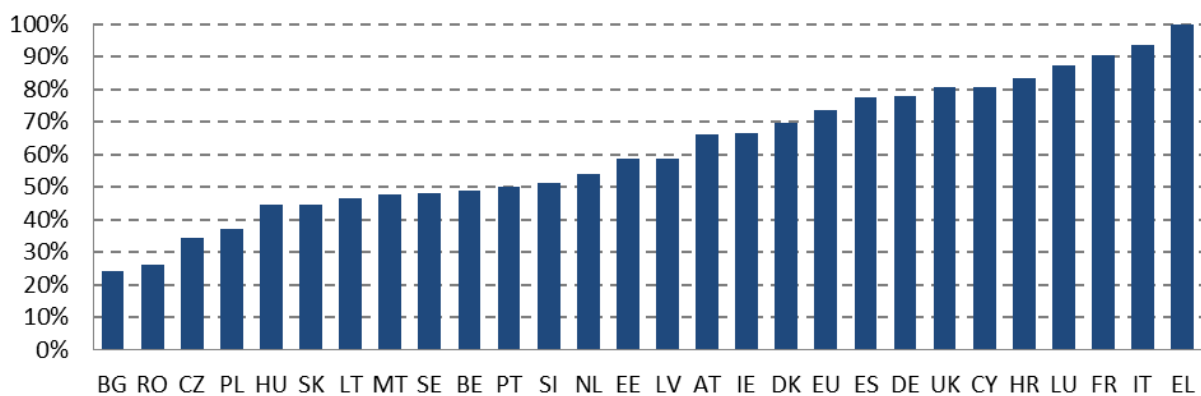


Figure 2: Share of fixed broadband subscriptions using incumbent infrastructure, July 2015
 Source: EU Digital Progress Report 2016

Incumbent broadband infrastructures account for more than half of broadband subscriptions in Europe (Figure 2). Thus most markets are unlikely to have effective competition at the wholesale level. Indeed, the EC has established that no European Union (“EU”) country, except for Romania, has effective competition at the wholesale local access (“WLA”) level.⁹ It is notable that Spain and Portugal, two of the few EU countries with relatively high FTTP penetration, are also countries with fibre to the home (“FTTH”) co-investment rollout agreements in place.

Building on the experience of co-investment projects in Europe, the EC has introduced co-investment provisions into the Code with the aim of introducing a “durable basis for sustainable competition” and to take account of the “risk sharing” of new network investment that co-investment would entail.¹⁰

1.2 THE CHALLENGE FACING THE EUROPEAN COMMISSION AND NRAS

Co-investment is widely regarded as a model which potentially supports both increased investment in VHC networks and increased competition. By lowering barriers to entry and

⁹ EC, 20th May 2016, Europe's Digital Progress Report 2016.

¹⁰ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, p16.

expansion in the market for fixed broadband services, it has the potential to unlock new sources of investment and to increase competition between fixed network operators.

This is potentially transformative for the fixed market as it would shift the model of competition from one that is based on wholesale access to SMP operators' networks to one of end-to-end competition between vertically integrated operators. Such network competition could also lead to a commercial wholesale market for fixed services as seen in the mobile industry. There is some evidence from across Europe that co-investment structures can deliver increased investment in VHC networks and more competition. However, there are still relatively few fixed network co-investment projects in place, unlike in the mobile industry where network-sharing and JV structures are common. This indicates that there are some significant challenges facing operators wanting to set up such arrangements in fixed networks.

The challenge facing the EC and NRAs is therefore to design a regulatory framework that maximises the incentives for operators, particularly SMP operators, to participate in such co-investment projects. However, this must be done while also:

- maintaining adequate regulatory protection for customers through, among other things, supporting effective competition; and
- avoiding opportunities for market participants to game the regulatory system to their own advantage.

Our analysis of the EECC proposal is undertaken from this perspective.

1.3 STRUCTURE OF THIS REPORT

This report is structured in the following way:

- Section 2 describes the experience of fixed network co-investment to date;
- Section 3 reviews the impact of co-investment on competition;
- Section 4 summarises the EECC proposal and provides an evaluation of its likely impact on the market;
- Section 5 outlines our proposals for strengthening the co-investment provisions in the Code;
- Section 6 discusses the implications of commercial offers on regulation in general and on co-investment in particular; and
- Section 7 concludes.

The Appendices contain more detail on co-investment case studies, the competition regulatory perspective on co-investment and market definition.

2 Co-investment in practice

2.1 MODELS OF CO-INVESTMENT

There are many examples where telecoms operators and other companies have co-operated in building and operating networks. There is a lot of variation in the way these co-operative structures are designed and no two examples are the same. However, they do have some common features. These include:

- agreement between the parties on the development of new network infrastructure (although agreements may also include existing network infrastructure);
- sharing of the risk of investments in network infrastructure; and
- mutual or shared obligations on the parties relating to the operation of networks and the provision of access to them.

The co-investment agreements that are seen in practice or that are being discussed can be grouped into three general models:

- JV models;
- Reciprocal access models; and
- One-way access models.

These are illustrated in Figure 3 and described in more detail below.

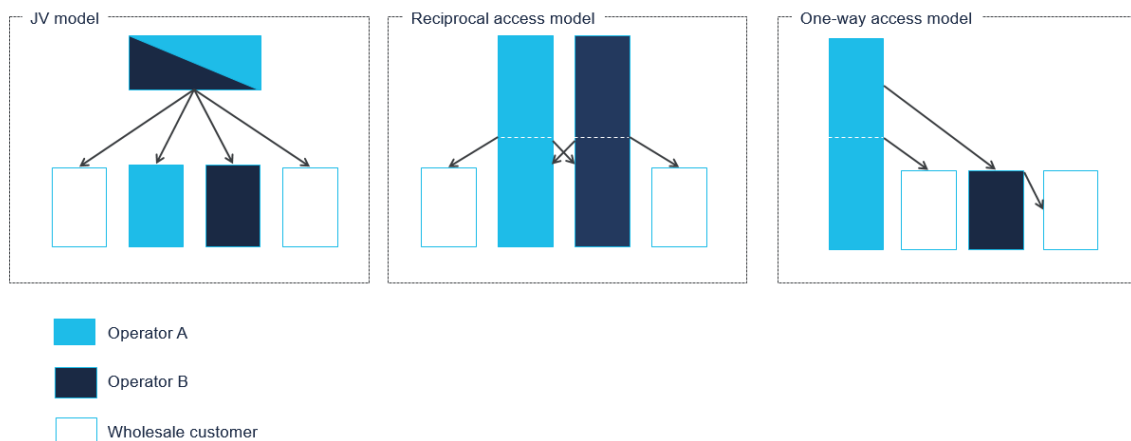


Figure 3: Models of co-investment

JV model. In the JV model, partners establish a new entity (“JVCo”) which they jointly own and control. JVCo is responsible for developing and operating network assets which are made available to the JV partners and potentially to third parties on a wholesale basis. The key feature of this type of co-investment model is the creation of an entity that is separate from its owners. Beyond this, there are many different options for the way in which it is set up. Partners may contribute assets to JVCo, or they may just provide

financing and JVCo is then responsible for building new network infrastructure. The trading relationship between JVCo and downstream parties, including the JV partners could be on an arms-length transactional basis or participation in the JV could provide rights of access to a proportion of the capacity of the network.

Reciprocal access model. In reciprocal access models, partners are responsible for developing and operating their own network infrastructure, usually in geographically separate areas, and there are reciprocal access arrangements that allow parties to the agreement to serve customers via each other's network infrastructure. The nature of these access arrangements varies between projects but the basic structure is common.

One-way access co-investment models. These models also do not involve the establishment of a JVCo and are based on the provision of wholesale access. The key difference between this type of co-investment model and the reciprocal access model is that only one party builds the network and provides access to the other party. Such arrangements could still be considered to be co-investment if certain criteria are met. These criteria could include, for example, whether the contracts for access are sufficiently large and long-term to have a material impact on the risk of the investment.

In addition to the underlying structure of the co-investment arrangement, there are several other important features of co-investment projects that differentiate them from each other.

2.1.1 Network infrastructure

The focus of the EECC proposal and this report is fixed-line infrastructure, in particular networks that are capable of providing high-speed broadband connections to customers. In practice, this means that it has to include network components that are either fibre-optic or capable of delivering equivalent technical performance and that reach close to the customers' premises. This is explicit in the EECC proposal.¹¹

Beyond this basic requirement, co-investment projects could cover a range of different network components. At the lowest level of the network hierarchy, the co-investment project could be established to develop passive infrastructure (i.e., ducts and poles) which are then supplied to partners or to third parties. Alternatively, the project could develop a dark fibre network or it could install active equipment and provide active services to its customers.

Another key design characteristic of the network infrastructure is where the network infrastructure that is built fits into the existing networks of stakeholders. Co-investment projects typically focus on the bottleneck components of the network infrastructure which is from the exchange or the cabinet down to the customer premises. In some cases (e.g., France) the network sharing/co-investment arrangements focus on an aggregation point even closer to the customer although, in the French case, this varies between areas of the country. Arrangements may also be needed for access to and management of in-building wiring in multi-dwelling units ("MDUs"). This may be part of the co-investment

¹¹ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Recital 13.

project or it may be separately managed or regulated. JV models of co-investment can cover all of these different combinations of network characteristics.

Reciprocal access co-investment models can also cover a range of different network components. They can involve providing reciprocal access to dark-fibre or to an active wholesale product. They could also involve only mutual access to duct and pole infrastructure although, under the current regulatory framework, this type of arrangement is more likely to arise as a result of symmetrical passive infrastructure regulation than a co-investment agreement.

The one-way access model of co-investment could also cover all combinations of the network characteristics outlined above. An access seeker could purchase long-term contracts for “capacity” on another operator’s network and this capacity could be in the form of passive access, dark-fibre or active services. In the case of passive access and dark fibre, it could also cover the range of different locations within the access network (i.e., customer premises to the distribution point, the cabinet or the exchange).

2.1.2 Operation and maintenance

Any network infrastructure built under a co-investment structure will need to be operated and maintained by someone. JV models of co-investment have flexibility in how they set up the operations and maintenance functions for the network and the co-investment agreement would include the operational and financial details of these arrangements.

In the case of reciprocal access models, each operator builds and operates the network in defined areas. Wholesale access is provided by each of the operators up to the point of handover.

In the one-way access model, the owner of the network infrastructure would operate and maintain it and service level agreements (“SLAs”) would be included in the long-term contracts agreed with the access seekers.

2.1.3 Geographical coverage

A central aspect of the design of a co-investment project is its geographical coverage. In the case of fixed networks, this would usually be defined as the homes passed or connected by the network. In most types of co-investment structure, there would be agreement on how to decide and manage upgrades and expansions in coverage or capacity. This can be a difficult process to manage in a JV and in other forms of network sharing arrangement.

2.1.4 Trading arrangements

The trading arrangements define how the co-investment project supplies services to other entities. This includes:

- **The specification of the product.** This will be determined by what the co-investment network has been designed to do. For example, if it is a dark-fibre network, the product supplied will be dark-fibre access. Alternatively, it could be an active service (i.e., a bitstream or virtual unbundled local access (“VULA”)-type

product). There may be some types of co-investment structure which supply more than one type of product (e.g., dark fibre and active wholesale products).

- **To whom the product is supplied.** Some types of co-investment project are designed as self-supply or production arrangements in which operators that are active in the retail market use the co-investment to develop network infrastructure for supplying their own retail customers. Alternatively, the co-investment project may also be designed to supply services to third parties and to be active in the wholesale market. In the case of reciprocal access co-investment projects, services are provided only between parties to the agreement, although partners may be able to sell their capacity to third parties on a wholesale basis.
- **The price of the product.** The price of the product is a key feature of the co-investment structure. In the case of a pure self-supply arrangement, there may be no charge at all for the product supplied through the co-investment project. Partners could establish the right to a certain amount of capacity on the network through their investment in it and there is no additional charge for that capacity when it is activated. Alternatively, there could be a charge for the supply of products where they are supplied to the co-investment partners and also when they are supplied to third parties. In these cases, the co-investment entity generates revenue which ultimately flows back to the owners. The price for the supply of services by the co-investment entity has to be determined and this could be done in advance in the agreement or could be done through a governance structure. There may also be different prices set for supply to partners compared with supply to third parties. In the case of reciprocal access co-investment models, there may be a charge for supply of wholesale products on the partner's network. This price would usually be set in advance through the co-investment agreement. In the case of one-way access models, a payment is made by the access seekers to the owner of the network through a long-term contract.

2.1.5 Governance

The governance structure that manages the co-investment project will make decisions on development and operation of the network and will provide a mechanism for monitoring and enforcing compliance with the terms of the agreement. The design of this governance structure is likely to be more critical in co-investment projects that have multiple partners than in bilateral arrangements because the number of stakeholders will be larger, compliance may be harder to determine and the interests of partners are more likely to diverge.

2.1.6 Ownership

The ownership structure of the co-investment project will vary according to the model of co-investment and the way it is implemented. In one-way access models the network is owned by one entity and access is provided, usually on a long-term basis through IRUs. IRUs provide some of the characteristics that are associated with ownership (e.g., the right to exclusive use, guarantee of long-term control, protection in event of bankruptcy of the

supplier etc.) but they typically do not give the holder rights to make decisions on new investments, upgrades etc.

In reciprocal access models, the ownership structure is relatively straightforward. The partners own their own networks and supply services to each other.

In the JV model, ownership is more complicated. The typical structure would be an investment by the founding partners. Unlike the other two models, this model can allow flexibility in terms of the structure of ownership, and also allows transfer and late entrance. Ownership arrangements are further complicated if parties transfer ownership of existing assets to the JVCo or lease access to them.

2.2 EXAMPLES OF CO-INVESTMENT

There are many examples of co-investment projects in the telecoms industry. Traditionally these have been more common in mobile than in fixed. Co-investment is also very common for submarine cables which have traditionally been developed by consortia of operators and other parties.

There are significant differences between these types of co-investment. Co-investment in fixed networks has been typically focused on the development of new fixed infrastructure. Mobile co-investment, on the other hand, has been more focused on sharing of existing networks with some provisions for network expansion. The co-investment arrangements for submarine cables have been established with the explicit intention of developing new infrastructure. However, in the majority of cases, members of submarine cable consortia are not direct competitors in retail markets, so the commercial dynamics of these arrangements are different from co-investment by competitors in domestic infrastructure. In this section, we provide an overview of some examples of fixed co-investment projects. More details are provided in Appendix A.

Spain and Portugal both have extensive network rollouts built through multiple co-investment projects. Italy has a co-investment project between Telecom Italia and Fastweb, called Flash Fiber. Vodafone also has an agreement in Italy with ENEL, the electricity company, although this is more accurately described as a commercial offer rather than a co-investment project. France is an anomaly in Europe in that co-investment FTTH rollouts are more directly regulated. In Ireland and Switzerland, co-investments have been launched between operators and utility companies. In Turkey and Greece, the intention to co-invest between various operators has recently been announced but not yet implemented.

In terms of the co-investment models described above:

- The deal between Telecom Italia and Fastweb and the deal between Vodafone Ireland and Electricity Supply Board (“ESB”) are examples of the JV model which involve the establishment of a JVco to sell the network services.
- The deals in Spain and Portugal (Jazztel/Telefónica, Vodafone Spain/Orange and Portugal Telecom (“PT”)/Vodafone Portugal) are reciprocal access deals.

- In France, the one-way access model is used between the “building operator”.¹² and operators who wish to use the access.

The assets included in the agreements range from those used to provide active services such as bitstream and VULA to different types of passive assets. The Vodafone/Orange reciprocal access deal in Spain is an active swap, [X]¹³ The majority of the other co-investment projects share on the passive level. The Jazztel/Telefónica agreement shares passive access only from the manhole outside of the building to each household. [X] The Telecom Italia/Fastweb deal involves a JV building a dual PON network. In France, arrangements are passive, and the point where operators connect to the mutualisation point is mandated by regulations.

The trading arrangements follow from the type of model and network infrastructure involved. [X] In passive deals, the arrangement is often based on a one-off payment for an IRU. There is also often a small per connection/activation charge.

In the reciprocal access agreements, the operations are kept separate and each partner operates and maintains their own networks. In France, the building operator maintains control of the network. Under the JV models in Italy and Ireland the separate entity maintains control of the network.

More information on these examples is provided in Table 1.

¹² The “building” operator is the operator that first rolls out an FTTH network to a building.

¹³ Confidential details are marked with X in the non-confidential version of this report.

Table 1: Co-investment examples

Project partners	Country	Model type	Year agreed	Details
Telecom Italia and Fastweb (Flash Fiber)	Italy	JV	2016	<ul style="list-style-type: none"> Plans to build an FTTH network covering 3 million premises by 2020 at a cost of €1.2 billion Dual PON network between cabinet and premises JV will be restricted to selling mainly to Telecom Italia and Fastweb
Telefónica and Jazztel	Spain	Reciprocal access	2012	<ul style="list-style-type: none"> Sharing agreement based on access from the local optical exchange to each building unit 1.5 million households covered by each partner, 3 million total Required both operators to invest in extending and modifying their networks, thereby establishing two independent networks in parallel
Vodafone and Orange	Spain	Reciprocal access	2013	<ul style="list-style-type: none"> Active service covering 3 million households [§<]
Orange and MásMóvil	Spain	Reciprocal access	2016	<ul style="list-style-type: none"> Result of remedies imposed as a result of the Orange/Jazztel merger Active service Asymmetrical with Orange covering more than MásMóvil
French fixed operators	France	One-way access	2010	<ul style="list-style-type: none"> ARCEP set technical and economic rules First operator to connect a building with FTTH is mandated to provide access to other interested operators at mutualisation point and offer co-investment
PT and Vodafone	Portugal	Reciprocal access	2014	<ul style="list-style-type: none"> Passive agreement covering 900,000 households (i.e., 450,000 each) [§<]
Vodafone and Optimus	Portugal	Reciprocal access	2010	<ul style="list-style-type: none"> [§<] Each party pays a fee per customer connected
Vodafone and ESB (SIRO)	Ireland	JV	2014	<ul style="list-style-type: none"> 50/50 JV rolling out to 500,000 homes at a cost of €450 million JV to offer wholesale openly
Vodafone Turkey, Turkcell and others	Turkey	Not confirmed	2016	<ul style="list-style-type: none"> [§<]

2.3 WHAT MAKES CO-INVESTMENT WORK IN PRACTICE?

There are lessons to be learned from the experience of co-investment in the telecoms industry which are relevant for the way in which the regulatory framework should treat such projects in future:

- Co-investment projects can be complex and difficult to agree and implement. They usually only work when partners are willing participants and each obtain significant commercial benefit from the arrangement which they could not match by investing on their own. These difficulties are greater when the participants are direct competitors to each other.
- Co-investment projects are easier to implement between partners of comparable size and when their strategic objectives are aligned towards cooperating on new network investment. A number of different factors can contribute to this alignment. For an SMP operator, these would include competitive threats from other fixed networks and the set of regulatory incentives that the operator would face if it were to develop VHC networks on its own rather than through a co-investment model. Significant differences between partners or in their strategies can create problems that prevent operators from being able to reach an agreement in the first place or result in major impediments to the implementation of the project.
- Significantly asymmetric project structures can also create problems. This is particularly relevant when an operator with SMP in the market overall also has the majority control of a co-investment project. This allows it to potentially exert undue influence over the design of the agreement and then in its operation. Such a situation can, in practice, be an extension of the operator's market power into the design and implementation of the project.
- Some co-investment structures are easier to implement than others. Bilateral arrangements in which two operators agree to develop separate networks and provide each other with reciprocal access are typically easier to establish and operate than JV structures involving more than two partners. The more partners there are in a co-investment project, the more difficult it becomes for them to reach a common agreement and establish the project in the first place.
- Co-investment is easier in stable market environments when market development is relatively predictable. Co-investment arrangements usually include provisions to allow expansion or upgrade of the network but implementing such changes can be difficult if there are differences in the network and corporate strategies of the partners.

3 The impact of co-investment on competition

The underlying objective of the co-investment provisions in the EECC proposal is to promote investment in fibre-based access networks and to stimulate competition in the broadband market.

One view of co-investment is that, by lowering barriers to entry for fixed network operators, it creates a more competitive fixed-line market at the retail and, potentially, the wholesale level. This comes about because, even though a co-investment project might involve building a single piece of network infrastructure, it would include multiple dark fibres or virtual connections which allow participants to compete directly with each other.

More operators with direct access to fixed-line infrastructure, either built and operated by themselves or through access agreements with partners, means that customers have a choice of both retail service provider and the networks over which those services are delivered. However, co-investment projects are also horizontal agreements between actual or potential competitors. They therefore have the potential to soften competition. Such effects could be seen in the upstream market through foreclosure of entry or in the downstream market through coordination between the co-investment partners.

This issue was recognised by BEREC in its 2012 report on co-investment.¹⁴ The report noted that co-investment was potentially a positive mechanism for increasing investment in FTTH but found that the characteristics of the arrangement were important for determining whether agreements resulted in situations resembling monopolies or effective competition. The factors that were considered to create a risk of an anti-competitive outcome included:

- a low number of partners in the co-investment project and limited competition from other networks;
- a JV rather than long-term agreements, depending on the contractual terms of the JV agreement;
- mono-fibre instead of multi-fibre networks, because multi-fibre does not require a manual change in the case of churn, due to multiple fibres allowing multiple operators connecting to each house simultaneously;
- exclusivity agreements, because they restrict outside operators from participating;
- exchange of information between partners; and
- compensation mechanisms, because certain types of compensation mechanism could cause partners not to operate independently.

This issue is relevant to the way in which the EECC is drafted for two reasons. First, the EECC should provide positive incentives for parties to enter co-investment agreements but it should also ensure that those agreements do not create a mechanism for softening

¹⁴ BEREC, April 2012, BEREC report on Co-investment and SMP in NGA networks BoR (12) 41.

of competition. Second, if the commitment not to regulate is linked to the establishment of competition, the criteria for evaluating proposed co-investment agreements should focus on the extent to which they promote competition in the market.

We discuss the impact of co-investment projects on competition in two different institutional contexts:

- A competition authority reviewing a co-investment agreement either ex-ante (i.e., if it was required to approve such an agreement before it was implemented) or ex-post (i.e., if it undertook an investigation into the effects of an agreement once it was in place) would consider the extent to which the co-investment project could soften competition.
- An NRA would be required to consider it when undertaking a market assessment and the consequent design of remedies to be applied to any party found to have SMP. By extension, this analysis is also relevant for the drafting of the EECC because it lays out the framework for the way in which ex-ante regulations are affected by co-investment.

We also consider how regulatory authorities have treated co-investment projects in the countries where they have been implemented. This experience is relevant for the Code proposal because it should be drafted in a way that focuses on the role of co-investment in enhancing competition and avoids some of the potentially negative outcomes.

3.1 COMPETITION ASSESSMENT OF HORIZONTAL AGREEMENTS¹⁵

Operators competing in the fixed-line market have traditionally been either vertically integrated (e.g., the incumbent fixed-line operators, cable TV networks) or have relied on regulated wholesale access to the SMP operator's network. Co-investment creates horizontal agreements between operators to expand and share networks. This is potentially a means to increase competition by lowering barriers to entry but also raises questions about whether such horizontal agreements could result in a softening of competition.

Economic analysis under the competition law approach starts by looking at the market that the co-investment network is operating within. This relevant market will usually be wider than the co-invested network itself and such networks will face competitive constraints from operators outside the agreement using different infrastructures (e.g., cable). Wholesale access regulation of the SMP operator's legacy and hybrid copper/fibre network is also likely to create a competitive constraint on the co-investment network at both wholesale and retail levels.

Co-investment structures may enhance competition by lowering barriers to entry into the upstream market and creating more competition between network operators. However, this pro-competitive effect could be adversely affected if the co-investment agreement

¹⁵ Appendix B discusses the competition law framework and the economics of production agreements in greater detail.

creates mechanisms for the participants to establish and exercise market power. This could happen in several ways:

- The design of the co-investment agreement could effectively restrict supply or elevate price in a way that mimics the competitive effects of a merger. This can happen even when the firms appear to be competing vigorously downstream.¹⁶
- Choices made with respect to network design and operation (e.g., cost-sharing rules, restrictions on the ability of partners to expand or install capacity independently, restrictions on the ability of third parties to access capacity on the network and the extent to which the network design induces similarities in cost structure and product offering between co-investing partners) can soften competition between the co-investing parties, facilitate coordinated behaviour and exclude aggressive or innovative competitors.
- Co-investment deals can facilitate information sharing and be used to signal future pricing or product decisions at the retail level. Even without any explicit information sharing, co-investment deals can (depending on their structure) provide competitors with visibility over their rivals' network deployment plans that owners of separate infrastructures would not have.

An important feature of the competition law treatment of horizontal agreements is that it weighs any possible negative effects arising from this exercise of market power against the economic benefits that might be produced by the agreement.¹⁷ Similarly, competition authority scrutiny of co-investment projects will be informed by consideration of the alternatives to the co-investment deal. For example, it would consider:

- Whether the parties to the co-investment would realistically have built their own VHC network absent the agreement. Co-investment deals can promote competition both in the upstream and the downstream market if, for example, the co-investment deal overcomes key hurdles to investing in VHC networks and especially if it results in the possibility of additional operators acquiring stakes in infrastructure.¹⁸ If these conditions hold, the efficiencies (e.g., new products, additional wholesale competition, continued retail competition) associated with the co-investment are likely to be significant.
- Whether any restrictions on third-party access, or other restrictions on competition, are integral to achieving the efficiencies of the co-investment. In the context of a market where the co-investing parties do not have high individual or collective

¹⁶ For example, a JV vehicle with a dominant position upstream could set a transfer price for each additional line that equals the price that a dominant firm in the downstream market would choose. The downstream arms of the JV partners can act as passive price-takers but the monopoly profits are earned upstream and can be divided up between the parent firms. This can be done without any coordination of retail behaviour.

¹⁷ EC, 14th January, 2011, Guidelines on the Applicability of Article 101 of the TFEU to Horizontal Co-Operation Agreements 2011/C 11/01.

¹⁸ This is true at least if the co-investment deal allows for leasing capacity to third parties.

market shares, these restrictions are unlikely to prevent approval of the project. This is particularly so given that competition law provides a means to review the competitive effects of such restrictions, ex-post.¹⁹

Regulatory authorities have taken these issues into account when operators have proposed co-investment agreements. In Spain and Portugal regulators appear to have concluded that the proposed projects were unlikely to have an adverse effect on competition as they have not blocked them or launched investigations. However, on 9th February 2017, the Italian competition authority announced that it had launched a formal investigation of the Telecom Italia/Fastweb joint venture. The nature of these different agreements is described in more detail below.

Appendix B provides more details of the competition law framework that applies to the assessment of production agreements, such as network sharing and co-investment. It also includes a discussion of the economic literature on upstream production agreements, which informs the European Union's guidelines on the relevant subject.

3.2 IMPACT OF CO-INVESTMENT ON SECTOR REGULATION

Co-investment has the potential to affect competition at both the retail and wholesale levels of the fixed-line market. When evaluated from the perspective of the traditional SMP framework, co-investment is therefore potentially a spur for two separate regulatory decisions:

- a decision regarding the regulatory treatment of co-investment projects that involve the SMP operator; and
- a decision regarding the continued regulation of hybrid copper/fibre and legacy networks owned by the SMP operator, if co-investment imposes a competitive constraint on such networks.

A critical factor in these decisions is the definition of the relevant markets. The focus of NRA market reviews under the EU regulatory framework is at the wholesale level²⁰ and there are two markets that are relevant in this context:²¹

- Market 3a - WLA provided at a fixed location; and
- Market 3b - Wholesale central access provided at a fixed location for mass-market products ("WCA").

¹⁹ Agreements between competitors that did not pose anti-competitive concerns at the outset could pose anti-competitive effects at a subsequent date, e.g., because over time the market share of parties to the agreement increases substantially through merger or changed market circumstances.

²⁰ EC, 25th November 2009, Directive 2009/140/EC amending Directives 2002/21/EC, 2002/19/EC, 2002/20/EC, *Official Journal of the European Union*.

²¹ EC, 9th October 2014, Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services 2014/710/EU, *Official Journal of the European Union*, Annex.

Co-investment projects can have an impact on markets 3a and 3b through both direct and indirect channels. The direct channel is where the network built by the co-investment project is used to sell directly at the wholesale level. The indirect channel is where competition at the retail level between vertically integrated operators constrains the ability of an SMP operator to raise its wholesale prices. The potential for co-investment to create competition is noted in the EC's NGA Recommendation which describes some of the features of co-investment projects which might result in a competitive market and thereby affect the way in which markets are defined on a geographical basis.²² The following sections discuss the regulatory implications of co-investment in more detail.

3.2.1 Regulatory implications of co-investment projects

It is worth starting with a first-principles approach to the regulation of the services provided by participants in a co-investment project. The first step would involve defining the relevant product market around the co-investment project. This would require an analysis of the constraints on the market power of a hypothetical monopolist that provided broadband services based on the technology (i.e., VHC) used by the co-investment project. The relevant market would include all services offered via alternative platforms whose capacity a hypothetical monopolist would need to control in order to raise the price of its VHC service profitably above the competitive level. Once this relevant market is defined, factors such as market shares and barriers to entry in the relevant market would determine the need for regulation, if any.

If the SMP operator's hybrid copper/fibre and legacy networks are in the same relevant market as the VHC network, any attempt to raise the price of retail services provided by that operator would be likely to see strong substitution to alternative retail providers. This competitive pressure could be provided by:

- other participants in the co-investment project;
- alternative vertically integrated retail competitors not in the co-investment project;
or
- retail competitors that use regulated access to the SMP operator's other networks.

In this case, there would not be a reason to regulate any of the participants in the co-investment project, including the SMP operator. Similarly, any effort to raise the price of wholesale services provided over the VHC network would likely face competition from both direct and indirect channels.

In practice, European NRAs' approach to regulating services provided by participants in a co-investment project is determined by the European regulatory framework and would be focused on wholesale markets, rather than retail markets. The EC's Recommendation on market definitions identifies the products that should be included in the relevant product market definition for markets 3a and 3b. The recommended approach is to include FTTH

²² EC, 20th September 2010, Recommendation on regulated access to NGA 2010/572/EU, *Official Journal of the European Union*, ¶28.

(i.e., VHC-type) networks in the same product market as copper local access, although many VHC-type deployments using FTTH are not able to be physically unbundled for local access in the same way that copper loops are.²³

Starting from this market definition, the market analysis would consider the effectiveness of competition at the wholesale level. Co-investment projects affect the outcome of this analysis to the extent that they facilitate entry, expansion and competition by multiple fixed-line network operators.

The implications of this for an NRA's decisions on SMP and remedies will depend on the details of the co-investment project(s) and the overall market structure. Participants in a co-investment VHC project that is internally competitive could expect not to be regulated on the services that they provide through the project. This decision could also be affected by the competitive constraints provided by operators competing in the same economic market but outside the co-investment structure. These operators could potentially include those that depend on regulated wholesale access to the SMP operators' hybrid copper/fibre and legacy networks. Finally, the increase in effective competition provided by co-investment could ultimately begin to constrain wholesale services provided by the SMP operator over its current hybrid copper/fibre and legacy networks either directly at the wholesale level or indirectly through the retail channel.

The full impact of co-investment on regulatory decision-making would arise through the market review process which would include a detailed analysis of the overall market and the competitive dynamics between operators and between networks. However, it is possible to define on an ex-ante basis what types of co-investment structure are likely to result in a more effectively competitive outcome. One key feature is the number of participants in the co-investment project. For example, a co-investment project with three participants is likely to be significantly more competitive than a project with only two participants.²⁴ However, in practice, the impact of a co-investment project on competition will be determined by a range of factors, including the structure of the project, the terms of the co-investment agreement and the relationship between the participants in the project and other network infrastructure serving the same economic market.

3.2.2 Geographic Markets and Application of Remedies

The previous discussion focussed on the product dimension of the relevant market. However, the advent of co-investment projects on a geographically disaggregated basis also poses challenges for the way in which NRAs approach geographic market definitions, and thus for the manner in which remedies are applied.

²³ EC, 9th October 2014, Commission Staff Working Document Explanatory Note Accompanying the document Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC SWD (2014) 298, p43.

²⁴ This is reflected in Recital 175 of the Code.

For an NRA deciding on a geographic definition, according to the SMP guidelines, the area should be one in which “the conditions of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different”.²⁵ For market 3a, NRAs have tended to define the geographic area as national in scope, arguing that this should be the case because the SMP operator generally sets prices nationally and because incumbent access networks are generally national. For market 3b, NRAs have, in some cases, chosen to split the geographic definition sub-nationally, in response to a clearly defined difference in competitive conditions.

The geographical basis for a sub-national market definition in both market 3a and market 3b is supported at European level. The Explanatory note accompanying the Recommendation on Relevant Markets, for example, states that “NRAs should assess whether there is a case for defining separate sub-national (relevant) geographic markets and assess whether regulation should be lifted for particular geographic areas”.²⁶

The EECC proposal also envisions the possibility that sub-national networks could result in significantly different competitive conditions across different geographical areas. The Code notes, in Recital 152, that the geographic markets depend on the local nature of a network roll-out, and further states in Recital 175 that in areas with at least three access operators present, an NRA will be less likely to identify an SMP operator.²⁷

Co-investment may have particular relevance for the issue of geographical market definition in markets 3a and 3b. Many co-investment projects are sub-national in scope, often focusing on particular cities and towns or parts of a country. They therefore have the potential to materially change the competitive conditions in the areas within which they operate at both retail and wholesale levels. A VHC co-investment project could therefore lead an NRA to consider splitting its geographic definition for both market 3a and 3b.

This approach is explicitly supported by the EC. The EC’s NGA recommendation links the establishment of competition through sub-national co-investment projects to a geographically defined market.²⁸

3.2.3 Recent examples of regulatory analysis of co-investment

Portugal and Spain provide some recent examples of market reviews that have taken into consideration the impact of co-investment projects.

²⁵ EC, 11th July 2002, Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services 2002/C 165/03, *Official Journal of the European Communities*, ¶56.

²⁶ EC, 9th October 2014, Commission Staff Working Document Explanatory Note Accompanying the document Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC SWD (2014) 298, p45.

²⁷ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Recitals 152 and 175.

²⁸ EC, 20th September 2010, Recommendation on regulated access to NGA 2010/572/EU, *Official Journal of the European Union*, ¶28.

Portugal

In Portugal, the NRA (Autoridade Nacional de Comunicações, “ANACOM”) found that the geographic market 3a was national in scope. This was based primarily on the fact that PT had national coverage for its WLA products and geographically uniform prices.²⁹ For the product market definition, ANACOM took the view that both cable and FTTH should be included in market 3a.

Using these definitions for market 3a, ANACOM calculated market share figures of fixed access wholesale lines. These market shares included vertically integrated operators for whom wholesale supply was not a major part of their business model.³⁰ It is understood that the market share calculations included lines that each operator had access to through sharing agreements. This would imply that ANACOM took the view that, in the areas that they covered, bilateral co-investment projects resulted in independent competitors in market 3a.

On the basis of this analysis, ANACOM found PT to have a market share in market 3a of 53% and concluded that it had SMP. In view of this, it maintained the existing remedies including Local Loop Unbundling (“LLU”) and duct and pole access.

ANACOM chose not to impose access obligations on PT’s FTTH network. This was based on the view that duct and pole access had lowered barriers to entry, as evidenced by the growth in alternative networks, and therefore that regulated access to PT’s FTTH network would not be proportionate.

In market 3b, ANACOM defined the market on a sub-national basis, dividing the country into competitive and non-competitive areas (“C” and “NC”). C areas were defined as:

- Parishes where there are at least two alternative operators to PT, each with NGA coverage higher than 50% of households; or
- Parishes where there is one alternative operator to PT with NGA coverage higher than 50% of households and PT’s retail market share in the parish is below 50%.

These C areas consisted of 56% of total broadband accesses.³¹

In its assessment of the criteria, it is understood that ANACOM followed a similar approach to its analysis of market 3a (i.e., a network built in a parish through a reciprocal co-investment project would count as two networks).

²⁹ ANACOM, 11th February 2016, Projeto De Decisão Sobre A Análise Dos Mercados De Acesso Local Grossista Num Local Fixo E De Acesso Central Grossista Num Local Fixo Para Produtos De Grande Consumo Definição Dos Mercados Do Produto E Mercados Geográficos, Avaliações De PMS E Imposição, Manutenção, Alteração Ou Supressão De Obrigações Regulamentares, p97.

³⁰ ANACOM, 11th February 2016, Projeto De Decisão Sobre A Análise Dos Mercados De Acesso Local Grossista Num Local Fixo E De Acesso Central Grossista Num Local Fixo Para Produtos De Grande Consumo Definição Dos Mercados Do Produto E Mercados Geográficos, Avaliações De PMS E Imposição, Manutenção, Alteração Ou Supressão De Obrigações Regulamentares, Tabela 11.

³¹ BEREC, 8th September 2016, BEREC Opinion on Case PT/2016/1889 Wholesale central access provided at a fixed location (market 3b) in Portugal, p6.

ANACOM found PT to have SMP in NC areas for market 3b and maintained standard SMP obligations such as a regulated wholesale broadband offer and price controls for copper products. It did not impose wholesale central access/bitstream access obligations for fibre products. It found that PT did not have SMP for market 3b in C areas.

The EC, in its response to this provisional decision raised serious doubts.³² A final decision is pending.

Spain

In the latest fixed access market review in Spain, published February 2016, the NRA (Comisión Nacional de los Mercados y la Competencia, “CNMC”) first identified 66 municipalities with a higher level of infrastructure competition. In order to be included in this category, at least one exchange in the municipality must be deemed an ultra-fast broadband exchange, as defined by the following criteria:

- Telefónica is required to have less than 50% broadband retail share, and at least two competing operators need to have above 10% retail market share.
- The exchange needs to have three NGA networks, each with a minimum coverage of 20% in the exchange area.³³

CNMC justified the need for two criteria, including one at the network level and one at the retail level, by the fact that the investments in NGA were still underway and it was uncertain how these investments would impact the market over the subsequent period. The state of competition in the retail market was therefore used as a criteria to supplement the one on competitive NGA deployment. CNMC’s assessment was that the current state of retail competition would help predict future levels of competition, as NGA networks continue to be rolled out.

The CNMC included fibre access networks in the definition of market 3a, while excluding cable. This was done, despite the lack of direct substitution with copper unbundling, because of the possibility of virtual unbundling via a mandated VULA product.³⁴

Similarly to ANACOM, it is understood that CNMC considered bi-lateral co-investments as two independent competitors in market 3a.

CNMC chose not to split the market geographically. It justified this by saying that there were not sufficiently different levels of competition sub-nationally, as shown by the fact that there are no operators except for Telefónica providing WLA.³⁵ This led to Telefónica

³² EC, 29th July 2016, Commission Decision concerning Case PT/2016/1888: Wholesale local access provided at a fixed location in Portugal.

³³ CNMC, 24th February 2016, Resolución Por La Cual Se Aprueba La Definición Y Análisis Del Mercado De Acceso Local Al Por Mayor Facilitado En Una Ubicación Fija Y Los Mercados De Acceso De Banda Ancha Al Por Mayor, La Designación De Operadores Con Poder Significativo De Mercado Y La Imposición De Obligaciones Específicas, Y Se Acuerda Su Notificación A La Comisión Europea Y Al Organismo De Reguladores Europeos De Comunicaciones Electrónicas (Orece), p67.

³⁴ Ibid, p85.

³⁵ Ibid, p89.

being designated an SMP operator in the WLA market, allowing CNMC to maintain nationwide access obligations on its copper network.

However, CNMC did choose to split the *remedies* applied to Telefónica in market 3a on a geographical basis for its fibre network products. This split was done according to the dual criteria for exchange area competitiveness. The result was it required Telefónica to offer virtual access to its fibre except in the 66 municipalities that it had designated as having a higher level of infrastructure competition.

For market 3b, CNMC defined the market on a geographical basis using the first retail market share criterion. It found no SMP in areas which passed this criterion and determined that Telefónica had SMP in areas that did not.

4 Current EECC proposal

4.1 THE EECC PROPOSAL

Co-investment is dealt with in three different sections of the EECC proposal – the Recitals, the Articles and in Annex IV.

Recital

(159): When withdrawing wholesale regulation, the NRA should define appropriate periods of notice that take into account the possibility for market participants to take up co-investment offers.

(166) – Reviews of SMP operator obligations should allow NRAs to take into account the impact of co-investment agreements on competition.

(175) – Where two network infrastructure operators are competing, the adequacy of competition depends on local circumstances. If one of these offers wholesale access indiscriminately and on reasonable terms, SMP regulation is unlikely to be needed.

When three network operators present are in the same wholesale and retail markets (which could be enabled by co-investment), an NRA “will be less likely to identify an operator as having SMP, unless they make a finding of collective dominance, or if each of the undertakings in question has SMP in distinct wholesale markets.”

(184) – Co-investment agreements offer benefits in terms of pooling costs and risks.

Where an SMP operator makes an open call for co-investment on fair and reasonable terms that contributes to VHC deployment, the NRA should typically refrain from imposing obligations on the new network elements, subject to further review in subsequent market analyses.

The NRA can still consider it appropriate to safeguard rights for other operators to other networks, or access to products with comparable functionality.

Articles

Article 65 (2): NRAs shall consider co-investment agreements in their market analysis procedure.

Article 66 (6): NRAs shall consider the termination of co-investment agreements when considering whether it is necessary to review SMP operator obligations.

Article 71 (2): When analysing SMP access obligations, NRAs shall consider the need to safeguard competition in the long term, particularly infrastructure competition and competition based on co-investment in networks.

Article 74: NRAs “shall not impose obligations” on new network elements if the SMP operator meets following requirements:

- The deployment of the new network is open to co-investment, on terms which favour sustainable competition (as specified in Annex IV).

- The new network elements contributes significantly to VHC deployment.
- Access seekers not co-investing can still access the same speed, quality, conditions and reach as before, either through commercial agreements or regulated access.

“Obligations” refers to articles 66-72, which includes SMP obligations such as price control, non-discrimination, access and transparency.

“VHC” is defined by the Code as a “network which either consists wholly of optical fibre elements at least up to the distribution point at the serving location or which is capable of delivering under usual peak-time conditions similar network performance in terms of available down- and uplink bandwidth, resilience, error-related parameters, and latency and its variation”.³⁶

Annex IV

In order to qualify under Article 74 (1)a, the offer must conform to the requirements provided in Annex IV. These can be summarised as follows:

- The co-investment offer associated with the new deployment must be open to any undertaking over the lifetime of the network, on an open and non-discriminatory basis.
- The offer must be transparent, in that it is easily identified on the website of the SMP operator, and further details, including a roadmap for the project, must be available to potential bidders without delay.
- The offer has to be on fair, reasonable and non-discriminatory conditions, relative to joining time and size of the commitment. Non-discriminatory does not entail exactly the same terms to all investors, but variations to terms must be justified on the basis of an objective and predictable criteria.
- There must be flexibility given on value and timing of the commitment provided by each co-investor, where price of participation should reflect the risks involved in the investment. This includes allowing investors to increase their commitment over time, and should take into account that early investors accept greater risks and engage their capital sooner.
- Co-investment agreement has to allow the transfer of the assignment of rights between co-investors and to third parties.
- If a separate entity is created for co-investment, it has to provide access to the network to all co-investors on an equivalence of inputs basis and on fair and reasonable terms.

³⁶ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Article 2 (2).

- Co-investors have to grant each other reciprocal rights on fair and reasonable terms for access to the co-invested infrastructure, and these terms must be transparent.

4.2 EVALUATION OF THE EECC PROPOSAL

The EECC proposal with regard to co-investment is based on providing an incentive for operators, including those with SMP in related markets, to enter into co-investment projects with other operators. It recognises the importance of regulatory certainty by creating a framework that would exempt qualifying projects from regulation on an on-going basis.

This approach has merit because the possibility of regulation is a disincentive to participants considering a co-investment project. By committing not to regulate such a project, the Code provides a positive incentive to enter into co-investment projects. However, the Code does have a number of limitations in this regard which undermine the impact that it is likely to have on the market. These limitations can be divided into two groups.

- *The overall approach is not targeted at the promotion of competition.* The overall approach is one that “hard-wires” a regulatory treatment of co-investment projects if they meet the qualifying criteria. This puts the regulation of such networks outside the overall SMP-based regulatory framework and de-links the regulatory treatment of co-investment projects from their contribution to effective competition. It focuses on the existence of a co-investment offer rather than an actual project and it ties the hands of NRAs, limiting their flexibility to make regulatory decisions that are tailored to the specifics of the markets as they evolve.
- *It does not provide a sufficiently strong incentive for participants.* The Code only targets projects that contribute towards VHC networks rather than ones that result in the completion of VHC networks. It also attempts to insert safeguards for potential participants in co-investment deals through the use of restrictive criteria. These include a requirement that co-investment offers be open-ended and a focus on the co-investment offer rather than the project actually being implemented. Further the proposal is for a limited scope of deregulation which does not go significantly beyond what is provided under the current framework.

4.2.1 The overall approach is not targeted at the promotion of competition

Article 74 of the EECC proposal specifies that the NRA “shall not impose obligations”³⁷ in cases where a co-investment offer is made that meets the requirements laid down in the Code. These requirements relate to the structure of investment (i.e., co-investment) and the type of network rather than the impact of the co-investment project on the competitiveness of the market.

³⁷ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Article 74 (1).

There is a reference to competition in relation to co-investment through a requirement that the offer to potential partners in the co-investment project is done “on terms which favour sustainable competition in the long-term”.³⁸ The focus of the EECC proposal is therefore limited to promoting competition through non-discrimination in the way in which co-investment partners are selected.

This overall approach has some potentially significant implications:

- *It is outside of the general SMP framework.* The commitment not to regulate qualifying co-investment projects does not appear to be subject to the normal process of market review and SMP designation in the future. This means that an NRA would not be able to take the impact of such a project fully into account in making its SMP decisions. Although the NRA would make a judgement on the co-investment, it would be only against the set of criteria in Annex IV, and not a more general judgment of the project’s impact on the market or on consumers. This process means that a co-investment project could meet the Annex IV criteria and therefore benefit from no regulation without being judged by the NRA to be deserving of deregulation according to the criteria laid out in the SMP framework that is more generally applied to the sector.
- *It takes no account of the structure of the co-investment project.* It does not allow for an NRA to review the structure and provisions of a co-investment agreement which could affect the way in which it influences competition. For example, a co-investment agreement could be made between an SMP operator and a challenger in which the SMP operator controls 90% of the network capacity that is built. In such a case, the co-investment would only maintain or enhance the SMP operator’s dominance, but the NRA would be prevented from applying regulatory remedies.
- *It focuses on co-investment offers rather than implementation.* The criteria defined in Article 74 and Annex IV that an SMP operator would have to meet in order to qualify for the no-regulation commitment are focused on the existence of an offer for partners to join a co-investment project. This approach raises significant risks of gaming by the SMP operator. For example, an SMP operator could make an offer available which met the requirements of the Code but was so commercially unattractive that no other participants would be willing to take it up. The operator could then go ahead and build the network on its own but still benefit from the open-ended commitment to no-regulation. BEREC identified a similar concern that this mechanism could potentially lead to “de facto unregulated monopoly”³⁹ in the event that there is no take-up for a co-investment offer.

³⁸ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Article 74 (1)a.

³⁹ BEREC, 30th November 2016, High-level Opinion on the European Commission’s proposals for a review of the electronic communications Framework BoR (16) 213, p7.

- *It ties the hands of the NRA.* The current proposal creates the risk that the NRA's hands are tied in the event that it is later not satisfied with the outcome of the co-investment. This restriction of the NRA's ability to regulate is also potentially open-ended.⁴⁰ This framework may make the NRA wary of co-investment proposals. Without the ability to act in the future to rectify competition problems that may emerge, the NRA will need to be assured that all necessary safeguards are built in at the ex-ante stage (prior to approval of the project). It may conclude that it is too risky or too complicated to engineer safeguards while also preserving the participants' ex-ante incentives to invest in the project.

4.2.2 It does not provide a sufficiently strong incentive for co-investment into VHC networks.

The Code specifies co-investment criteria in Annex IV. Any partner in a co-investment project that meets these criteria would not be subject to regulation for services provided over the network. The criteria have been designed to achieve a set of objectives such as ensuring that smaller operators or late-comers are not excluded from participation. This approach creates the risk that, in attempting to meet these objectives, the qualifying criteria are too difficult to satisfy or (conversely) are open to "gaming" and therefore do not meet the overall objective of this part of the Code which is to incentivise participation in co-investment projects to build VHC networks. Examples of the criteria that create these risks include:

- *The type of network investment that is targeted by the EECC proposal.* In order to meet the criteria in the EECC proposal, the co-investment project must ensure that "the deployment of the new network elements contributes significantly to the deployment of very high capacity networks".⁴¹ This requirement, which only requires a project to "contribute" to VHC network deployment, leaves open the possibility that an SMP operator could meet the criteria without the project necessarily resulting in end-to-end VHC networks being built.
- *It includes a requirement for an open-ended project structure.* The Code requires the offer to co-investment partners to remain open for the lifetime of the network. The underlying competition concern is that "closed" co-investment deals would foreclose competition through excluding entry by new competitors or by constraining co-investment partners from competing effectively. However, an open-ended co-investment project risks providing disincentives for participation. Projects will face uncertain demand, particularly in the early stages of network development. Rather than take the risk of participating (and making sunk commitments by doing so) at the outset, many parties may choose to adopt a "wait

⁴⁰ Article 74 does not specify a time limit to the commitment not to regulate the co-investment project, provided that the conditions described in Annex IV continue to be met. However, it is worth noting that Recital 184 appears to place a limit of one market review period.

⁴¹ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Article 74 (1)b.

and see” approach.⁴² Although the Code does recognise that the terms of participation should reflect the risks faced by participants, it is unclear that a financial mechanism could be devised that levels the playing field in this regard.⁴³ Open-endedness also risks creating complications in the governance and organisation of co-investment projects. For example, cost-sharing rules that were devised through bargaining or balancing the interests of the original participants may not be acceptable to a late-coming party. Likewise, there may be other “rules of the game” or practices that were devised based on the experience and incentives of the original investors, but which may require justification or modification to be acceptable to late-comers.⁴⁴

A further aspect of the Code which may not create sufficient incentives to change materially the amount of investment going into co-investment projects is the limited scope of the regulatory commitment.

In practice, NRAs often avoid regulating the price of wholesale access to NGA networks - even if they are built by SMP operators - for a period of time. This approach is designed to incentivise investment into NGA networks and avoid the risk that an operator’s profits would be removed through regulation as soon as the network was built. It is therefore unclear whether the regulatory incentive on SMP operators to participate in co-investment provided by the EECC proposal is significantly greater than the incentive for them to build VHC networks on their own.⁴⁵

Another aspect of the incentives facing an SMP operator considering a co-investment project is the regulatory treatment of its networks in the absence of such a project. For example, lower regulated wholesale access prices in the absence of co-investment (or,

⁴² This approach would involve exercising their option to participate if and only if demand for the product is established. This would create an incentive to not participate — given the value of the “wait and see” option, returns are higher for a late-comer who enters the project only when demand is established.

⁴³ The Code does make reference to adjusting the terms of participation according to the risk faced by early vs. late entrants to the project but it does not provide any guidance on how these terms should be set (EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Annex IV (c)).

⁴⁴ The economics and management literature on co-operative or JVs between firms makes the point that the incentive to collaborate arises from the desire to tap into synergies or complementary assets between the collaborating parties. The incentive is diminished if such co-operative ventures must be opened up to parties that may lack the characteristics of attractive partners for collaboration. The understandable concern with ensuring competition must be balanced against the commercial realities that firms will choose the most attractive and beneficial partners, and will seek to minimize complications and coordination costs. This point is captured in the Article 101 Guidelines (see Appendix B). It is also captured in much of the literature on R&D joint ventures. See, for example, Belleflamme, P. and Bloch, F. (2000), “Optimal Ownership Structures in Asymmetric Joint Ventures”, Tirole, J. and Rey, P. (2001), “Alignment of Interests and the Governance of Joint Ventures”, Working Paper, IDEI, University of Toulouse.

⁴⁵ As noted in footnote 40, there is some ambiguity in the EECC proposal about the time period of the commitment not to regulate a qualifying co-investment project. If it is open-ended, then this would be a change from the current situation in which an NRA would be expected to regulate a VHC network built by an SMP operator at some point. However, if the commitment not to regulate a qualifying co-investment project is limited to one market review period, as indicated in Recital 184, this would not be a change from current practice.

more generally, in the absence of end-to-end network competition) would further incentivise SMP operators to enter co-investment projects. An operator considering whether to build a VHC network on its own or as a co-investment project would consider the overall set of incentives provided by the regulatory treatment of one option compared with the other. This study focuses just on the specific regulatory treatment of co-investment and the analysis of the current version of the Code and the recommendations for its improvement are therefore limited to this area.

5 Recommendations for the co-investment provisions in the Code

In this section, we provide recommendations as to how the Code could be improved. These recommendations are based on the broadly accepted view that co-investment into VHC networks should be encouraged and that one way of doing this is through the way in which they are regulated. They are therefore consistent with the general principles on which the Code is based but with an adjustment in the way in which those principles are applied.

The recommendations are designed to ensure greater consistency between the regulatory treatment of co-investment and the overall SMP-based regulatory framework. Decisions about regulation and deregulation of co-investment should be based on competitive conditions in the industry rather than just the fact that it is a co-investment project. These competitive conditions should also be considered at a sub-national level. This would fit with the pattern of co-investment projects which are typically sub-national in scope and would be consistent with the general approach of the Code. NRAs and competition authorities would also retain the regulatory flexibility to respond to evolving competitive conditions on an ex-post basis, as is currently the case in the general regulatory framework.

This competition-based approach, combined with more regulatory flexibility, would reduce the burden of ex-ante safeguards that need to be included in the Code or in regulatory guidelines associated with it. It could also allow NRAs to be more innovative in their regulatory decisions since their hands would not be tied, as they might be with the current approach. At the same time, co-investment projects which are effective in stimulating competition could ultimately lead to broader market deregulation, following a market review process, which would be a further incentive for SMP operators to participate in them.

The recommendation also includes the use of a set of bright-lines tests. These are rules that define a standard that can be applied to judge a situation. The approach of setting bright-lines in the Code is similar to the EECC proposal's method of using criteria to establish regulatory forbearance but, instead of hard-wiring a regulatory response according to criteria linked to a co-investment offer, bright-lines create a presumption of no regulation if certain criteria linked to competition are met. This approach increases the predictability of the regulatory response to a co-investment project and is consistent with the overall regulatory framework which links regulation to competition. It is also consistent with some parts of the existing version of the Code which links competition to the number of players in the market.⁴⁶

The recommendations are divided into two groups, linked to the evaluation of the Code described in Section 4:

⁴⁶ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Recital 175.

- the implications of co-investment for competition; and
- strengthening the incentives for participation in co-investment.

This is followed by some examples of how these recommendations could be implemented within the Code through a bright-lines approach.

5.1 FOCUSING THE REGULATORY TREATMENT OF CO-INVESTMENT ON COMPETITION

The regulatory treatment of services provided through co-investment projects should be linked to the effectiveness of competition in the markets in which these networks operate. Any specific commitment not to regulate VHC networks in the Code should therefore be limited to those that are built through co-investment schemes that lead to sustainable and effective competition. This analysis should particularly take into account geographical variations in the effectiveness of competition arising from sub-national co-investment projects.

5.1.1 Linking regulatory treatment to competition

If a co-investment project lowers barriers to entry for competitors wishing to build fixed networks, then it is reasonable to expect that this will increase the effectiveness of competition in the relevant markets. If, for example, a fixed broadband retail market which had only two networks (e.g., the fixed incumbent network and a cable TV network) saw the entry of more competitors via co-investment, this would increase the competitiveness of the retail market. It would also increase competitive constraints in the wholesale market either directly through more commercial wholesale offers or indirectly via the retail market channel. If these competitive constraints are sufficiently strong, it would be reasonable for there to be no regulatory measures applied to the co-investment partners at either wholesale or retail level in the relevant market. It is this link between co-investment and effective competition that the regulatory treatment should be focused on.

It is important to note that, although co-investments can lower barriers to entry and increase infrastructure competition in the fixed-line market, they are horizontal agreements between competitors and therefore also have the potential to soften competition. The SMP operator, by virtue of its scale and market position, may also be in a position to extract favourable terms in the negotiation of a co-investment deal, which would not lead to an improvement in the competitive environment but rather would result in a continuation of dominance.

These issues were considered by BEREC⁴⁷ which noted that a co-investment could in some cases be a vehicle for abuse of dominance or of coordinated behaviour unless certain safeguards are met. As part of its assessment of a co-investment project to determine the extent to which it was likely to increase competition, an NRA would need to consider the structure of the agreement and whether any aspect of it would be likely to soften competition, rather than enhance it. This should be part of the criteria which

⁴⁷ BEREC, April 2012, BEREC report on Co-investment and SMP in NGA networks BoR (12) 41.

determine the effect of the co-investment project on competition and therefore on the regulatory treatment of the co-investment project.

This approach avoids tying the hands of an NRA and provides appropriate room for it or a competition authority to review the situation on an ex-post basis. If a co-investment project was considered ex-ante to be pro-competitive and therefore was not regulated but, in practice, had the effect of softening competition, an NRA could step in and regulate it while still being within the overall framework of the Code.

The overall regulatory approach can be augmented by a set of bright-lines which specify conditions that would result in a presumption of competition and therefore no-regulation (see Section 5.3). This framework results in a more predictable regulatory treatment of co-investment projects and therefore reduces the risk to potential participants.

Recommendations:

- The regulatory treatment of co-investment in the Code should be linked to the extent to which that co-investment contributes to effective competition in the relevant market. The assessment of this contribution should be based on established regulatory and competition principles, including an evaluation of the terms of the agreement itself.
- The Code should avoid tying the hands of the NRA so that it has the flexibility to determine on both an ex-ante and ex-post basis whether a co-investment project has, in fact, contributed to the effectiveness of competition.
- This competition-based regulatory treatment of co-investment should be augmented by a set of bright-lines which specify the conditions under which an NRA would be required to presume that a co-investment project is competitive and therefore not subject to regulation.

5.1.2 Linking regulatory treatment to actual co-investments rather than co-investment offers

Rather than linking the regulatory treatment of networks built through co-investment to an offer to co-investment partners, as is currently the case in the EECC proposal, it would be better to link it to the actual establishment of a co-investment project. This would reduce the risk that SMP operators gaming the rules by, for instance, making a co-investment offer that is commercially unattractive to prospective partners or delaying the establishment of co-investment arrangements in order to benefit from the commitment not to regulate without actually having to support the entry of competitors into the market.

This approach also contributes to focusing the regulatory treatment of co-investment on its impact on competition since it is only when a project is actually implemented that competition is affected.

Recommendation:

- The regulatory treatment of co-investment should be linked to the effect of such projects on competition and not on the existence of a co-investment offer.

5.1.3 Recognizing the impact of co-investment at a sub-national level

The sub-national nature of most co-investment projects has further implications for their regulatory treatment.

It means that competition conditions in the relevant retail and wholesale markets may vary significantly between different regions of a country. Areas in which there are co-investment projects are likely to be more competitive than other areas. This lends itself to NRA's applying a geographical dimension to the definition of the relevant market. Even where a national market definition is maintained, NRAs have chosen to apply regulatory controls in a selective way that recognises that competitive conditions vary on a geographical basis.

The implications of a sub-national perspective for the Code extend beyond market definition and SMP analysis. The fact that many co-investment projects are designed on the basis of regions or specific municipalities, means that there are multiple opportunities for operators to enter co-investment projects within a national territory. If an operator was not able to negotiate successfully a project in one area of the country, it would not be excluded from participating completely because there would be opportunities in other areas. This reduces or eliminates the need for the regulatory requirement that co-investment projects remain open to new participants throughout the lifetime of the network since failure to enter a particular co-investment project does not preclude an operator from entering the fixed network market altogether.

It should also be noted that operators with some fixed network coverage built either on their own or through co-investment projects are in a better position to negotiate access on other networks. This means that, even if an operator does not participate in one particular co-investment project, it could end up with access to customers via that network as a result of subsequent commercial negotiation.

Recommendation:

- In considering the impact of co-investment projects on competition and the consequent regulatory treatment, NRAs should pay particular attention to geographical variations in markets and levels of competition.

5.2 STRENGTHENING THE INCENTIVES FOR PARTICIPATION IN CO-INVESTMENT

SMP operators are typically already in a strong market position with respect to super-fast broadband services but would also be unlikely to face immediate regulation of new investments into VHC infrastructure, even if they built them on their own. The Code, in its current form, may therefore not materially change the incentives for operators to participate in co-investment projects.

In order to strengthen these incentives, the Code should focus on the outcome of the network investment rather than on components of it. It should also avoid requirements for open-ended co-investment project structures and replace this with a requirement that co-investment projects should not have any exclusionary or discriminatory effect.

In the event that co-investment materialises and it leads to sustainable and effective competition, there is also the prospect for broader market deregulation through the market review process. This will incentivise both SMP and non-SMP operators to participate in co-investment.

The incentive to participate in co-investment projects is also affected by the way in which an SMP operator is regulated if it builds the network on its own. The tighter the regulatory treatment of such a network, the stronger the incentive to undertake co-investment.

In order to provide more regulatory certainty to all partners in co-investment projects, the Code could incorporate a set of “bright-lines”. These are criteria which help partners understand, in advance, whether the co-investment project will be considered competitive. If they are satisfied, the Code would require an NRA to presume that the project is effectively competitive unless there was evidence to the contrary. This enhances the prospect of investment by non-SMP operators who would otherwise be concerned that their investment would automatically be subject to *ex ante* regulatory obligations.

5.2.1 Clearer specification of the type of network investment

In order to avoid the situation in which an operator builds only partial elements of a VHC network but still qualifies for the commitment not to regulate, the Code should focus on ensuring that a full VHC network is built. This would require removing references to deployment of network elements that “contributes significantly to the deployment of very high capacity networks”. Instead, the regulatory treatment of co-investment should be linked to the fact that VHC networks have been or are reasonably expected to be deployed.

Recommendation

- The regulatory treatment of co-investment should be linked to the actual deployment of VHC networks, rather than elements that contribute to it.

5.2.2 Remove the requirement for an open-ended project structure

In order to avoid the disincentives associated with the requirement for open-ended project structures, such requirements should be removed from the Code. These should be replaced with a requirement that a co-investment agreement should not have the effect of softening competition through unduly discriminatory terms or through exclusionary effect. Detailed guidelines are available for regulators and potential co-investment partners to refer to when determining whether or not a particular project structure would have either of those effects. The legal guidance available will develop over time as competition authorities within the EU investigate co-investment projects and give judgements on their impact on competition.

Recommendation

- The requirement that co-investment projects remain open-ended should be removed and replaced with a general requirement that projects should not have the effect of softening competition.

5.2.3 Competition leading to deregulation

The EECC proposal only deals with the regulatory treatment of services provided over the VHC network built through a co-investment agreement. However, these services are likely to be in the same economic market as services provided over hybrid copper/fibre networks (i.e., FTTC) and potentially even services provided over legacy networks. Establishing competition on VHC networks through co-investment should therefore increasingly constrain the SMP operators' wholesale products provided over these alternative networks. This creates the conditions under which the regulation of wholesale products provided over this infrastructure can be deregulated following a market review process.⁴⁸ This provides an incentive for both SMP and non-SMP operators to participate in co-investment.

It is unlikely that this competitive constraint would emerge immediately and there are likely to be significant transitional issues for challenger operators as they migrate customers from the SMP operator's network to the new VHC infrastructure. It would therefore not be appropriate for any deregulation arising from co-investment in VHC to extend to copper-based networks immediately. Rather, it could simply be incorporated into NRAs' market analysis as part of the regular market review process. Alternatively, the Code could articulate a process by which the establishment of a co-investment project that facilitates upstream competition can trigger a market review which would include an evaluation of the competitive impact on the other networks. This review could then lead to deregulation of those networks at an appropriate time.

Recommendation:

- The Code should take account of the possible effects of co-investment on competitive constraints on the SMP operators' other networks. This might, when these constraints are sufficiently strong, lead to the deregulation of those networks, following a market review process.

5.3 A BRIGHT-LINES APPROACH

A bright-lines approach gives a clear statement of the conditions that need to be satisfied for a co-investment project to be deemed to be competitive. If a project meets these criteria, the bright-lines framework would require an NRA to presume that the services are

⁴⁸ The implications of co-investment into VHC networks for regulation in the fixed market depends on the extent to which services delivered over them provide an economic constraint on hybrid copper/fibre and legacy networks and vice versa. If copper-based retail services constrain the price of VHC services, then the presence of retail competition based on regulated access to the SMP operator's network will constrain the participants in the co-investment VHC network, even if one of them is the SMP operator itself. If VHC services constrain the price of services delivered over hybrid copper/fibre and legacy networks, then a competitive VHC market achieved through co-investment could ultimately lead to further deregulation.

being provided on an effectively competitive basis and therefore no regulation is required. This would allow market participants to understand in advance whether or not the project will qualify to be exempted from regulation. This could be confirmed through an approval process with the NRA.

A bright-lines approach also avoids an open-ended commitment to no-regulation because, if the market structure evolved to the extent that it no longer met the criteria, the presumption of competition and therefore no-regulation would no longer hold. In addition, NRAs would continue to be able to undertake an investigation or market review if there was clear evidence that the market was not functioning correctly.

This approach creates a positive incentive for operators, particularly the SMP operator, to participate in co-investment because it gives a clear indication of the conditions under which such a network would not be regulated.

Conversely, if an investment project failed to meet these bright-lines criteria, it would face the usual regulatory treatment. This might happen, for example, if an operator built a VHC network on its own or if the co-investment project was structured in a way that did not create effective competition. In these circumstances, an SMP operator might find its VHC services being regulated following the next market review or possibly before if the NRA found it to be appropriate.⁴⁹

This bright-lines approach has the merit of providing transparency and predictability to prospective investors and participants in co-investment projects while also being consistent with the overall SMP regulatory framework. This bright-lines approach is also consistent with the existing EC regulatory framework. The SMP guidelines, for example, provide guidance that undertakings with “market shares of no more than 25% are not likely to enjoy a (single) dominant position on the market concerned”.⁵⁰ The recitals currently in the Code also provide guidance of a similar nature. Recital 175 states that where three network operators are present in the same wholesale (including co-investment deals) and retail markets, an NRA “will be less likely to identify an operator as having SMP, unless they make a finding of collective dominance, or if each of the undertakings in question has significant market power in distinct wholesale markets, such as in the case of voice call termination markets”.⁵¹

5.3.1 Examples of bright-lines for co-investment

A set of bright-lines would establish a presumption of effective competition if certain criteria were met. These bright-lines could replace the criteria that are currently in Annex IV of

⁴⁹ See EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Article 66. This Article states that NRAs “shall consider the impact of new market developments” and then “assess whether it is necessary to review the obligations imposed on operators.”

⁵⁰ EC, 11th July 2002, Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services 2002/C 165/03, *Official Journal of the European Communities*, ¶175

⁵¹ EC, 12th October 2016, EECC proposal COM(2016) 590 final/2, Recital 175.

the Code. Box 1 provides an example of how such a set of bright-lines could be incorporated into the Code.

Box 1

Example of co-investment regulatory bright-lines

Article 74

1. A national regulatory authority shall not impose obligations as regards new network elements that are part of the relevant market on which it intends to impose or maintain obligations in accordance with Articles 66 and Articles 67 to 72 and that the operator designated as significant market power on that relevant market has deployed or is planning to deploy, if the following cumulative conditions are met:

(a) the deployment of the new network elements is done through a co-investment approach which creates, or is reasonably expected to create, effective and sustainable competition in the relevant market; and

(b) the deployment of the new network elements results in, or is reasonably expected to result in, the deployment of very high capacity networks.

When assessing the impact of a co-investment project on competition in the relevant market, as referred to in point (a) of the first subparagraph, NRAs shall presume that a co-investment project satisfies this requirement if it complies with the criteria set out in Annex IV.

When assessing the impact of a co-investment project on competition in the relevant market, as referred to in point (a) of the first subparagraph, an NRA will also consider the actual or expected impact of such competition on services in the same relevant market but provided over networks other than that covered by the co-investment project. If, following this consideration, an NRA determines that there is a reasonable prospect that the co-investment project could result in effective competitive constraints on those services, it will undertake a detailed market review including market definition and competition assessment under the procedures defined in Articles 61 to 65. In doing so, the NRA will take into consideration geographical dimensions to market definition in accordance with Article 62(3).

Annex IV – Bright-lines rules

- Within the relevant market, there are three or more independently controlled networks;
- The co-investment agreement does not unduly discriminate against one or more participants or prospective participants in the agreement;
- No undertaking deemed to have SMP in the relevant market has or is expected to have more than 50% of the retail market served by networks that rely on the VHC network elements built through the co-investment project; and
- The co-investment agreement does not have the object or effect of restricting competition between participants to the agreement or between any party to the agreement and any other provider or potential provider of services in the same relevant market. Such terms or structures could include, for example, ones

which had the effect of market-sharing, information-sharing, price-fixing or co-ordination of technological innovation.

* In situations where there are fewer than three independently controlled networks there may be sufficient competitive constraint on the VHC network from operators competing using regulated access to the SMP operator's networks. In such situations, an NRA may decide that the co-investment project satisfies this criteria.

5.3.2 Application of the bright-lines approach

The bright-lines approach provides more clarity and certainty to investors contemplating a co-investment project about the way in which services provided through it will be regulated. The potential impact of this approach can be described through different co-investment scenarios.

Scenario 1: A co-investment project with three or more participants

Assume for the purposes of this example that the co-investment project is designed in a way that it gives each participant full control over a network. This is likely to be the case, for example, in a dark-fibre reciprocal access model. Other types of co-investment projects may also create independently controlled networks but, in these cases, an NRA would need to look at the terms of the agreement in more detail to ensure that this is, in fact, the case.

Within the area of coverage of the co-investment project, there would be at least three independent networks competing with each other to serve customers. Under the bright-lines approach, assuming that the project met all of the criteria, an NRA would be required to presume that it has created competition, at least in the market for VHC-based services. There would therefore be no basis for regulating the services provided through the co-investment project by any of the participants.

This conclusion would be strengthened if there were other end-to-end VHC networks outside of the co-investment project providing competing services in the same relevant market. Similarly, if services provided by downstream operators relying on regulated access to the SMP-operator's other networks are in the same economic market as those provided over the VHC networks, this would provide a further competitive constraint on the VHC network.

Scenario 2: A bilateral co-investment project

The regulatory treatment of bilateral co-investment projects is less straight-forward than in the case of three or more operators. Assuming that the project was also a dark-fibre reciprocal access arrangement and that it met the other bright-lines criteria, it would create two independently controlled networks, competing with each other.

In a situation in which there were initially only two network operators in the market and they were also the participants in a bilateral co-investment project, the overall

competitiveness of the market would not have changed significantly with the establishment of the project.⁵² This would be true if the market was defined as VHC network-based services only or on a broader basis that included other network technologies.

Following the bright-lines approach described in Box 1, such a co-investment structure would not be sufficient, on its own, to justify a presumption of competition. An NRA would be required to take account of the co-investment project in its normal market review process but the participants would not benefit from a presumption of competition and the commitment not to regulate.

In a situation where there were other VHC networks, outside of the co-investment project, the regulatory outcome would be different. The participants in the bilateral co-investment project would be competing with these other VHC networks and there would therefore be at least three independently controlled end-to-end networks in the market. This would satisfy the bright-lines criteria described in Box 1 and the co-investment partners would benefit from a presumption of a competitive market and therefore no regulation.

If services provided over the SMP's hybrid copper/fibre or legacy network infrastructure are determined to be in the same economic market as those provided by the VHC network, the presence of retail competition created by regulated wholesale access to the SMP operator's network could be sufficient to ensure effective competition. In this case, there would be no need to regulate services provided over the co-investment VHC network as long as there is regulated access to the SMP operator's other networks.

This would remain the case until, at some point in the future, a sufficient number of customers had migrated over to the VHC network and this network becomes the source of market dominance (i.e., the relevant market consists of VHC and copper products, the incumbent has a very high retail market share, and that high retail market share stems primarily from its interest in the VHC network). In such a situation, in deciding whether or not to impose regulatory remedies on one or more of the co-investment partners, an NRA would need to consider whether the competitive constraint of the co-investing partner sufficiently disciplines prices.⁵³

⁵² Although the co-investment project could potentially expand the reach of the operators and therefore increase the contestability of the market.

⁵³ Even with two operators, prices could fall close to marginal cost if there is excess capacity on the network. This is consistent with a two-stage model of competition widely discussed in the industrial economics literature. In this model, two competing firms first choose capacities (a la the Cournot model of industrial economics). Once capacity choices are made, firms compete in prices (a la the Bertrand model of industrial economics). The final outcome is usually closer to the Cournot model, i.e., prices are above marginal cost and some market power is exercised, but when there is excess capacity, the outcome could be closer to the Bertrand model in which price equals marginal cost.

6 Commercial offers

Commercial offers are wholesale transactions that take place in parallel to a product that is either currently or prospectively regulated. They are typically related to the regulated offer but will differ in some of the terms and conditions (e.g., the term of the contract, provision of ancillary services, bulk or term discounts etc.). Commercial offers are referenced in two of the Recitals of the EECC proposal and two articles.

- Recital (156): If commercial agreements are “sustainable and improve competitive dynamics, they can contribute to the conclusion that a particular wholesale market does not warrant ex ante regulation”. Similarly, the unexpected termination of such agreements in a deregulated market may contribute to the reverse conclusion. The analysis of commercial agreements “should take into account that the prospect of regulation can be a motive for network owners to enter into commercial negotiations”.
- Recital (157) Before the NRA determines whether any additional remedy should be imposed on the SMP operator, it should seek to determine whether the retail market concerned would be effectively competitive in the light of any relevant commercial arrangements or other wholesale market circumstances.
- Article 65 (2): During the market analysis procedure, NRAs should take into account commercial access agreements between operators which benefit competitive dynamics sustainably.
- Article 71 (2): When analysing SMP access obligations, the assessment shall include existing or prospective commercial access offers.

6.1 COMMERCIAL OFFERS AND WHOLESale ACCESS REGULATION

Commercial offers are significant for regulatory analysis and decision-making in two different ways:

- They can inform the analysis of the effectiveness of competition. The existence of commercial offers could be an indication of effective competition or at least the emergence of significant competitive pressures and might therefore contribute to a decision to lift existing SMP-based regulation.
- They may also provide an indication about how competition is likely to evolve going forward. For example, a commercial arrangement such as leasing of network capacity on a long-term basis may allow the lessee to compete more effectively with the SMP operator and therefore be an indication that competition is likely to become more effective in future.

The first of these considers commercial offers as an indicator of the overall competitive conditions in the market.⁵⁴ The second focuses on the incremental effects of any commercial agreements on the evolution of competition in the future. In both types of analysis, the details of the wider market and the specific agreement will be informative, but their relative importance to any decision is likely to vary.

6.1.1 Commercial offers as an indication of competitive pressure

The emergence of commercial offers does not, by itself, indicate that there is effective competition and that there is a justification for the removal of remedies.

In a regulated market, the terms of a commercial offer may be heavily influenced by the existence of the regulated reference offer as an alternative that is available to the access seeker. This is for a number of reasons:

- Commercial negotiations concluded in the shadow of regulation will not yield the same result as commercial negotiations where there is no threat of regulation. Regulation changes the “disagreement payoff” that is available to the parties. The existence of a regulated reference offer product or even the backstop of a regulated process with well-known standards (e.g., a well-defined default pricing standard) will improve the payoff available to the access seeker in the event of a breakdown of negotiations. With a well-defined regulated product as the “disagreement payoff”, economic models of bargaining indicate that the access seeker might obtain better terms in a negotiation than through take-up of the regulated product.⁵⁵
- Incumbents could have strategic reasons to make concessions in a commercial offer negotiation. For example, under a price-cap regime for a regulated access product, the incumbent can do better than a normal rate of profit if they are able to outperform the assumptions on which the price-cap was based. However, the firm may believe that regulators could respond to observed high profitability by significantly revising the terms of future regulatory decisions (i.e., the firm’s managers believe that regulation is “endogenous.”).⁵⁶ In this case, making strategic

⁵⁴ For example, in the context of a vertically integrated and presently regulated SMP operator, a rapid increase in the share of the downstream market served by competitors that do not use the regulated offering of the SMP operator will typically make both vertical foreclosure and the exercise of market power at the wholesale level less likely. Perhaps more obviously, the emergence of a direct wholesale alternative network, will create more direct competition upstream. Both circumstances may warrant relaxation of existing SMP remedies.

⁵⁵ In the “outside option principle” model of bargaining, the access seeker will obtain the value of its outside option. In the “Nash bargaining” model, the access seeker will (assuming equal bargaining skill) obtain the disagreement payoff plus half the gains from trade. See Putnam, J. and Tepperman, A. (2004), “Bargaining and the Construction of Economically Consistent Hypothetical Licensing Negotiations”, *The Licensing Journal*, p8-15, for a simple description of these two models. In the present case, the bargaining in the “regulated negotiation” will reflect an effort by the access seeker to improve on the level of profit it can obtain were it to use the regulated reference product. The rationality of concessions relative to the regulated outcome by the regulated firm is discussed *supra*.

⁵⁶ The potential existence of endogenous regulation in telecommunications is discussed in Grajek, M., & Röller, L. H. (2012), “Regulation and investment in network industries: Evidence from European telecoms”, *The Journal of Law and Economics*, p189-216.

concessions in the negotiation of commercial agreements may help prevent a worse regulatory outcome in the future.

- Some negotiators may have a degree of countervailing power. One way in which this arises is through multi-market contracts. An access-seeker may be a supplier in another market (e.g., content). In this case, an observed “discount” on a reference product may simply reflect one part of a wider set of negotiated outcomes, not all of which the regulator observes or monitors. Equally, the same outcome may not be obtainable by all access-seekers or all parties. The inability of those access-seekers to obtain the same terms may suggest that removing regulation would substantially lessen competition.
- Negotiated outcomes may be multi-dimensional and difficult to compare precisely with a regulated reference offer. For example, negotiated outcomes may reflect multi-market contracts; they may also reflect volume or risk-sharing discounts based on commercial assessments of risk or cost (which may differ from regulated assessments).⁵⁷ Thus any practical comparison of bespoke commercial offers relative to regulated standardised offers necessarily has to account for these commercial complexities.

In view of this, the existence of commercial offers is unlikely to have a major impact on the conclusions of a broader SMP analysis of a relevant market which, in the fixed market, would include evidence of self-supply, additional wholesale competition from existing alternative infrastructures or growing indirect constraints from existing and new alternative infrastructures that serve retail customers.

However, it would not be appropriate to ignore commercial offers completely in this analysis. A review of the terms and conditions of existing offers could offer information that complements other parts of the SMP analysis. Such a review would need to look at the commercial context of the negotiation (e.g., volume discounts, multi-market contracts, countervailing power of the negotiating party etc.) when comparing this commercial offer with a regulated offer.

In circumstances where an SMP analysis does not yield clear-cut conclusions, the existence of commercial offers, and the details of their terms and conditions, could add useful insights concerning competitive pressures in the market.

Ultimately, a decision to remove a remedy on an operator with SMP could only be justified in circumstances where analysis of the counterfactual (i.e., the level of competition that would prevail in the absence of regulation) indicates that a regulatory remedy is not required.⁵⁸

⁵⁷ Two reasons for such a divergence would be: (a) private information that the parties have but which the regulator may not have, and (b) the incentives of regulators to promote competition. The latter reason may lead to regulators weighing risk-mitigation alongside foreclosure of competition.

⁵⁸ Specifically, when considering whether to maintain SMP remedies on a candidate product market, that market must be defined based on competitive circumstances (i.e., the possibilities for demand

6.1.2 Commercial offers as a source of competition

In addition to seeing the existence of commercial offers as an indicator of the current effectiveness of competition, they can also be considered as a factor in understanding how competition is likely to evolve over time.

For example, an SMP operator might lease capacity on its network under long-term contracts to another party or parties. There are a number of different considerations in understanding how such a contract would affect the future evolution of competition:

- If the amount of capacity that is leased is large, relative to the total size of the market, it could be an indication that the lessee has significant opportunity to expand its market share and therefore constrain an unregulated incumbent.
- The extent to which the leasing agreement allows the lessee to compete in the downstream market is an important factor. Anything about the agreement which constrains the lessee from competing with the SMP operator in either the wholesale or retail markets would have implications for the extent to which the contract will contribute to effective competition in the market.
- The duration of the contract is also a significant issue in evaluating its impact on prospective competition. On the one hand, longer-term contracts provide stability and certainty to lessees which allow them to invest in the related infrastructure required to compete with the SMP operator. On the other, they also lock lessees into specific network technologies which may ultimately negatively affect their ability to compete.
- Commercial leasing agreements also have the potential to foreclose competitors in the absence of an SMP remedy. Such concerns could arise because the leasing agreement does little to restrict the unilateral dominance of the SMP operator, because it leads to collective dominance or because it effectively restricts the supply of capacity and thereby forecloses the market to new entry.
- An agreement between close competitors in the retail market could (again in the absence of a continuing SMP remedy) facilitate collective dominance by making it easier for close competitors to coordinate on retail pricing. This might happen, for example, if wholesale products that permit or facilitate product differentiation are withdrawn and the leasing agreement permits a greater degree of cost commonality between parties.
- There may be potential for the leasing agreement to be used as an inducement by rivals to not build alternative access infrastructures, or to competitively disadvantage rivals who do build such infrastructures.

substitution and, less frequently in the telecoms context, supply substitution) that would prevail absent regulation.

- Finally, the leasing agreement may affect the incentives of an unregulated incumbent and the lessee to offer wholesale access to third parties.

It is clear that there are a range of different types of commercial offer and the detailed features of such offers will determine the way in which they affect the evolution of competition. The offers should therefore be analysed in detail to understand the implications for future SMP analysis and remedy decisions.

It is also worth noting that it is not a trivial or costless process to de-regulate and then have to re-regulate markets. Any regulatory analysis that was based on the existence of commercial agreements in any significant way would therefore have to take into consideration the duration of the contract and the arrangements available after the initial contract expiration.

The impact of these agreements on competition also has implications for any ex-post analysis which would particularly focus on their potential to foreclose or to coordinate market outcomes.

6.2 COMMERCIAL OFFERS AND CO-INVESTMENT

Commercial offers in the form of long-term contracts, such as IRUs, play an important role in co-investment. Both reciprocal access and one-way access agreements typically include long-term contracts for access on an operator's network. These contracts may be for active or passive network services and they vary in the terms and conditions. Such contracts offer many of the significant features that define co-investment projects for the purposes of regulatory evaluation. They may assign significant amounts of network capacity to another party, they may place no or limited constraints on what the network capacity is used for downstream and they provide long-term contractual assurance to the network owner that they will receive a stream of revenues in exchange for the provision of access to the network.

However, there may be some types of commercial agreements that do not qualify as co-investment and that do not increase the effectiveness of competition. Examples of such contracts include those that:

- limit the ability of the access seeker to influence technical specifications, upgrades or network expansions;
- are on commercially adverse or discriminatory terms;
- include restrictions on what the access seeker could use the capacity for (e.g., restrictions on behaviour at the wholesale or retail level); and
- create commercial leverage over the access-seeker at contract expiry.

The ability of a network owner to offer contracts with these characteristics is a reflection of its market power. It is therefore more likely to be a feature of one-way access agreements between the SMP operator and a challenger which does not own its own upstream network than in reciprocal access co-investment models in which there is a degree of symmetry between the parties.

There is no simple way of defining ex-ante what types of commercial agreement in a co-investment context would be pro-competitive and what would have the effect of restricting competition. Rather, it is preferable that the regulatory framework defines the principles which an NRA then applies in evaluating a co-investment deal. This would be done as part of the assessment of whether such a co-investment project meets the criteria laid down in the bright-lines.

These principles should be focused on the extent to which the contractual structure promotes new investment into VHC networks and enhances competition. It is a further reason to avoid an approach which “hard-wires” a specific regulatory treatment into the framework.

7 Conclusion

The primary aim of this report is to analyse the EECC proposal with regard to co-investment and to make recommendations for how it could be strengthened in a way that makes it more likely that the objectives of the EECC proposal are fulfilled. In addition, the report has addressed the issue of commercial offers, answering questions on what the role of commercial offers should be in SMP analysis and how they relate to co-investment.

In our view, policy and regulation relating to co-investment should be based on the commercial realities of such deals, recognising that co-operative agreements between competitors are complex and often difficult to reach. This helps to ensure that regulatory incentives are designed effectively and will stimulate further co-investment in future.

Co-investment projects have been implemented in several European countries and there is therefore some experience of how they are structured and what their impact has been on the market. There are three basic types of co-investment model: the JV model, the reciprocal access model and the one-way access model. Within these categories, there are many different variants, with no two co-investment projects being identical. One general conclusion that can be drawn from the European experience to date is that co-investment projects are complex and are often difficult to negotiate, particularly when they are between competing operators that, in many cases, have different strategic priorities.

In addition to generating more investment in VHC networks than might otherwise be the case, co-investment also has the potential to increase the effectiveness of competition in the market for fixed-line services. This is because co-investment lowers the barriers to entry for new infrastructure players which creates more end-to-end network competition and could result in a more competitive wholesale market.

However, co-investment also creates horizontal agreements between competing operators and therefore raises questions about whether such agreements could have the effect of softening competition. Competition law weighs any possible negative effects arising from the exercising of market power against the economic benefits that might be produced by agreement. The extent to which co-investment agreements create mechanisms for softening competition is therefore something that should be considered when analysing their impact on the market overall.

An NRA would also take co-investments into account when conducting market analysis. Such analysis has taken place as part of fixed access market reviews in Spain and Portugal where NRAs have identified co-investments as providing upstream competitive pressure which is equivalent to the operators building separate networks themselves.

The EECC proposal, by encouraging participants to enter co-investment agreements through offering regulatory incentives, recognises the positive attributes of co-investment. However, the approach taken in the EECC proposal of “hard-wiring” regulatory forbearance according to criteria outside of the standard SMP framework creates a number of issues which are likely to result in either problems for NRAs trying to apply a

consistent regulatory framework to the sector or have no material effect on the amount of co-investment that takes place.

Our proposal to strengthen the EECC proposal is two-pronged. Firstly, we propose that deregulation should be linked to competition, keeping the regulation of co-investment in line with the rest of the SMP framework. Secondly, we think the incentives for co-investment provided by the Code should be strengthened by linking any regulatory treatment to actual co-investment, rather than the existence of an offer. We think that, to the extent that co-investment in VHC networks creates an effectively competitive market, it could also ultimately lead to de-regulation of the SMP operator's copper-based networks following a market review process. We also note that the incentive for operators to co-invest is affected by the regulatory treatment that they would face if they built networks on their own - the tighter the regulation of such networks, the greater the incentive for operators to co-invest.

Finally, we propose that the Code should include a set of bright-lines which establish a presumption of effective competition if certain criteria are met. An operator considering co-investment would therefore have a guide to how a co-investment would be regulated.

Our findings in regards to commercial offers do have implications for co-investment but their impact is broader, affecting other regulatory decisions. We find that commercial offers can be informative in competition analysis in two ways. Firstly, they can be an indication of competitive pressure, and secondly, they can be a source of competition. On the first issue, while commercial offers may warrant the relaxation of regulation, a commercial offer does not, by itself, indicate that there is sufficient competitive pressure to warrant the removal of a remedy and may, in fact, be misleading. On the latter, a commercial agreement may create sufficient incremental competition to warrant a revision of current SMP-based remedies, but the specifics of an agreement are critical to the amount of incremental competition created.

Appendix A Co-investment case studies

A.1 FIXED NETWORK CO-INVESTMENT

A.1.1 Italy

In 2010, a national fibre infrastructure plan, backed by Deputy Minister for Communications Paolo Romani and known as the “Romani Plan”, was proposed. The agreed plan⁵⁹ involved the creation of a JVCo that would have rolled out a national FTTH network. Originally, the plan involved all the fixed operators including Telecom Italia, Wind, Tiscali and Vodafone. However, Telecom Italia later changed its approach and the plan was ultimately abandoned.

In 2012, Vodafone and Wind signed a letter of intent with Metroweb to use the FTTH network that was already built and any further network that would be developed in future. This would also be open to other operators and investors.⁶⁰

In July 2016, Enel announced its intention to acquire Metroweb. Enel announced plans to cover 9.5 million homes in 250 cities with an FTTH network at a cost of €3.7 billion.⁶¹ Network deployment started in 2016 and the first active lines were delivered in May 2016. The network is a wholesale-only network and Enel does not aim at competing at the retail level. Vodafone and Wind have agreed to acquire end-to-end passive access from Enel by paying a monthly rental fee for wholesale dark fibre lines. Vodafone currently offers speeds of up to 1Gbps in areas where Enel has already rolled out lines.

[✂]

Also in 2016, Telecom Italia and Fastweb announced that they had agreed to launch a JV owned 80% by Telecom Italia and 20% by Fastweb.⁶² The JV will build an FTTH network covering 3 million premises by 2020 at a cost of €1.2 billion.⁶³ It will undertake civil works and lay fibres between the cabinet and the premises. The network will be structured as a dual PON network which will be sold to the two JV partners. The JV will be restricted to selling only to Telecom Italia or Fastweb directly but there are no restrictions on these companies from selling the FTTH access on a wholesale basis. On 9th February 2017, the Italian competition authority announced that it had launched a formal investigation of the Telecom Italia/Fastweb joint venture.

A.1.2 Spain

⁵⁹ Wall Street Journal, 19th September 2010, Italy Operators Reach Broadband Deal, <http://www.wsj.com/articles/SB10001424052748703470904575499432808468868>.

⁶⁰ Reuters, 29th May 2015, Vodafone, Wind sign letter of intent for Italy fibre-optic network, <https://uk.reuters.com/article/vodafone-wind-italy-idUKL5N0YK4KX20150529>.

⁶¹ Enel, Enel Accelerates On Broadband With Metroweb Acquisition, 28th July 2016, https://www.enel.com/content/dam/enel-com/pressrelease/porting_pressrelease/1666151-1_PDF-1.pdf.

⁶² Previously the two companies had co-operated together developing an FTTC network.

⁶³ Fastweb, 26th July 2016, Fastweb and Telecom Italia sign a strategic partnership to build a national FTTH network, http://company.fastweb.it/wp-content/uploads/2016/07/2016_07_26_PR_FTTH_Fastweb-e-TIM-Agreement_ENG.pdf.

In October 2012, Jazztel and Telefónica formed a co-investment agreement based on access from the local optical exchange to each building unit. Jazztel agreed to share access from the manhole to 1.5 million households covered by its network and in return, Telefónica agreed to give Jazztel access to 1.5 million households that they had already covered. The agreement required both operators to invest in extending and modifying their networks, thereby establishing two independent networks in parallel, with access being shared from the manhole to the building on a reciprocal basis.

[X] There are no restrictions within the agreement on partners selling network access on a wholesale basis. In principle, the agreement is open to new operators on a symmetrical basis (i.e., a new participant would be required to build a network to an additional 1.5 million households).

Following the agreement, Orange and Vodafone jointly brought a dispute to the Spanish NRA, the CNMC, complaining that they were not being given access to the verticals in building units at reasonable prices. CNMC determined that Telefónica must give access to other operators on the basis of an obligation arising from its SMP status. Jazztel was acquired by Orange in August 2015.

In a separate agreement in 2013, Vodafone and Orange agreed to launch a co-investment project covering 3 million households (i.e., 1.5 million each) on a reciprocal active service swap basis. [X]

The agreement was updated in July 2014 following the acquisition of ONO by Vodafone. The total number of households covered under the agreement remained the same⁶⁴ but one million of them consisted of households which were already covered by the ONO's network. For these households, Vodafone/ONO would provide access to Orange using a bitstream product. The remaining 2 million would be covered by new network deployment under the agreement. After Orange's acquisition of Jazztel, the agreement was again updated to allow Vodafone to mutualize an additional 1 million households from Jazztel's FTTH network.

In July 2016, a further co-investment agreement was signed between Orange and MásMóvil.⁶⁵ This was the result of remedies imposed as a result of the Orange/Jazztel merger. The companies announced that they planned to share FTTH access in a similar way to the Orange and Vodafone deal as part of a wider agreement involving mobile roaming and site sharing. The agreement is asymmetrical with Orange's coverage area reaching 2-3 times more than MásMóvil's. The arrangement is also open to third parties.

A.1.3 France

⁶⁴ Vodafone, 23rd July 2014, Vodafone Spain and Orange Spain update fibre sharing agreement, <http://www.vodafone.com/content/index/about/policy/news/public-policy-news-releases/2014/vodafone-spain-orange-spain-fibre-sharing-agreement.html>.

⁶⁵ MásMóvil, 22nd July 2016, Masmovil Alcanza Un Acuerdo De Co-Inversion En Redes De Nueva Generación (Ftth) Con Orange, https://www.bolsasymercados.es/mab/documentos/HechosRelev/2016/07/84696_HRelev_20160722_1.pdf.

Telecoms co-investment is directly regulated in France. Between 2008 and 2011, the Autorité de Régulation des Communications Électroniques et des Postes (“ARCEP”) published decisions that set the technical and economic rules for rolling out FTTH, which includes elements of co-investment. The regulatory framework splits France into two areas according to population density - *zones très denses* (“ZTD”) and *zones moins denses* (“ZMD”) - with the ZTD containing about 5.5 million households and ZMD areas covering the other 27.7 million. In both areas, the operator that is first to connect a building with FTTH is mandated to provide access to other interested operators at a “mutualisation point”.⁶⁶ The cost of this sharing must be fair, reasonable and in line with the principle of efficient investments, as judged by ARCEP.

In 2010, the French government issued a call for expressions of interest in FTTH investment⁶⁷ at which point Orange and SFR, the only operators to reply to the call, made it clear where they intended to rollout FTTH initially. Various co-financing agreements were signed between Orange, SFR and local authorities in order to fund rollouts in different areas. In 2014, ARCEP undertook consultations to develop a cost model for calculating the cost basis for prices that co-investing operators were required to charge.⁶⁸

For the ZTD, the mutualisation point must be placed within a large dwelling unit or must serve 100 or 300 households for smaller dwelling units. Each operator that intends to reach customers within one of these groups of premises is therefore responsible for obtaining connectivity through to the mutualisation point. The first operator to connect a building is required to propose a co-investment for the building riser. A 25-30 year renewable IRU at this point would be provided if this co-investment is taken up. The cost of this IRU involves capital expenditure upfront and also operating expenditure covering maintenance and civil engineering costs. The cost for this IRU in ZTD areas is a function of $1/n$, where n is the number of co-investors active in a building. Alternatively, individual FTTH accesses can be leased.

For ZMD areas, mutualisation points must serve more than 1000 households (or 300 if backhaul portion is shared). Access to the shared part after the mutualisation point can be purchased in the form of co-investment in 5% increments. These two factors are intended to make it more reasonable for smaller operators to invest in less dense areas. However, although IRUs in the French model allow non-incumbents to be co-owners, there are still advantages for the building operator; network architecture and future investments remain under their control.

⁶⁶ Allen, J. and Arnell, E., 18th September 2015, The digital single market and telecoms regulation going forward, http://www.ectaportal.com/en/upload/Press_Releases_2015/Analysys%20Mason%20final%20%20report%20for%20ECTA%2018-09-2015%20CLEAN.PDF.

⁶⁷ Bourreau, M., Grzybowski, L., & Hasbi, M. (2015), “Private Operators’ Entry Strategies in the FTTH Market”, Telecom ParisTech.

⁶⁸ Allen, J. and Tinine, C., 10th July 2015, International case studies, https://www.ofcom.org.uk/__data/assets/pdf_file/0016/72025/international_case_studies.pdf.

A.1.4 Portugal

In July 2014, PT and Vodafone signed a co-investment agreement. [X] The agreement covers a total of 900,000 households, with each operator covering 450,000.⁶⁹ There are no per-customer fees paid between parties except for the consumption of energy when Vodafone is located within one of PT's central offices, or PT is located in a Vodafone central office. [X]

A separate co-investment agreement in Portugal was created in 2010 between Vodafone and Optimus. The agreement was for coverage of about 200,000⁷⁰ homes for each operator (400,000 homes in total), and access was offered on a reciprocal basis.⁷¹ [X]. As a condition of approval of the merger between Optimus and cable company Zon, Optimus subsequently sold its FTTH network to Vodafone.⁷²

In addition to these commercial co-investment deals, Vodafone has a separate agreement with DST, a wholesale-only network operator focusing on rural areas which is partially publicly-funded. This arrangement is a one-way access deal in which Vodafone has signed a long-term contract for capacity on DST's network. The terms of this contract in the areas of DST's network that have been supported by public funds are determined by the guidance of DST's bid during the public tender process.

A.1.5 Germany

In Germany, Deutsche Telekom ("DT") offers a form of specific access as part of its suite of fixed access products. DT describes the *Kontingentmodell* as "risk-sharing with [their] partners"⁷³. The arrangement offers long term (8 years plus 3 years right of continuance ("Nachlaufzeit")) bitstream capacity on DT's network in return for an upfront fee and a lower monthly fee. When the arrangement was first proposed in 2012, the German NRA ("BNetzA"), prohibited the arrangement because it considered that volume-based discount would discourage the investment in alternative infrastructure from competing operators. The proposed arrangements were amended, and the arrangement was then allowed by BNetzA later in 2012⁷⁴. The key changes made were to allow contracts to be terminated every two years and to increase the monthly fee slightly due to margin squeeze.

⁶⁹ Vodafone, 21st July 2014, Vodafone Portugal announces fibre sharing agreement with Portugal Telecom, <https://www.vodafone.com/content/index/media/vodafone-group-releases/2014/vodafone-portugal-fibre-sharing.html>.

⁷⁰ Competition Policy International, 17th May 2016, Portugal: Vodafone to buy Optimus' fiber network, <https://www.competitionpolicyinternational.com/portugal-vodafone-to-buy-optimus-fiber-network/>,

⁷¹ Vodafone, 17th December 2010, Optimus and Vodafone sign partnership deal for next generation networks, <http://press.vodafone.pt/en/2010/12/17/optimus-and-vodafone-sign-partnership-deal-for-next-generation-networks/>.

⁷² TeleGeography, 13th May 2016, Vodafone agrees to purchase former Optimus FTTH network, <https://www.telegeography.com/products/commsupdate/articles/2016/05/13/vodafone-agrees-to-purchase-former-optimus-ftth-network/>.

⁷³ Deutsche Telekom, 26th February 2015, Capital Markets Day - Day 1 Corrected Transcript, p27.

⁷⁴ EC, 3rd August 2012, Commission Decision concerning Case DE/2012/1350: Wholesale broadband access in Germany – Modification of price remedies, p2.

A.1.6 Ireland

In September 2012, ESB (a state-owned former monopoly electricity company and owner of a significant duct network), began a tender process to find a telecoms partner.⁷⁵ This led to Vodafone and ESB launching a JV with the two partners owning equal shares. The new entity is called SIRO and was launched in July 2014. It plans to roll out FTTH using ESB's existing overhead and underground infrastructure at a cost of €450 million (€900 per home). By 2018 the first phase of the project is planned to be complete with coverage reaching 500,000 premises in 50 towns.

SIRO offers its services to all telecoms operators on a wholesale basis. Vodafone, Digiweb, Westnet and Carnsore have signed up as retailers and BT Ireland has an interconnect agreement which allows it to offer corporate and public sector customers access.

A.1.7 Turkey

[3<] The negotiations, launched in July 2016, were focused on forming a JV to invest in broadband infrastructure.⁷⁶ The announcement stated that together the companies would be able to invest more efficiently, by avoiding duplicate infrastructure.

A.1.8 Greece

In July 2016, Vodafone and Wind Hellas, both challenger network operators, signed a Memorandum of Understanding, which agreed that they will deploy investments of fibre networks co-operatively.⁷⁷ The deal follows a failed merger attempt in 2012 between the companies. Both operators have fixed and mobile businesses and, following the unsuccessful merger deal, a successful active mobile network sharing deal was formed, creating a JV company named Victus.⁷⁸ This operating company manages the radio access network ("RAN") of both parent companies in approximately 70% of rural areas and approximately 40% of urban areas.

A.2 MOBILE NETWORK CO-INVESTMENT AND NETWORK-SHARING

A.2.1 United Kingdom

⁷⁵ Vodafone, 2nd July 2014, ESB and Vodafone to invest €450 million in 100% fibre broadband network across Ireland in European first.
<http://www.vodafone.com/content/index/about/policy/news/public-policy-news-releases/2014/esb-vodafone-ireland.html>.

⁷⁶ TurkCell, 27th July 2016, Turkcell and Partners Announce Plans for a Joint Venture Company to Achieve Greater Fixed Broadband Penetration,
http://s1.turkcell.com.tr/hakimizda/en/yatirimciiliskileri/InvestorPressReleaseLibrary/turkcell_partners_JVC.pdf.

⁷⁷ Vodafone, 11th July 2016, Vodafone Greece And Wind Hellas Will Co-operate On Co-Investments In Future-Proof Fiber Optic Networks,
http://www.vodafone.gr/portal/client/news/pressReleaseClient!pressReleaseDetails.action?pressReleaseId=40424&dateFrom=&dateUntil=&request_locale=en&lang=en_EN.

⁷⁸ Largo Intermediary Holdings Limited, Unaudited Condensed Consolidated Interim Financial Statements 30 September 2016, p27,
https://www.wind.gr/files/1/wind_v2/newsroom/deltia_typou/Crystal_Almond_Q3_2016_Final.pdf.

In the UK, there are two major mobile sharing agreements, both structured as JV agreements. In 2008 T-Mobile and H3G launched a JV named Mobile Broadband Network Limited (“MBNL”). This involved fully sharing passive elements which, in mobile, can include the sharing of towers and masts as well as power and air conditioning. In addition, the operators shared a 3G Multi-Operator Radio Access Network (“MORAN”), while each operator kept separate their 2G networks. Following the merger of T-Mobile and Orange in 2010, Orange’s sites and 3G RAN was merged into the agreement.

O2 and Vodafone formed a JV in 2012 called Cornerstone Telecommunications Infrastructure Limited (“CTIL”). The JV shares both passive assets, such as sites, and active RAN. The active RAN part of the arrangement is named Beacon and, unlike MBNL, includes 2G, 3G and 4G. Operational responsibility is split, with Vodafone looking after network design, management and maintenance in the west of the UK, Wales and south London, with O2 responsible of eastern regions as well as Northern Ireland and north London. In neither MBNL nor CTIL does sharing include spectrum, the core fibre backbone of the network or the “intelligent part of the network” that provides functionality such as mobile switching, home location registers and service platforms.⁷⁹ In addition to passive assets such as masts and towers that MBNL and CTIL own or manage, the networks also rely on independent infrastructure providers to provide access to network sites (Figure 4).

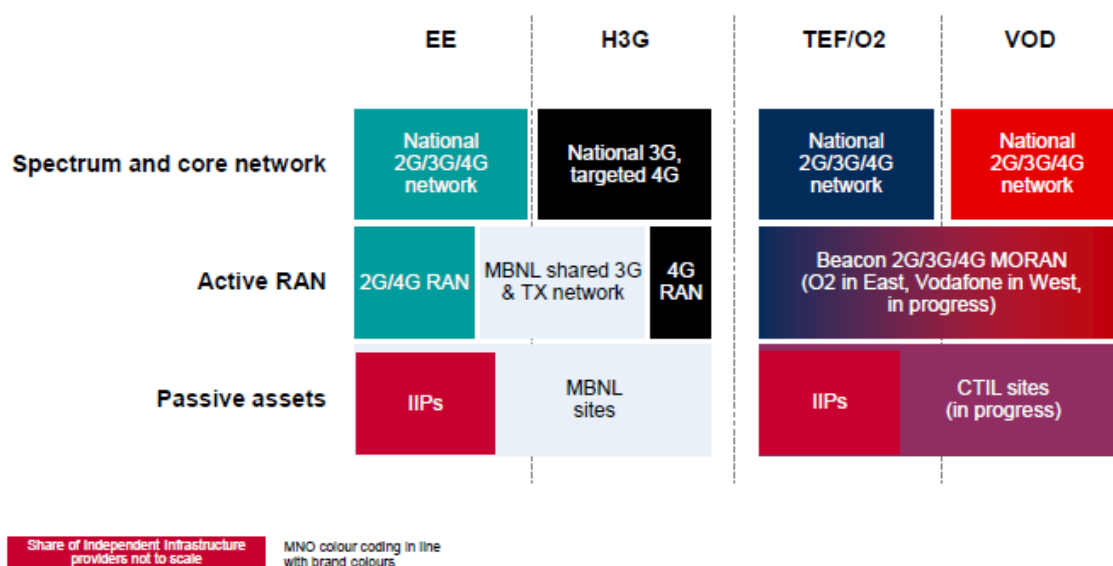


Figure 4: MNO network sharing landscape as of mid-2015

Source: Arqiva submission to Ofcom’s Strategic review of Digital Communications

In early 2017, Vodafone and O2 announced that they were renegotiating their network sharing deal to reflect their different views on the need for network expansion.

⁷⁹ OFT, 28th September 2012, OFT’s decision on the anticipated joint venture between Vodafone Limited And Telefónica UK Limited ME/5556/12, <https://assets.publishing.service.gov.uk/media/555de2d5e5274a708400003a/vodafone.pdf>.

A.2.2 Sweden

Sweden has an extensive history of mobile network sharing. This was necessitated originally because, in 2000, the incumbent operator TeliaSonera did not succeed in winning a 3G license. This led to a network sharing 50/50 JV deal to be formed in January 2001 between TeliaSonera and Tele2, named Svenska UMTS-Nat AB (“SUNAB”). The JV itself owned 3G spectrum, and the operators purchased wholesale capacity from the JV, with equal charges for each operator. The regulator supported the sharing arrangement.⁸⁰

Also in 2001, a 50/50 JV network sharing agreement called 3GIS was formed between Telenor and Hutchison 3G. Management and operation of the JV were handled by Nokia Siemens Networks. This network sharing agreement remains for 3G (2100 MHz) only, and the spectrum licenses are held separately by Telenor and Hutchison 3G, but parts of the core network are shared.

To aid LTE network deployment, Telenor and Tele2, formed a separate 50/50 JV active network sharing deal in April 2009. This is an active deal that shares parts of the access network and is similar in structure to SUNAB. The JV is called Net4Mobility and is used to coordinate the construction and operation of 2G and 4G networks. Net4Mobility itself owns spectrum, acquired through participation in spectrum auctions or having been transferred from the JV partners. All the spectrum that Telenor uses is shared within Net4Mobility except the 2100 MHz which remains shared with Hutchison 3G in 3GIS.⁸¹

A.3 SUBMARINE CABLE CONSORTIUMS

There are many different types of submarine fibre-optic cable project around the world. The traditional consortium model involves a group of operators or other investors forming a JV to develop a new submarine cable project. The JVCo will typically own the offshore assets (i.e., cable infrastructure that lies outside countries’ territorial waters) while one party in each country that the cable lands in may own the assets within that country, including the landing station. These operators are known as “landing parties” (“LPs”), and there would often be lease-back arrangements under which the landing party gives access to the JVCo or individual operators to these facilities.

Capacity on the cable is shared between members of the consortium according to the size of their investments. Structures may also be set up by the JVCo to wholesale capacity on the cable directly into the markets. The consortium, or participants in it, will typically try to presell as much capacity as possible before the launch of the cable, preferably on a long-term or IRU basis. This reduces the financing requirements of the project and reduces

⁸⁰ GSR discussion paper, 25th June 2015, Accelerating Broadband Deployment through Network Sharing and Co-investment, https://www.itu.int/en/ITU-D/Conferences/GSR/Documents/GSR2015/Discussion_papers_and_Presentations/Discussionpaper_networksharing.pdf.

⁸¹ Telenor, June 2016, Telenor Sweden Business description, <https://www.telenor.com/investors/company-facts/business-description/telenor-sweden/>.

risk for the equity investors. Operation and maintenance of the cable is outsourced, frequently to one of the consortium members.

Governance arrangements are written into the consortium agreement along with any specific rules and regulations about the activities of consortium members. There may, for example, be restrictions on wholesaling or requirements for consortium members to access customers in other countries via designated parties (usually the LP).

Appendix B Competition law framework and economic considerations

B.1 INTRODUCTION

Competition law provides one institutional framework that governs co-investment projects. This framework sits alongside the framework of economic regulation that sector-specific NRAs implement. In many cases of co-investment agreements there has been no formal review process under any EU or national competition statute. Indeed, a formal competition review may not occur until a specific competitive issue is raised through a complaint.⁸² However, competition principles are likely to inform regulatory reviews, and co-investment agreements cannot be written without competition law compatibility in mind. This section discusses the analytical approach described in European Union competition guidelines, as well as the economic underpinnings of that approach.

In the context of competition law, co-investment agreements are likely to be analysed as horizontal agreements between actual or potential competitors.^{83,84} However, fully-fledged joint ventures may be analysed as horizontal concentrations or mergers.⁸⁵ The competition analysis may be quite similar, however, whether the merger framework is used or the framework for analysis of horizontal agreements.

Article 101 of the Treaty on the Functioning of the European Union (“TFEU”) is the governing article for agreements between competitors, including joint production agreements such as co-investments.⁸⁶ Existing EU guidelines on the application of Article

⁸² This is the case in Italy in which the competition authority has launched an investigation into the Telecom Italia/Fastweb co-investment project in response to complaints from other parties.

⁸³ More precisely, co-investment agreements are likely to fall under the rules governing “joint production agreements.” Related to these rules, there is a “specialisation block exemption” that governs certain types of specialisation arrangements between firms that agree to let one of the partners specialise in producing certain products or which arrive at reciprocal agreements pertaining to certain products or in certain geographies, and leasing or purchasing supply from each other in geographies where the other partners does not produce. There are also *de minimis* market share thresholds that apply to all agreements and specific thresholds that apply in the case of agreements that qualify for the Specialisation Block Exemption.

⁸⁴ For brevity, and given the focus of this report, the subsequent discussion concerns the analysis of agreements that may not qualify for any of the various available exemptions.

⁸⁵ The Guidelines on the Applicability of Article 101 of the TFEU to Horizontal Co-Operation Agreements 2011/C 11/01 (“Article 101 Guidelines”) define a full-function joint venture as one that performs all the functions, on a lasting basis of an economically autonomous entity (¶6). The Guidelines at ¶21 state that the analysis of horizontal agreements has elements in common with horizontal merger analysis, further pointing out that there is “often only a fine line” between the types of ventures that are assessed under Article 101 and the types of ventures that come under merger review. One point of difference may be that analysis under Article 101 more expressly requires an analysis of the trade-offs (if any) between efficiencies and restrictions on competition than does the European merger control regime.

⁸⁶ There are also rules pertaining to vertical agreements — agreements between firms at different levels of the supply chain. In some cases, there are indeed vertical relationships between firms that may be participating in co-investment projects: for example, a co-investment project may involve the

101 state that horizontal co-operation agreements can be beneficial if, for example, they combine complementary activities, skills or assets. They can also be a valuable way of sharing risks, saving costs and bringing innovation to market more quickly than would otherwise be the case.⁸⁷

But agreements between actual or potential competitors in the same market(s) can also be used to restrict competition. This is so, even when they do not contain what the EU guidelines describe as “hardcore restrictions” or restrictions “by object”.⁸⁸ Examples of such restrictions are provisions to allocate or share markets, directly exchange individualised information on future pricing intentions, fix prices, limit sales, or fix output. Even absent such restrictions, provisions of horizontal agreements could face scrutiny if they have the potential to restrict competition (i.e., “by effect” rather than “by object”). In such circumstances, any restriction on competition will be weighed against the pro-competitive or efficiency effects from the agreement and the role of the restrictions in fostering that efficiency.

In short, a co-investment project would potentially be subjected to two screens. An Article 101(1) screen, which would evaluate whether the co-investment agreement has terms that “by object” or “by effect” restrict competition. If the Article 101(1) screen is not passed, then the agreement is subjected to an Article 101(3) screen. Here the role of restrictions on competition is weighed against efficiencies that the agreement creates. The Article 101(3) analysis will particularly focus on the relationship between the specific restrictions and the efficiency gains, if any. If the Article 101(3) “offsetting efficiencies” tests are not passed, then the agreement is prohibited under Article 101(2).

The potential analyses under Articles 101(1) and 101(3) are described in more detail below. The role of competition law is not, however, restricted to the application of Article 101. For instance, if the co-investment agreement involves an SMP operator whose dominance is maintained or enhanced by the agreement, then a clearance under Article 101 does not preclude a review under Article 102 (Abuse of Dominance) of the TFEU. An agreement may have no anti-competitive effects initially, but changes in market circumstances can result in provisions of the agreement having anti-competitive effects at some point in the future. In those circumstances, there are remedies available under competition law, and potentially also through the review processes of NRAs.⁸⁹

SMP operator in a market and another firm that currently uses inputs (e.g., unbundled local loops) that it purchases from the SMP operator. However, the co-investment project itself is not a vertical agreement, and it does not alter the pre-existing vertical relationship between firms.

⁸⁷ See, for example, Article 101 Guidelines at ¶1.1, for a description of the benefits and potential downsides of horizontal agreements.

⁸⁸ See Article 101 Guidelines ¶24.

⁸⁹ By way of analogy, a code-sharing agreement between two airlines may not be anti-competitive at its inception as the two airlines may be small players in the market. But the assessment of the competitive effects of the code-sharing agreements would change if there was substantial consolidation in the airline industry. An airline merger or a sector investigation would typically provide triggers for reviews of the original agreement.

B.2 ARTICLE 101(1) ANALYSIS

An Article 101(1) analysis would have significant parallels to an SMP analysis in the telecommunications sector. To raise concerns, the agreement has, at a minimum, to feature actual or potential competitors in one or more relevant market(s). Notably, there is no reason that the “relevant market” that would be analysed under a competition analysis would need to be confined to the relevant markets that are susceptible to ex-ante regulation, as defined by the European Commission. All of those markets are upstream or wholesale markets. Many potential co-investment projects could feature agreements between parties that are not competitors in any relevant upstream market - many or most alternative operators do not compete with the incumbent SMP operator in these markets. Unless they had concrete plans to build their own networks and supply at the wholesale level, they would not even be potential competitors in those upstream markets.⁹⁰ But they are or would be competitors in the retail markets. Thus agreements that involved the flow of information relevant to retail pricing would certainly be subjected to scrutiny.⁹¹ So too might issues of network design and operation that effectively inhibit retail competition.⁹² These issues may be quite subtle but are only likely to be problematic should the co-investment project acquire a high collective market share in a relevant market.

Market power is a key factor in the analysis of competitive effects of an agreement: “A direct limitation of competition between the parties, a collusive outcome or anticompetitive foreclosure is not likely to occur if the parties to the agreement do not have market power in the market”.⁹³ In the case of a co-investment agreement, the incremental effect of the agreement on market power would be the focus of the analysis. For instance, a co-investment project in an FTTH network between an SMP operator and an alternative operator that currently lacks its own infrastructure may raise no concerns about upstream market power. However, if the two parties have significant retail market shares, then those retail market shares could give cause for investigating the downstream impacts of the agreement.

Given the market definition considerations, it is more likely that the locus of immediate concern in an Article 101(1) analysis of a co-investment agreement would be effects on the retail market.⁹⁴ In very general terms, other than “by object” restrictions, typical areas

⁹⁰ Indeed the criteria that the Article 101 Guidelines use for a potential competitor (¶10) involve a competitor that could switch to participating in the relevant market within a short period of time.

⁹¹ See also ¶¶160-162 of the Article 101 Guidelines.

⁹² Examples include restrictions on independent decisions about expanding network capacity or taking actions that increase product differentiation — these may be more likely to arise where active network elements are shared; cost-sharing rules such as “allocating” total costs to parties based on some measure of volume of data carried by each party which could restrict incentives to offer up incremental capacity, including to third parties; and network design that effectively rules out third party access.

⁹³ EC, 23rd April 2010, Article 101 Guidelines Draft, ¶158.

⁹⁴ There is not likely to be a relevant upstream or downstream market centred around FTTH technology. Even where the co-investment involves the “incumbent” operator with SMP, the FTTH

of concern are (a) direct limitation of competition between parties (e.g., a JV vehicle created for the co-investment partners that charged a high transfer price and thus effectively limited output in the downstream market⁹⁵); (b) agreements that create a high degree of commonality of (variable) costs, thus facilitating coordinated conduct; and (c) information exchanges that, while not involving the exchange of future pricing intentions, make it easier to coordinate output and prices between the co-investing partners.⁹⁶ Provisions that go beyond joint production and extend into joint marketing or sales are likely to heighten concerns about coordinated conduct. To determine that an upstream co-investment agreement in a discrete technology may affect retail market outcomes, however, it would require evidence that the co-investment agreement somehow facilitates information flows that impact retail pricing and product development choices; or that it otherwise contains provisions that effectively restrict parties' freedom to make such choices. Given market conditions today and in the near future, one would likely need to see evidence that the co-investment agreement has spill-overs into the parties' broader retail market conduct and that the affected parties have a high collective market share.⁹⁷

Where one of the parties to a production agreement has a dominant position in a relevant market (or markets), the agreement will ordinarily raise significantly more concerns. Indeed, in such circumstances, foreclosure concerns could trigger an Article 102 investigation, although foreclosure might also be analysed and result in a prohibition under Article 101. In the fixed telecommunications industry, however, the dominance assessment is made with reference to the upstream market. As discussed, the immediate incremental effect of a co-investment agreement on the SMP operator's dominance need not be a source of immediate concern, at least if there is regulated access to the copper network that is the source of the operator's market power. Clearly, as technology changes and consumer demand evolves, the co-invested network may itself eventually confer or substantially enhance SMP⁹⁸ but that may not be sufficient to conclude under competition law that the agreement will prevent or lessen competition.

Finally, and very importantly in the context of co-investment that leads to new VHC networks, the Article 101 Guidelines state that production agreements are unlikely to have

network likely faces competition from (often regulated) legacy copper networks or hybrid copper/fibre networks.

⁹⁵ In economic terms, the transfer price between the JV to the downstream arm could be set in such a way that it restricted downstream output and price to the monopoly level (for example) without any explicit agreement or even tacit coordination on the downstream price. See, for example, the Article 101 Guidelines at ¶174.

⁹⁶ Again, these concerns are only really potent if the co-investing partners have high market shares and a substantial amount of market power, or if somehow the agreement makes it easier to coordinate across all parties in the industry.

⁹⁷ If the parties continue to offer other products based on current-generation technology, there would also have to be some type of spill-over effect on the retail pricing and marketing of these products.

⁹⁸ This would be true if the market share at the retail level of operators using the incumbent's infrastructure is high enough for an inference of dominance upstream (in the wholesale market), as is the market share of parties using the co-investment network to compete in the retail market. In this circumstance, the extent of actual or potential competition between the co-investing parties may need to be analysed and remedies implemented if necessary.

restrictive effects on competition if the co-operation gives rise to a new market: “[I]f the agreement enables the parties to launch of [sic] a new product or service, *which the parties would not have been able to do otherwise.*” [Emphasis added]. This does not constitute an unambiguous exemption for new products or innovations. However, it does suggest that co-operation to foster innovation is looked upon favourably within a competition framework.

It is worth noting that anti-competitive effects from an agreement between competitors can arise even if these competitors appear to be competing vigorously downstream. The economic literature recognises that a JV over an “input” that is used in a downstream retail market product can sometimes replicate the result of an outright horizontal merger. This may be the case even if the parties to the agreement continue competing vigorously at the retail level.⁹⁹ Such effects are much more likely to arise when the two parties compete by selling products that are highly substitutable or not well differentiated from each other. In this case, the greater the shared elements of the network, the more likely are anti-competitive effects to arise. Alternatively, market division can arise if parties construct geographically distinct networks and charge each other high “swap” fees for access; again, the parties’ downstream divisions can compete vigorously (i.e., price at cost), but the swap fee can be set at a level that ensures that the end result is a retail price that replicates a monopoly price.¹⁰⁰ The conventional competition focus on minimising the potential for coordinated conduct at the retail level should be supplemented by an awareness of the potential for the co-operation upstream to produce outcomes similar to coordination or a full downstream merger. For example, concerns about information sharing might compel the creation of a stand-alone co-investment entity that acts completely separately to its parents but the economic literature shows that this could actually produce higher prices than even a full-blown merger.¹⁰¹

⁹⁹ Chen, Z. and Ross, T.W (2003), “Co-operating Upstream While Competing Downstream: A Theory of Input Joint Ventures”, *International Journal of Industrial Organization*, Volume 21, Issue 3, p381-97. This paper shows that in the case of perfect substitutes produced in a market with two competing firms, the upstream “JV” will set a transfer price that equals the price that a downstream monopolist would set. The downstream firms continue to compete vigorously, in that they price at cost, but the cost is equal to the monopoly retail price. This type of arrangement produces an identical outcome to a merger.

¹⁰⁰ This is less likely if the swap fee is a fixed monthly fee that does not depend on the number of lines added, for the simple reason that such a pricing structure would be hard to mirror at the retail level. A per-unit swap fee (e.g., x Euros per line) would be easier to mirror as would a two-part tariff (fixed fee plus marginal price per unit of use).

¹⁰¹ Chen and Ross (2003), *op. cit.*

B.3 ARTICLE 101(3) ANALYSIS

If the Article 101(1) analysis suggests that aspects of the agreement restrict competition¹⁰², an agreement can still be approved if it meets certain criteria under Article 101(3). The economic content of these criteria are as follows:

- There are substantial efficiencies, such as may particularly be the case with obviously innovative products, associated with the production agreement;
- There are likely to be significant consumer benefits, implying a high rate of pass-on to consumers, as a result;
- The restrictions on competition are reasonably necessary and directly related to facilitating that innovation and consequent consumer benefit. In other words, absent the restrictions the efficiencies associated with the agreement would not be achievable; and
- There is no elimination of competition in the relevant market(s) or so-called spill-over markets.¹⁰³

In practical terms, most co-investment agreements in new technology such as FTTH, if they were subjected to an Article 101(3) analysis, would be expected to result in substantial innovation and efficiency. Also, given the relatively low deployment of such networks by either incumbents or alternative operators, it is relatively easy to make the case that, but for the agreement, the efficiency gain associated with the new network investment would not be realised. There could, however, be concerns about agreements that facilitate coordinated conduct between significant players in the retail market. Such concerns would be more potent if the agreement covered downstream aspects such as commercialization and sales, in which case there may be information flows that could facilitate retail-level coordination. There may also be concerns with co-investment structures that while seemingly consistent with vigorous retail competition implicitly mimic the effects of a horizontal merger upstream.

The economic literature provides some insights into the nature of restrictions on competition that are justified from a competition perspective and those that are not.

- Economic theory supports the notion that exclusivity commitments and restrictions on access have a role to play in incentivizing investment. Freedom to limit the number and type of partners may help overcome fears of free-riding and opportunism by late-comers. Carlton and Salop (1996) write:

“Regulation of new membership entry may lead to efficiency benefits. Concerns that later applicants will free ride on large and risky investments made by the

¹⁰² The focus here is on the more interesting case of restrictions on competition by effect, rather than by object. Agreements containing “by object” restrictions are not likely to qualify for an exemption under either Article 101(1) or 101(3).

¹⁰³ See, for example, the discussion in ¶4.4 of the Article 101 Guidelines. Spill-over markets might typically be markets upstream or downstream of the market affected by the co-operation.

founding members might lead a joint venture to close its membership or increase application fees for new members after such investments have been made... coordination costs can be affected by divergent economic interests, and differences among members with respect to location, skills, or market position can affect the degree to which potential complementary efficiencies are realised".¹⁰⁴

- Similarly, Rey and Tirole (2001), recognise that certain types of restrictions such as provisions that ensure that each partner will remain exclusive to the co-invested network and not seek out other partners in the same market can foster commitment and participation in the joint project. They argue that reducing the exit options of the parties is conducive to the success of collaborative projects such as JVs.¹⁰⁵

Conversely:

- Restrictions on independent decision-making stemming from network design, cost-sharing rules or transfer pricing between downstream and upstream entities may be difficult to justify on efficiency grounds should they be found to lessen competition.
- Equally, access restrictions that were necessary to incentivize investment at the inception of a project may be used at a later date to foreclose competition. This effect may arise when the co-investment has acquired substantial collective market share.
- Even if the individual co-investing parties are truly competing vigorously downstream (i.e., they are not merely appearing to do so), access restrictions could prevent the emergence of innovative competitors who require access to the co-invested network.¹⁰⁶ This too may raise competition concerns in itself.

Thus, while many co-investment projects in fixed telecommunications will not raise competition concerns in the current market context, the competitive effects of these projects can change over time. The ultimate analysis of these competitive effects will require an in-depth review of the project arrangements; and the economics of competitive harm stemming from such project arrangements is complex and nuanced.

¹⁰⁴ Carlton, D. W., & Salop, S. C. (1996), "You keep on knocking but you can't come in: Evaluating restrictions on access to input joint ventures", *Harvard Journal of Law & Technology*, p320-352, at 326.

¹⁰⁵ Tirole, J. and Rey, P. (2001), "Alignment of Interests and the Governance of Joint Ventures", Working Paper, IDEI, University of Toulouse.

¹⁰⁶ This is discussed in Carlton & Salop (1996), *op. cit.* Even if members of a co-investment project compete vigorously and earn no monopoly profits, they may have incentives to deny access to a competitor that can use the network to offer a more compelling product at retail (e.g., a disruptive new entrant that can bundle its fixed broadband offering with TV or mobile offerings, or which has a substantial edge in retail service provision).

Appendix C Market definition

C.1 GEOGRAPHIC MARKET DEFINITION

Geographic market definition is already included in the European regulatory framework: “the geographic scope of a defined market can in principle be local, regional, national or even covering territories across the borders of individual Member States”.¹⁰⁷ The characteristic that should be taken into account when splitting geographic markets is whether an SMP operator acts uniformly across its network area or whether there are significantly different levels of competition in an area to the extent that its actions are constrained in that area but not others.

Further guidance is given in the explanatory note of the SMP guidelines. It explains that a geographic area is not a distinct market purely due to the number of networks present in an area.¹⁰⁸ There must be evidence that the addition of a sub-national network creates a regional competitive pressure that causes a price difference from other areas which are not covered by the sub-national network.

More recently, BEREC published a Common Position document which examines further the geographical aspects of market analysis.¹⁰⁹ This report lays out some of the more practical aspects of the analysis. An analysis should start with a “modified greenfield approach” where the competitive conditions of the retail market being studied should be examined in the hypothetical situation where there would be no regulation in the underlying wholesale market. The report lays out criteria for a distinct sub-national geographic market:

- Mutually exclusive areas for each market;
- The network layout of the relevant operators is able to be examined in the separate areas;
- Clear and stable boundaries; and
- “Small enough for competitive conditions to be unlikely to vary significantly within the unit but at the same time large enough that the burden on operators and NRAs with regard to data delivery and analysis is reasonable.”

¹⁰⁷ EC, 9th October 2014, Commission Staff Working Document Explanatory Note Accompanying the document Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC SWD (2014) 298, p13.

¹⁰⁸ EC, 13th November 2007, Commission Staff Working Document Explanatory Note Accompanying document to the Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services SEC(2007) 1483/2, p13.

¹⁰⁹ BEREC, 5th June 2014, Common Position on geographical aspects of market analysis (definition and remedies) BoR (14) 73.

Historically, there have been a number of decisions made by NRAs that have been challenged by the EC. For example, CNMC in Spain chose to separate market 3b into two geographic markets, a more competitive area and a less competitive area. The more competitive area included those exchanges where the cable operator covered at least 60% of households and two out of three of the main LLU operators were present, or where all three of the main LLU operators were present, and the market share of Telefónica was under 50%. The EC considered that CNMC had not provided enough justification to split the market and that more evidence was required to show that the difference in competitive conditions had given rise to differing pricing strategies. In response to the EC's comments, CNMC changed its market definition to a national level. Similar disagreements have occurred in the Czech Republic and Poland.¹¹⁰

However, in other countries, such as the UK, the NRA, Ofcom, has successfully argued for a sub-national split. In 2010, the wholesale broadband access ("WBA") market was split according to how many competitors were present at the LLU level:

- "Market 1: exchanges where only BT is present or forecast to be present"
- "Market 2: exchanges where two POs are present or forecast and exchanges where three POs are present or forecast but where BT's share is greater than or equal to 50 per cent"
- "Market 3: exchanges where four or more POs are present or forecast and exchanges where three POs are present or forecast but where BT's share is less than 50 per cent".¹¹¹

Competitive constraints at the WLA level have, in the past, been mainly provided by cable network operators but this has not been strong enough for incumbents to have non-uniform pricing depending on the presence of cable. NRAs have therefore tended to retain national market definitions.

Looking forward, with the potential of FTTH co-investment roll-outs in mind, it may be the case that co-investment could provide effective competition to the extent that a geographic market split would be necessary. BEREC comments on this specifically in its report focussed on practical aspects of geographic market analysis, stating that if an alternative network is being deployed, it may indeed be appropriated to "use as the geographical unit in the geographical segmentation (i) the incumbent operator's exchange area, (ii) the alternative network's topology or (iii) an administrative geographical area, or others".¹¹² depending on the specific situation. BEREC suggests that the development of fibre rollouts in certain regions could cause competitive conditions to vary significantly in market 3a as well as market 3b.¹¹³

¹¹⁰ BEREC, 5th June 2014, Common Position on geographical aspects of market analysis (definition and remedies) BoR (14) 73, p10.

¹¹¹ Ofcom, 3rd December 2010, Review of the wholesale broadband access markets, p14. PO is an abbreviation for Principal Operator.

¹¹² BEREC, 5th June 2014, p23.

¹¹³ Ibid, p4.

The situation where an FTTH co-investment creates effective competition in a specific geographic area was also considered within the NGA Recommendation:

*“Arrangements for co-investment in FTTH based on multiple fibre lines may in certain conditions lead to a situation of effective competition in the geographic areas covered by the co-investment. These conditions relate in particular to the number of operators involved, the structure of the jointly controlled network and other arrangements between the co-investors which aim at ensuring effective competition on the downstream market. In such a situation, if competitive conditions in the areas concerned are substantially and objectively different from those prevailing elsewhere, this could justify the definition of a separate market where, after the market analysis according to Article 16 of Directive 2002/21/EC, no SMP is found”.*¹¹⁴

This paragraph indicates that an NRA would need to consider splitting geographically a market that contained a co-investment roll-out. BEREC explains that it recognises that geographical segmentation could lead to increased infrastructure competition in some areas and thus effective competition in retail markets, and suggests that this may significantly influence the NRAs decisions about geographic market definition.¹¹⁵

Geographical segmentation of markets versus geographical differentiation of remedies

BEREC notes that there are two possible ways for NRAs can respond to geographic competitive environment differences in the nations that they regulate. They can either define different markets at the market definition stage, or they can adjust remedies depending on geography. The former method should be used when the NRA finds that the competitive situation differs significantly and sustainably from other areas.¹¹⁶ If the NRA is wary of deregulating sub-nationally due to the competitive situation not being stable or sustainable, remedy differentiation on a sub-national geographic basis can be used.

In the CNMC’s 2016 review of market 3a, it used the latter method to differentiate remedies geographically, partially deregulating Telefónica’s fibre network in the 66 municipalities that were declared competitive.¹¹⁷ The EC Recommendation on Consistent Non-discrimination Obligations and Costing Methodologies suggests methods for where the NRA considers remedy differentiation appropriate. The recommendation states that

¹¹⁴ EC, 20th September 2010, Recommendation on regulated access to NGA 2010/572/EU, *Official Journal of the European Union*, ¶28.

¹¹⁵ BEREC, 5th June 2014, Common Position on geographical aspects of market analysis (definition and remedies) BoR (14) 73, p38.

¹¹⁶ Ibid, p35.

¹¹⁷ EC, 16th December 2016, Commission Decision concerning: - Case ES/2016/1951: Wholesale local access provided at a fixed location in Spain – Remedies.

differences between geographical areas could lead to price control measures being imposed in some areas, but not those that are deemed competitive.¹¹⁸

C.2 PRODUCT MARKET DEFINITION

The EC SMP guidelines state that the relevant product market comprises “all those products or services that are sufficiently interchangeable or substitutable”.¹¹⁹ The WLA, WCA and leased line markets (markets 3a, 3b and 4) have been judged by the EC to be those that should be reviewed¹²⁰ and NRAs are able to segment these markets further if justified. Whether or not NRAs segment these markets further has historically been determined by their analysis of the chain of substitution. The EC guidelines state that “chain substitutability occurs where it can be demonstrated that although products A and C are not directly substitutable, product B is a substitute for both product A and product C and therefore products A and C may be in the same product market since their pricing might be constrained by the substitutability of product B”.¹²¹

In the 2014 explanatory note to the 2002 EC Access Directive, it is stated that experience has “not shown significant breaks in the chain of substitution when comparing current-generation broadband services to those provided over optical fibre”.¹²² This finding is not completely universal, with BEREC finding that 19 NRAs of the 28 included fibre access in the relevant product market alongside copper based products in WLA and 17 out of the 28 included it in the WCA market.¹²³ Further to this BEREC notes that the main reason that NRAs did not decide that fibre should be included in the relevant market was due to the fibre rollouts being only at early stages in these markets.

Although in the retail or WCA markets, NRAs have found that FTTH services may be directly substitutable to copper-based services, in the WLA market this is less likely to be the case. However, NRAs have still tended to find that fibre is in the same market as other products as shown due to the indirect constraint of the self-supply of FTTH at the WLA

¹¹⁸ EC, 21st September 2013, Commission recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment 2013/466/EU, *Official Journal of the European Union*, ¶67.

¹¹⁹ EC, 11th July 2002, Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services 2002/C 165/03, *Official Journal of the European Communities*, ¶41.

¹²⁰ EC, 9th October 2014, Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services 2014/710/EU, *Official Journal of the European Union*, Annex.

¹²¹ EC, 11th July 2002, Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services 2002/C 165/03, *Official Journal of the European Communities*, ¶41.

¹²² EC, 9th October 2014, Commission Staff Working Document Explanatory Note Accompanying the document Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC SWD (2014) 298, p40.

¹²³ BEREC, April 2012, BEREC report on Co-investment and SMP in NGA networks BoR (12) 41.

level, as well as the proposed direct substitutability of a VULA remedy. BEREC states that it has “consistently noted that self-supplied services can be included in the wholesale market definition or in the wholesale market analysis stage of the review process if the strength of indirect constraints is, without regulation, sufficiently effective to have a material impact on upstream conditions”.¹²⁴

Looking closer at individual decisions made by NRAs, Ofcom stated in its 2013 Fixed Access Market Review that, in regards to small-scale fibre based NGA deployments alongside BT’s network, it “seems plausible that these lie within the relevant market for the same reasons that cable-based access is included”.¹²⁵ Cable-based access is included due to the indirect competition constraint that it applies.

In Portugal, where FTTP networks are more extensive, in the latest WLA market review the relevant product market was defined by ANACOM as all access products irrespective of the supporting technology (i.e., copper, cable and fibre products).¹²⁶ This decision by ANACOM is an interesting case study to illustrate how an NRA may approach deregulation in the event that an increase in FTTH penetration leads to this being a consideration. In its decision, ANACOM takes the previously stated quotation from the 2014 explanatory note regarding the lack of significant chains of substitution, as well as various comment letters sent to it from European NRAs, to conclude “unequivocally”¹²⁷ that fibre accesses should be included in market 3a.

¹²⁴ BEREC, 5th June 2014, Common Position on geographical aspects of market analysis (definition and remedies) BoR (14) 73, p19.

¹²⁵ Ofcom, 3rd July 2013, Fixed access market review: consultation, p124.

¹²⁶ EC, 29th July 2016, Commission Decision concerning Case PT/2016/1888: Wholesale local access provided at a fixed location in Portugal C(2015) 5095, p2.

¹²⁷ ANACOM, 11th February 2016, Projeto De Decisão Sobre A Análise Dos Mercados De Acesso Local Grossista Num Local Fixo E De Acesso Central Grossista Num Local Fixo Para Produtos De Grande Consumo Definição Dos Mercados Do Produto E Mercados Geográficos, Avaliações De PMS E Imposição, Manutenção, Alteração Ou Supressão De Obrigações Regulamentares, ¶3.20.

Appendix D Glossary

Term	Definition
ARCEP	Autorité de Régulation des Communications Électroniques et des Postes
BEREC	Body of European Regulators for Electronic Communications
DT	Cornerstone Telecommunications Infrastructure Limited
EC	European Commission
ESB	Electricity Supply Board
EECC	European Electronic Communications Code
FTTH	Fibre to the home
FTTP	Fibre to the premises
IRU	Indefeasible right of use
JV	Joint-venture
LP	Landing parties
MBNL	Mobile Broadband Network Limited
MDU	Multi-dwelling units
MORAN	Multi-Operator Radio Access Network
NRA	National regulatory authorities
NGA	Next generation access
OFT	Office of Fair Trading
OLT	Optical line terminal
PON	Passive optical networks
PT	Portugal Telecom
PO	Principal Operator
RAN	Radio access network
SMP	Significant market power
TFEU	Treaty on the Functioning of the European Union
VHC	Very high capacity
VULA	Virtual unbundled local access
WBA	Wholesale broadband access
WCA	Wholesale central access
WLA	Wholesale local access
ZMD	Zones moins denses
ZTD	Zones très denses

Appendix E Berkeley Research Group

E.1 OVERVIEW

Berkeley Research Group, LLC is a leading global strategic advisory and expert services firm that provides independent expert testimony, litigation and regulatory support, authoritative studies, strategic advice, and document and data analytics to major law firms, Fortune 500 corporations, government agencies, and regulatory bodies around the world.

From testifying in high-stakes litigation to consulting on large-scale projects, BRG experts and consultants combine intellectual rigor with practical, real-world experience and an in-depth understanding of industries and markets. Their expertise spans economics and finance, data analytics and statistics, and public policy in many of the major sectors of our economy, including healthcare, banking, information technology, energy, construction, and real estate.

Berkeley Research Group is headquartered in Emeryville, California, with offices across the United States and in Australia, Canada, Latin America, and the United Kingdom.