



AALBORG UNIVERSITY
DENMARK

Aalborg Universitet

Symmetric Telecom Regulation, Competition and Investment

Henten, Anders Hansen; Falch, Morten

Published in:

Nordic and Baltic Journal of Information and Communications Technologies

DOI (link to publication from Publisher):

[10.13052/nbjict1902-097X.2020.005](https://doi.org/10.13052/nbjict1902-097X.2020.005)

Creative Commons License

Unspecified

Publication date:

2020

Document Version

Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Henten, A. H., & Falch, M. (2020). Symmetric Telecom Regulation, Competition and Investment. *Nordic and Baltic Journal of Information and Communications Technologies*, 2020(1), 95-116.

<https://doi.org/10.13052/nbjict1902-097X.2020.005>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Symmetric Telecom Regulation, Competition and Investment

Anders Henten* and Morten Falch

*CMI, Department of Electronic Systems, Aalborg University, Copenhagen,
Denmark*

Email: henten@es.aau.dk; falch@es.aau.dk

**Corresponding Author*

Received 21 January 2020; Accepted 21 January 2020

Published 03 February 2020

Abstract

Symmetric telecoms regulation, where it is not only the operators with significant market power (SMP) at national or large geographical scales which are subject to special access obligations, has been on the agenda for long. However, emphasis has hitherto been on asymmetric regulation, but during the past few years, symmetric regulation has gradually gained weight in different EU countries, and the new European Electronic Communications Code also aims at putting more emphasis on symmetric regulation. The paper identifies the reasons behind symmetric access regulation possibly coming to play a more prominent role in EU telecoms regulation, the scope of symmetric regulation and how it is being articulated, and what the possible implications of symmetric regulation could be on the level of investment. The contribution of the paper is to discuss these different elements of understanding the potential role of symmetric regulation.

Keywords: Symmetric regulation, competition, investment, European Electronic Communications Code.

Journal of NBICT, Vol. 1, 95–116.

doi: 10.13052/nbjict1902-097X.2020.005

This is an Open Access publication. © 2020 the Author(s). All rights reserved.

1 Introduction

The paper aims at analyzing the implications of symmetric telecom regulation on competition and investment in the telecom area. Symmetric regulation, where it is not only the operators with significant market power (SMP) at national or large geographical scales which are subject to special access obligations, has been on the agenda for long. However, emphasis has hitherto been on asymmetric regulation, but during the past few years, symmetric regulation has gradually gained weight in different EU countries, and the new European Electronic Communications Code (Directive 2018/1972) also aims at putting more emphasis on symmetric regulation (de Streel and Larouche, 2016; Briglauer et al., 2017).

The paper elaborates on the rules for the implementation of symmetric regulation in the Communications Code and discusses how symmetric regulation can potentially effect competition and investment. The assessment will look at the potential impacts of symmetric regulation on competition and discuss how competition can affect investment. The reason for this sequence of analysis is that it is assumed that the implications of symmetric regulation on investment, to a large extent, will be mediated by the implications of symmetric regulation on competition. However, symmetric regulation will also directly impact investment in the sense that the implementation of symmetric regulation may lower the incentives for physical infrastructure investment by new-coming network operators to a geographical area. It could also limit incentives for additional investment by operators that are already there with physical networks, as they may have to open their networks for other competing operators. But it could also lead to increased investments, which is the hope enshrined in the new European Communications Code of 2018.

In addition to symmetric regulation, another important element in the new European Electronic Communications Code is regulation aiming at promoting co-investment in telecom infrastructures. This will lead to lower investment costs for the individual operators and may increase the incentives for operators to invest in areas they would otherwise have been hesitant to enter. It will, furthermore, for certain, lead to a greater emphasis on service competition as opposed to infrastructure competition. The overall purpose of the Communications Code can be seen in light of the aim of extending very high-capacity networks to all areas, businesses and citizens in Europe by changing the regulatory set-up and thus the dynamics and actions of network operators. An increased emphasis on symmetric regulation and an enhanced promotion of co-investment is meant to invigorate competition and

the deployment of very high-capacity networks and access of citizens in all areas to very high-capacity connectivity by avoiding unnecessary duplication of physical network infrastructures.

The present paper is only concerned with part of this overall purpose. The paper contributes with elements to understanding the implications of symmetric regulation on competition and investment. In the following section, the provisions in the Communications Code relating to symmetric regulation will be examined in addition to the most important regulatory innovations in the Directive. Thereafter, theory contributions to understanding the relationships between competition and investment are discussed. In the subsequent section, statistical correlations between the level of competition and investment are examined, and this followed by a discussion section and a conclusion.

2 The Communications Code

The issue of symmetric and asymmetric regulation actually does not figure prominently in the Communications Code. The word ‘symmetric’ is only mentioned twice in the whole Directive – and one of the two times in a context which is not relevant for the discussion here – and the word ‘asymmetric’ is only mentioned once. This does not mean that the issue of symmetric and asymmetric regulation is not an important topic in the Communications Code. But other concepts and ways of articulating the issue are used. In the Directive, the issue is dealt with in terms of the more exact legal and economic terms of Significant Market Power (SMP) and the situations in which *ex ante* regulation is to be imposed.

The concepts of symmetric and asymmetric regulation are more general concepts that can be superimposed on discussions on the balance of regulatory intervention in order to describe the overall structure and direction of regulatory provisions. This is the only manner in which the concept of symmetric regulation is used in the Directive. In one of the very last recitals of the Directive (number 319), it is stated that ‘...this Directive introduces novel approaches to the regulation of electronic communications sectors, such as the possibility to extend the application of symmetric obligations...’. These novel approaches should be given particular attention in coming reviews of the Directive, it is furthermore said.

Also, the issues relating to symmetric and asymmetric regulation are only a small part of the Directive as such. The Directive 2018/1972, which came into force in December 2018 with a deadline for national transposition

in December 2020, replaces the four previous Directives that constituted the EU regulatory framework for electronic communications, namely the Framework Directive, the Access Directive, the Authorization Directive, and the Universal Service Directive. The new Directive includes the topics of the former Directives and amends the provisions in them. This means that the Directive is concerned with the general aims of telecom regulation, access and interconnection, regulatory institutions, universal service, etc. It is thus a large and very complex directive with 326 recitals and with 127 articles with numerous sub-articles, and the issue of symmetry and asymmetry only plays a small and partial role in this overall piece of legislation. Nevertheless, in overviews of the new Directive provided by, for instance, consultancy companies and other observers (e.g. Bird and Bird, 2018 and Crowell and Moring LLP, 2018), the question of symmetric regulation plays a central role. The reason is obviously that this is one of the areas, where the intensions of the new Directive differ from the previous Directives.

The explicit overall new direction of the Directive is to give greater emphasis to provisions that will incentivize investments in high-speed broadband networks. In recital 23 of the Directive, it is stated that ‘...in addition to the exiting three primary objectives of promoting competition, the internal market and end user interests...’, the Directive should ‘...pursue an additional connectivity objective, articulated in terms of outcomes: widespread access to and take up of very high capacity networks for all citizens of the Union and Union businesses...’. It is also said in recital 26 that ‘both efficient investment and competition should be encouraged in tandem, in order to increase economic growth, innovation and consumer choice’. From the previous relatively one-sided focus on the promotion of competition, more emphasis should be on advancing investments. This is a position that has been increasingly prominent on the political agenda in the last decade, and it has now become a central cornerstone in the legal communications network and service legislation. The reason is that it has, to a growing extent, been realized that competition in itself does not necessarily lead to investments at the pace and amounts considered necessary and that special attention in policies and regulation has to be on increasing investments.

Another major new development of the Directive is the increased scope in terms of including OTT-services. The term OTT-services itself is not mentioned in the Directive, but the Directive seeks to deal with the issue of OTT by means of the concept of number-independent interpersonal communications services (ICS). In the Directive, the concept of ICS is introduced,

and the Directive differentiates between number-dependent and number-independent services. On the basis of the previous Directives in the field, it has been unclear whether different OTT-services should be subject to regulation like other interpersonal communications services. Court cases have been raised, and the new Directive seeks to deal with this matter by including number-independent ICS.

But there will still be uncertainties, as number-dependent and number-independent ICS will not be subject to the same degree of regulation. It is stated in recital 18 of the Directive: ‘Number-independent interpersonal communications services should be subject to obligations only where public interests require that specific regulatory obligations apply to all types of interpersonal communications services, regardless of whether they use numbers for the provision of their service. It is justified to treat number-based interpersonal communications services differently, as they participate in, and hence also benefit from, a publicly assured interoperable ecosystem’. However, the new direction in the Directive is summarized in recital 151, where it is stated that national regulatory authorities can ‘impose proportionate obligations ... on those providers of number-independent interpersonal communications services with significant level of coverage and user-uptake’.

In the EU legislative system, there are three kinds of directives dealing with communication services. One kind of Directives (now one Directive) is concerned with ‘telecom-like’ services; another Directive is the Audio Visual Media Service Directive (AVMS) dealing with ‘broadcast-like’ services; and the last one is the Information Society Service Directive – also called the e-commerce directive – which deals with, in reality, the residual group of communications services. When this latter Directive was created, Internet-based services were a new category of services that were difficult to categorize as either ‘telecom-like’ or ‘broadcast-like’. Also, legislators stood back from imposing known regulatory provisions on these new services, as this might constrain the development of Internet services. However, as time has passed and Internet has become the dominant infrastructure for communications, the scope of AVMS has been expanded to include first on-demand ‘broadcast-like’ services, for instance Netflix, and lately in 2018 also audio-visual services on YouTube and Facebook. Similarly, the Directive for ‘telecom-like’ services has now come to include number-independent ICS. The Information Society Directive in the middle gets increasingly squeezed, but as it is said in the new telecom Directive in recital 7: ‘It is necessary to separate the regulation of electronic communications networks and services

from the regulation of content'. These two areas of regulation are not to be mixed.

With respect to symmetric and asymmetric regulation, this question is primarily dealt with in recitals 144 to 158. In recital 145, it is stated: 'In light of the principle on non-discrimination, national regulatory authorities should ensure that all undertakings irrespective of their size and business model, whether vertically integrated or separated, can interconnect on reasonable terms and conditions, with a view to providing end-to-end connectivity and access to the internet'. Even though this applies to 'all undertakings irrespective of their size and business model', there are significant differences between small and large operators. The situations where symmetric regulation will primarily apply is focused on '...situations where undertakings are deprived of access to viable alternatives to non-replicable wiring, cables and associated facilities inside buildings or up to the first concentration or distribution point...' (recital 152); ...in order to promote competitive outcomes in the interest of end-users, national regulatory authorities should be empowered to impose access obligations on all undertakings, irrespective of a designation as having significant market power' (recital 152). This means that the focus is on facilities inside building or up to the first concentration or distribution point. However, in recital 154, it is also stated that 'it could be justified to extend access obligations to wiring and cables beyond the first concentration or distribution point while confining such obligations to points as close as possible to end-users...'. However, this should only be '...where it is demonstrated that replication faces high and non-transitory physical or economic barriers, leading to important competition problems or market failures at the retail level to the detriment of end-users' (recital 154). In such a situation, '...the national regulatory authority does not need to establish significant market power in order to impose these obligations' (recital 154).

The scope of symmetric regulation is thus limited in terms of where in the network access obligations can be imposed on market players without significant market power. Furthermore, it is also said in recital 152 that '...as such obligations can in certain cases be intrusive, can undermine incentives for investments, and can have the effect of strengthening the position of dominant players, they should be imposed only where justified and proportionate to achieving sustainable competition in the relevant markets'.

Nevertheless, the Directive does introduce some degree of symmetric regulation – or, in other words, the imposition of access obligations on operators that do not hold significant market power. At the same time, the intension is to lower asymmetric regulation. It is stated in recital 29: 'This Directive aims

to progressively reduce *ex ante* sector-specific rules as competition in the markets develops and, ultimately, to ensure that electronic communications are governed only by competition law'. This has certainly been the aim since the start of the telecom reform process starting in the 1980s, but it seems that the EU legislators believe that we are getting closer to this situation and that it is time to seek to implement additional rules to lower asymmetric regulation. This applies in the Directive, for instance, to provisions regarding obligations on SMP operators that offer commitments in connection with co-investment arrangement (recital 205).

With the overall goal of promoting '...incentives for investment in high-speed broadband networks' (recital 3) and of increasing '...widespread access to and take-up of very high capacity networks...' (recital 23), there is an increased focus on investments, on sharing of facilities – not only passive but also active – and on symmetric regulation. This seems to be a clear direction of the new Directive, while the actual 'road' to get there is more unclear and subject to many upcoming disputes and regulatory decisions – which is why we have cited the recitals extensively.

3 Theory Contributions

The focus of this section is on theory approaches as to how symmetric regulation will affect investment. It should, however, be noted that the role of symmetric regulation – also with the new Directive – is rather limited, as it has been shown in the previous section. It is thus, to a larger extent, a discussion on general theoretical relationships and not so much a discussion on the actual implications of the provisions in the Directive.

As it was explained in the introduction, the primary relationships that will be discussed are those between symmetric regulation, competition and investment – where competition mediates between symmetric regulation and investment. However, as it was also explained, there are also direct relationships between symmetric regulation and investment, as symmetric regulation may lead to less investment by operators that already have physical networks in the geographical areas concerned as well as operators seeking to offer network services in these areas. It may also lead to increased investments if the incentives for investing are increased by lower investment costs for the individual operators.

Furthermore, it has to be taken into consideration that the overall goal of the Directive concerning very high-capacity networks is to extend connectivity, which does not necessarily require larger investments in total. This

is where co-investment comes in, as this may lead to increased connectivity even though total investments by all operators do not increase. The ‘elements’ that will be discussed in this section thus comprise symmetric regulation, competition, investment, and connectivity.

The discussions on the implications of *ex ante* access regulation go back to the liberalization of the telecoms area. In the 1990s when the area was liberalized and sector-specific regulation was implemented, the issue of symmetric and asymmetric regulation was also discussed, and there were spokesmen for giving symmetric regulation more emphasis (Schankerman, 1996; Knieps, 1997) – a position that was supported by incumbent operators. However, sector-specific access regulation came to focus on asymmetric regulation, because of the dominance of the former monopolies and the aim of establishing competition in the markets. The fastest way to establish some kind of competition was to open the networks of the incumbent operators to new service providers, and the expectation was that this, on a longer run, would lead to infrastructure competition. This was the approach of the theory on the ladder-of-investment (LoI), explaining that, at first, new-coming operators would take the opportunity of using the networks of the incumbents and compete on a service-base; later on, they would invest in their own infrastructure in order to get a firmer grip on the market (Cave, 2006). The experiences with operators climbing up a LoI have generally not lived up to expectations, and the theory has been subject to much criticism (e.g. Bourreau et al., 2010). It has been pointed out that it may be that service competition leads to a faster take-up (penetration) of services, at least in the beginning, but infrastructure competition will in the end lead to better coverage and, therefore, more solid competition (Yoo, 2014). This is part of the background for the relaxations of asymmetric regulation. There has thus been a long discussion on these issues, and the learnings from these discussions are important for the new discussion on symmetric regulation.

The question regarding the relationships between competition and investment is one of the major issues in the history of economics. Mathis and Sand-Zantman (2014) have made a short and concise summary of how this question has been dealt with in economics. They take the history overview back to Adam Smith and much later Joseph Schumpeter, where the economic tradition building on Smith has seen competition as promoting investment and where the tradition building on Schumpeter (at least in the Mark II version) has argued that too much competition can hurt investment, as there will not be sufficient profit to invest. Mathis and Sand-Zantman (2014) write that, in the manner in which the issue has been dealt with in economics, the

implications of competition on investment depend on where in the process of competition an industry is positioned. In the early stages, competition may promote incentives to invest, while incentives will be lower at later stages.

In this context Mathis and Sand-Zantman refer to the well-known idea of the inverted-U shaped curve developed by Aghion et al. (2005). In the paper on 'Competition and innovation: An inverted-U relationship' from 2005, Aghion et al. developed a model where 'competition discourages laggard firms from innovating but encourages neck-to-neck firms to innovate'. The issue in the paper by Aghion et al. (2005) is thus on the relationships between competition and innovation, and the major contribution of the paper by Mathis and Sand-Zantman is to discuss the issue of competition and investment in light of investment being in innovations as well as in what they call 'infrastructure investment' – meaning investment that do not represent an innovation but an investment in building up physical infrastructure. This is a helpful differentiation, as it provides a basis for caution when trying to implement the idea of an inverted-U shaped curve on the relationships between competition and investment. In practice, however, it can be difficult to differentiate between innovations and infrastructure investments, as infrastructure investments may be in technology solutions, which represent some degree of improvement, and as it may be investments in areas, where infrastructure technologies indeed are new. Thus referring to the discussions of, e.g., Schumpeter on what innovations are, there is an overlap between innovations and infrastructure investments – or to put it otherwise, there are different kinds of investments: some in innovations and some in extending existing infrastructure.

In a paper from 2015, Hounghonon and Jeanjean discuss the level of competition intensity and investment in the wireless industry. They apply the concept of an inverted-U shaped relationship and find that 'the non-parametric methods suggest an inverted-U shaped relationship between competition and investment in the wireless industry'. The paper is primarily an empirical investigation of the issue, but it also refers to theory discussions on the relationships between competition and investment with reference to Schumpeter (1942) and Arrow (1962). While Arrow emphasizes an 'escape-competition effect', where companies will invest in order to win the market by investing and out-competing (escaping) other companies, those who follow Schumpeter put focus of the 'efficiency effect' of a monopolist. In the first phases of an upcoming market, some companies will attempt to escape competition by investing, and later on when the market has matured, the companies who dominate the market will have efficiency advantages.

In a paper also from 2015, Lesca refers to the findings of Hounghonon and Jeanjean (2015) regarding the inverted-U shaped curve of the relationships between competition and investment in the wireless industry. The aim of the paper by Lesca (2015) is to promote the idea of finding an ‘optimal level of competition intensity that allows dynamic competition through investment’. The paper by Lesca (2015) is more normative than the abovementioned papers and argues that ‘the level of competition and the continuous need for investments call for a move from the current asymmetric regulation, based on the SMP concept, to a symmetric one’. The argument is that a sufficient level of competition has been reached in the ‘very high broadband’ market and that it is time to lift or, at least, reduce the level of asymmetric regulation and rely on symmetric regulation to a greater extent. In this text, the issue of symmetric regulation is thus related to investment.

The relationships between the implementation of symmetric regulation and investment are also investigated in a paper by Briglauer et al. from 2017. The purpose of this paper is to assess the then upcoming proposal for the European Electronic Communications Code, and one of the issues taken up in the paper is how symmetric regulation should be implemented if it is to lead to increased investments. Another question that they also discuss is co-investment, and they see both issues, symmetric regulation and regulation for promoting co-investment, in light of how such regulations can increase investments. Symmetric regulation does, according to the authors, not necessarily lead to increased investments. This depends on how symmetric regulation is interpreted and implemented.

In the paper, they write: ‘Insofar as symmetrical obligations are suitable for delivering synergy potentials and lowering total investment costs ... the will increase the profitability of NGA projects and, *ceteris paribus*, overall investment activity’. They also write: ‘It is important to note ... that in order to increase investment, symmetric regulations must not ultimately result in extending asymmetric access regulation to a variety of infrastructure elements and all infrastructure operators regardless of actual market power (SMP)’. And, when assessing the then upcoming Communications Code, they believe that ‘the proposed symmetric access regulations actually entail the potential to significantly expand the current regulation’. The point of view is that if one wants to increase investment by implementing symmetric regulation, this must be part of an overall ‘softer’ regulation and not as implementing the rules applying to SMP-operators to non-SMP-operators.

In order to systematize and potentially operationalize the theoretical propositions, different relationships (not all of them mentioned in the referenced texts) are listed in the following overview:

- Co-investment will lead to lower investment costs for the individual operators participating in the joint investment operation and will increase incentives for investing.
- Co-investment may or may not lead to increased overall investment by all participating operators, but will lead to extended connectivity.
- Co-investment will lead to more emphasis on service-based competition.
- Symmetric regulation will lead to more emphasis on service-based competition.
- Symmetric regulation may lead to increased investment investments if the incentives for investing are increased by lower investment costs for the individual operators.
- Symmetric regulation may, on the other hand, also lead to lower investments by the non-SMP operator present in the market as well as new incoming operators.
- Initial competition may lead to more innovative investments in first stages of market developments.
- Too much competition may lead to lower overall investments in later stages of market developments.

As can be seen from this list of relationships, there are no certain correlations. It very much depends on how the rules for symmetric regulation and co-investment are implemented and the existing market circumstances. In the following figure, a model of the elements that have to be taken into consideration is depicted.

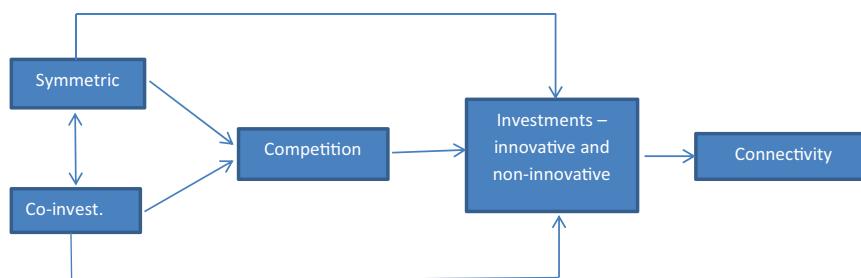


Figure 1 Analytical model.

4 Correlation Analysis

Studying the relationships between competition and investment in a sector like telecom is not a straightforward thing. The level of competition may be very different in different parts of the country, and a mere counting of suppliers within a country may overstate the level of competition, as not all suppliers have a national coverage. Especially in rural areas, there may be only 1–2 possible providers (if any) even though a large number of national operators exist.

In addition to geographical variations, the telecom sector includes a number of different markets with very different levels of competition. Within the EU, a number of submarkets have been defined and market studies for each of these markets are performed in order to assess whether regulatory intervention is needed and to be preferred compared to a ‘free’ market. These submarkets are often highly interdependent, as they may offer either substitutes or complementary services. Examples of this could be substitution between wireless and fixed broadband services and services complementing network facilities. Even if these markets could be assumed to be independent, it is difficult to determine the levels of investments on each market, as they may be sharing the same facilities.

Another distinction to be made is between facility based and service based competition. With regard to broadband, facility based competition can either be among identical or different technology platforms. Early studies focused on service based competition in existing telecom networks. These studies indicated that the liberalization of the telecom sector made in the 1990s was accommodated by a growth in investments and some competition. A study from 2004 (Henten et al., 2004) shows a positive relationship between competition and investments. The study creates a composite competition index and compares the incumbent markets shares in the provision of major telecom services with investment levels in selected EU countries.

With regard to competition in broadband markets, it is especially important to distinguish between services based and facility based competition. For service based competition, the general conclusion seems to be that service based competition promotes immediate competition, leading to lower prices and higher subscription rates, but that it may limit investments in new infrastructures and coverage by high-speed technologies. When it comes to facility based competition, several studies conclude that competition promotes investments.

A large number of studies are concerned with the policy impact on the level of investments. Especially the role of policy promoting investments in broadband has been widely studied. These studies are not addressing the competition issue directly. However, many of the regulatory measures studies are implemented in order to facilitate competition. It would, therefore, be reasonable to assume that a positive impact of such policies on investments also indicates a positive relation between competition and investments.

Within this field, the impact of access regulation has been widely studied in particular in the US. According to (Friederiszick, 2008) there is some empirical support for the hypothesis that low access prices have promoted investments. Among others, Sidak has disputed this conclusion both theoretically and empirically (e.g. Jorde, Sidak and Teece, 2000). The argument is that with low access charges, new entrants will be less inclined to invest in their own facilities, and investments made by the incumbent will be less profitable. Not all of these studies use investments the dependent variable, but analyses the impact on coverage or penetration instead. Such data are more accessible and might be more relevant success parameters in the expansion phase for broadband networks. In addition, they can be expected to be highly correlated with the level of investments.

The relationship between competition and investments in mobile networks has been analyzed in a recent study by WIK (Elixmann et al., 2015). This study looks at a number of different factors driving investments. These include costs and demand factors as well as competition. Investments are measured as CAPEX/revenue and CAPEX per subscriber. Three different indicators for the level of competition are applied: The HHI index, number of MNOs, and presence of maverick firms (companies that behave in a manner that differs from the industry norm, e.g. by aggressive price setting). The study is based on data from 2005 to 2014. The study concludes that there is no indication that less competition is related to a higher level of investments. The presence of maverick firms has a positive correlation with investments in four out of ten years.

In this paper, we have used the Digital Agenda key indicators to perform an analysis of the competition-investment relation. These data include market shares of the incumbent mobile operator for each country, but no similar indicators are available for fixed network operators. With regard to investments, only total telecom investments are included. Data are available for the years 2009–2015. The table below depicts the correlation between

Table 1 Market shares of leading mobile operators and total telecom investments for EU countries 2009–2015

Year	Market Share of Leading Mobile Operator	Total Telecom Investments as % of Revenue	Correlation Between the Two Parameters
2009	44.3%	14.3%	0.438
2010	44.6%	14.2%	0.295
2011	43.6%	14.0%	0.218
2012	42.6%	15.1%	0.322
2013	42.5%	15.4%	0.094
2014	41.0%	16.7%	−0.138
2015	39.1%	17.5%	−0.066
Average, all years	42.5%	15.3%	0.166

Source: https://digital-agenda-data.eu/datasets/digital_agenda_scoreboard_key_indicators/visualizations

these two indicators. Market shares for the leading operator and total telecom investments as percentage of total revenue are calculated for each year as a simple average for 23–27 national market within the EU. The correlation shows the correlation between market share and investments for each year.

It follows that there is a decreasing trend in the market shares for the leading operator, while there is increasing trend in investments as % of revenue. This could lead to the immediate conclusion that more competition facilitates more investments. One should however be very cautious with such a conclusion. The WIK study analyzing the mobile markets in a similar group of countries in almost the same period of time uses the HHI index as a parameter for the level of competition. According to this study, no general trend in the level of competition can be observed. In five countries competition is growing, while it is decreasing in four countries.

More important is that this conclusion cannot be supported by the correlation between market shares and investments. Here we find a positive correlation, and this leads to the opposite conclusion: Higher market shares (and less competition) leads to more investments. This correlation is very weak, when looking at the average for all years. However the correlation is much higher for 2009–2012, while it is close to zero in 2013–2015. This could be an indication of a negative relation between competition and investments in a specific historical period.

5 Discussion

In the Communications Code, symmetric regulation has been launched as a new element in the regulatory tool box. It should be noted, though, that the scope for symmetric access regulation is relatively narrow in the Directive, and it should also be noted that the possibilities for national regulatory agencies (NRA) to implement symmetric access regulation already were part of the Framework Directive from 2009 in Article 12. In a report published by WIK from 2011, Nett and Stumpf thus discuss the implications of the provisions in Article 12 for the German access regulation. It is, therefore, not an entirely new issue, but what is new is the emphasis that EU puts on it and how it is being articulated. This is also reflected in the way symmetric regulation is dealt with by national authorities. In Denmark, for instance, the agency that regulates telecoms infrastructure, the Energy Agency, has commissioned a study on what the implications of symmetric regulation can be on investments in the telecom sector, and in the Netherlands, the ministry responsible for telecoms regulation in April 2019 launched a public consultation on the introduction of symmetric access obligations. Even though the topic is not new, there is increased focus on it.

This increased focus is the result of different development trends. One of these trends is concerned with the emphasis on increasing not only connectivity to high-capacity networks but also investments in telecommunications infrastructures. While the assumption at the beginning of access regulation in the 1990s was that the creation of competition would not only lead to lower prices and higher penetration but also to growing investments and enhanced coverage, this has turned out not always to be true, and this is the reason for wanting to implement regulations that will grow investments. It is also the reason for public investments in infrastructure where private operators do not seem to have sufficient incentives to invest (Falch and Henten, 2010).

Another trend is that it has already from the start of access regulation been the intension that sector-specific telecom regulation should eventually be disbanded and that the asymmetric SMP regulation would be lifted in this context. In fact, asymmetric regulation has been lifted in retail markets, while it still exists in wholesale markets. Incumbent operators have been putting pressure on policy directions to limit asymmetric regulation and to promote a greater degree of symmetry in the regulatory provisions.

There are already experiences with some degree of symmetric regulation in a number of EU countries. In a paper entitled 'Is symmetric

access regulation a policy choice? Evidence from the deployment of NGA in Europe', Shortall and Cave (2015) discuss the experiences with different broadband strategies in countries in Europe. They observe a difference between France, Spain and Portugal, on the one side, and Belgium Germany and the UK, on the other. In the first group of countries, there has been a wider deployment of fiber infrastructures than in the latter group, where there is a greater reliance on legacy copper infrastructures. The explanatory framework that Shortall and Cave (2015) present in the paper is that the countries have implemented different policies for broadband development.

In 2008, the regulation of broadband was contemplated by the European Commission, and focus was on fiber loops and on access to the lowest level passive infrastructures as opposed to access to the active infrastructure elements. However, in 2010, the policies put forward by the European Commission had changed with a greater focus on upgrading of copper infrastructures. France, Spain and Portugal had already adopted the policies from 2008, while Belgium, Germany and the UK adopted the policies from 2010. In the paper, Shortall and Cave (2015) examine the implications of these different strategies, and the conclusion is that the policies followed by Belgium, Germany and the UK has led to a maintained emphasis on asymmetric access regulation, while the policies followed by France, Spain and Portugal give way to a greater degree of symmetric regulation. They also document a significant difference in fiber deployment and investments by alternative operators with France, Spain and Portugal as the champions of fiber and alternative operators.

As it is mentioned in the paper by Shortall and Cave (2015), one can discuss whether it was because of these policy strategy differences or whether the policy differences fit in well with the already existing differences in infrastructural points of departure. But there is no question that the policy differences have lead in different directions, and it would seem that the Communications Code includes the intension of bringing access regulation in direction of what was intended in 2008.

The question is whether the Communications Code will actually achieve this. The hope is clearly that facilitating co-investment and gradually relying more on symmetric regulation, as opposed to the existing primarily asymmetric regulation regime, will lead to more investments and to better connectivity to very high-capacity networks. In an assessment by Georg Serentschy from May 2018 (Serentschy, 2018), half a year before the adoption of the Communications Code, a serious concern was raised as to whether the new Directive would actually achieve what was the intension at the outset of process of

changing the European regulatory framework. Serentschy (2018) writes that ‘the essential concern is whether the future system of regulation will ever function at a practical level, as it will be based on a parallelogram of forces hinging on SMP regulation, symmetric regulation, universal service and state aid – without clear distinctions between those areas and without any clear definition of the interdependencies amongst them’.

A similar concern is found in the abovementioned paper by Briglauer et al. (2017), where it is formulated in a softer manner stating that the outcome of an enhanced emphasis on co-investment and symmetric regulation is uncertain and depends on how it will be implemented. As it is expressed in the 8 statements in the theory section of the present paper, the correlations are not obvious. Developments with respect to investments can go in different and even opposing directions.

In the model presented in the theory section, enhancing competition is still the central core of the relations between co-investment, symmetric regulation, investments and connectivity. This is how it has been viewed since competition was introduced in telecommunications. However, investments are not considered to be sufficient and the role of competition has to be combined with other measures. In the model, this is illustrated by the direct impacts of co-investment and symmetric regulation on investments, and state aid could be added as another measure. The concern is how these different elements are combined and what the interdependencies are.

In the section on correlation analyses, various approaches to analyzing the competition-investment relationships are mentioned, and a simple correlation analysis based on figures from the Digital Agenda database is conducted. The great difficulties in conducting such analyses and assembling relevant data are discussed, and the results reached in the correlation analysis presented in this paper are relatively inconclusive. If any conclusion can be made, the figures point towards a negative relationship between competition and investment. This could indicate that competition has moved beyond the optimum on the inverted U shaped curve. However, this negative relationship seems to disappear after 2012.

The paper by Hounbonon and Jeanjean (2015) includes documentation that there is an inverted-U shaped relationship between competition and investment in the wireless industry. Such analyses and interpretation of the relationships between competition and investment could be valid arguments behind the policy directions of lowering asymmetric regulation and giving more emphasis to symmetric regulation. The kind of competitive environment that has existed with the asymmetric model could be said to have exhausted its

potentials for increasing investment. The positive investment incentives from neck-to-neck competition have been exhausted and the incentives of ‘lag-guards’ are decreasing. Such could be the line of argumentation for changing the dynamics of competition. This is surely the line of argumentation in the paper by Lesca (2015). Symmetric regulation and policies for encouraging co-investment could constitute elements of creating such new dynamics in the telecommunications industry.

6 Conclusion

The paper aims at identifying reasons behind symmetric access regulation possibly coming to play a more prominent role in EU telecoms regulation, the scope of symmetric regulation and how it is being articulated, and what the possible implications of symmetric regulation could be on the level of investment. The contribution of the paper is to discuss these different elements of understanding the potential role of symmetric regulation.

In the Communications Code from December 2018, to be transposed nationally no later than December 2020, symmetric access regulation is presented as a new dimension of the EU telecoms regulatory framework. One can discuss how new it really is, as it already was part of Article 12 in the former Framework Directive and as different EU countries already have embarked on implementing symmetric regulation to a larger degree than other countries. One can also discuss how wide the scope for symmetric regulation really is in the new Communications Code. However, there is no doubt that there is and will be increased attention to and emphasis on implementing provisions for symmetric regulation in the national regulations. The fact that national authorities have received these signals underline that changes are taking place.

The aim of focusing more on symmetric regulation in companion with promoting co-investments is to increase investments and extend coverage of very high-capacity broadband networks to all corners of Europe. Policies have hitherto been based on the assumption that improving conditions for competition would be the main driver for increasing investment. But if the policy signals around the Communications Code are to be taken for granted, more direct focus on investments is to be given. The aim is to develop a new set of competitive dynamics in the telecoms sector with elements of symmetric regulation and the promotion of co-investment.

The question raised by different observers (e.g. Briglauer et al. (2017) and Serentschy (2018)) is whether the new regulatory framework will achieve this

in reality. With the many different interests of stakeholders that have had to be taken into consideration, the question is whether the Communications Code has become incoherent and points in too many different directions. It will very much depend on how the Directive is interpreted and implemented.

References

- Aghion, P. et al. (2005). Competition and innovation: An inverted-U shaped relationship, *The Quarterly Journal of Economic* 120(3), pp. 701–728
- Arrow, K. (1962). Economic welfare and the allocation of resources for invention, Princeton University Press
- Bird and Bird (2018). European Electronic Communications Code aims to boost connectivity and competitiveness with the roll-out of very high capacity networks in the 5G era, <https://www.twobirds.com/~media/pdfs/netherlands/communication-on-the-code-december-2018.pdf?language=en&hash=65A9773711E4195736CAC59A61CE090CD2431965>
- Bourreau, M. et al. (2010). A critical review of the ‘ladder of investment’ approach, *Telecommunications Policy* 34(11), pp. 683–696
- Briglauer, W. et al. (2017). The European Communications Code: A critical appraisal with a focus on incentivizing investment in next generation networks, *Telecommunications Policy* 41(10), pp. 948–961
- Cave, M. (2006). Encouraging infrastructure competition via the ladder of investment, *Telecommunications Policy* 30(3–4), pp. 223–237
- Crowell and Moring LLP (2018). The European Union adopts a new telecoms code, <https://www.crowell.com/NewsEvents/AlertsNewsletters/all/The-European-Union-Adopts-a-New-Telecoms-Code>
- De Steel, A. and Larouche, P. (2016). An integrated regulatory framework for digital networks and services: A CERRE policy report, Centre on Regulation in Europe
- Directive (EU) 2018/1972 of the European Parliament and the Council of 11 December 2018 establishing the European Electronic Communications Code
- Elixmann, D. et al. (2015). Competition and investment: An analysis of the drivers of investment and consumer welfare in mobile telecommunications, WIK Consult report, Bad Honeff
- Falch, M. and Henten, A. (2010). Public private partnerships as a tool for stimulating investments in broadband, *Telecommunications Policy* 34(9), pp. 496–504

- Friederiszick, H. et al. (2008). Analyzing the relationship between regulation and investment in the telecom sector, ESMT White Paper WP-108-01
- Henten, A. et al. (2004). New trends in telecommunication Innovation, *Communication & Strategies* Issue 54, pp. 131–158
- Houngbonon, G.V. and Jeanjean, F. (2015). What level of competition intensity maximizes investment in the wireless industry?, 2014 TPRC
- Jorde, T.M., Sidak, J.G. and Teece, D.J. (2000). Innovation, investments and unbundling, *Yale Journal of Regulation* 17, pp. 1–37
- Knieps, G. (1997). Phasing out sector-specific regulation in competitive telecommunications, *Kyklos* 50(3), pp. 325–339
- Lesca, V. (2015). A symmetrical regulation for an intensified very high broadband deployment, Working Paper, European Regulatory Affairs ORANGE
- Mathis, J. and Sand-Zantman, W. (2014). Competition and investment: What do we know from literature, Institut d’Economie Industrielle
- Nett, L. and Stumpf, U. (2011). Symmetric regulation in line with the new regulatory framework of the European Union, Discussion Paper 350, WIK
- Schankerman, M. (1996). Symmetric regulation for competitive telecommunications, *Information Economics and Policy* 8(1), pp. 3–23
- Schumpeter, J. (1942). Capitalism, socialism and democracy, Harper & Row
- Serentschy, G. (2018). European Electronic Communications Code – back to square one, Serentschy.com Advisory Services GMBH, <http://www.serentschy.com/european-electronic-communications-code-eecc-back-to-square-one-contribution-to-the-discussion/>
- Shortall, T. and Cave, M. (2015). Is symmetric access regulation a policy choice? Evidence from the deployment of NGA in Europe, *Digiworld Economic Journal* no. 98, pp. 17–41
- Yoo, C.S. (2014). U.S vs. European broadband deployment: What do the data say?, U of Penn, Inst for Law & Econ Research Paper no. 14–35

Biographies



Anders Henten is Professor at section for Communication, Media and Information technologies (CMI) – an interdisciplinary research and teaching section specializing in ICT services, digital media and cyber security at the Department of Electronic Systems at Aalborg University in Copenhagen. He is a graduate in communications and international development studies from Roskilde University in Denmark (1989) and holds a PhD in ICT from the Technical University of Denmark (1995). He has worked professionally in the area of communications economy and policy for more than 30 years.



Morten Falch is Associate Professor at Center for Communication, Media and Information Technologies (CMI) located at Aalborg University Copenhagen. He holds a bachelor in Mathematic, a master degree in economics and a Ph.D. and has since 1988 specialised in research on socio-economic issues related to Information and Communication technologies.

He has participated in 40 research projects in the telematics area more than a third of these have been funded by EU. He has also conducted a large number of consultancies for national and international organisations such as ITU, UNCTAD, the World Bank and the National Telecom Agencies in Denmark, Norway and Sweden.

He has authored almost 200 research publications including journal papers, book chapters and research reports and conference papers. He has been Editor-in-Chief of International Journal of E-Services and Mobile Applications (IJESMA) published by IGI Global. He has organised international conferences for organisations like International Telecommunications Society (ITS) and European Communication Policy Research Organisation (EuroCPR).